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An information management framework for the work-integrated learning process

by

Roelen Brink

Thesis
Submitted in fulfilment of the requirements for the degree
PhD (Information Management)
in
Information and Knowledge Management
in the
Faculty of Management
at the
UNIVERSITY OF JOHANNESBURG

Supervisor: Prof M Mearns
Co-supervisor: Prof T du Plessis

OCTOBER 2013
I certify that the thesis submitted by me for the degree PhD (Information Management) at the University of Johannesburg is my independent work and has not been submitted by me for a degree at another university.

______________________________
(Name in block letters – no signature)
Dedication

This thesis is dedicated to my father who passed away and now is in heaven and whom I miss dearly –

DICK JACOBUS Breytenbach

and my dearest, loving husband and daughters –

RENIER, CLARICE AND RAUGMÉ BRINK

My deepest gratitude goes to my family for their love, patience and understanding throughout the writing of this thesis.

They all made sacrifices allowing the completion of this study, which has been a dream of mine and to contribute to the dream of a better higher education institution for our students.
Acknowledgement

A number of people including colleagues, managers, mentors and family have supported and assisted me in the completion of this thesis, and I wish to thank them all. To start with, I would like to thank my supervisor Professor Martie Mearns and co-supervisor Professor Tanya du Plessis for guiding and supporting me in my study and the writing of this thesis. You were the best mentors that I could have asked for.

I wish to thank Professors Kettil Cedercreutz and Cheryl Cates from the University of Cincinnati and all their staff members, students and industry for hosting me for my research at their university, assisting and guiding me in my research. Their commitment, support and willingness to share and contribute in the research of a framework which can be applied to South Africa for the benefit of student learning on HEI level are highly appreciated.

Professor Helen Oloroso from the McCormick Office of Career Development at the Robert R. McCormick School of Engineering and Applied Science Northwestern University in Illinois, for helping and guiding me during my research at her university. All her staff members, students and industry for their contribution and willingness to participate in this study and securing critical data which were required to make this study practical and beneficial to student learning from a WIL perspective.

To all staff members, students and industry mentors from the University of Johannesburg; I wish to thank all for their contribution and willingness to participate in this study, which is so critical for student and industry engagement.

To Renier, Clarice and Raugmé who constantly supported me during this journey and to fulfil my dream – now I can continue to be a wife and mother to my family which I adore.

Lastly, I thank GOD who is my strength in everything I do.
Abstract

The South African landscape on employment has reached a stage which requires strategies and initiatives that can assist and elevate awareness on ways which can facilitate opportunities of placement of people in the labour market. Critical levels of unemployment have placed the priority on the skilling of work seekers at the highest level. The critical issue of unemployment has also impacted on the higher education institutions (HEIs) fraternity to turn out professional graduates that are attractive and appropriately skilled for placement at industry level. HEIs have an unspoken obligation as a research founded environment to be on the cutting edge of processes and strategies on addressing the country’s needs and strategic directives. Work-integrated learning (WIL) was identified as a core area which can facilitate preparation and empowering student learning on industry level that can promote student placement and possibly address levels of employment.

HEIs in South Africa require teaching and learning to include WIL within specific learning offerings. The different learning offerings provided by various faculties have unique and diverse procedures which justify different WIL approaches at HEIs. A lack of structure regarding the information management (IM) for WIL across departmental silos, result in different processes followed for WIL. Therefore a lack of structure for IM can impact negatively on the optimal utilisation of WIL. In order to establish an effective IM feedback process the information that currently is, and that potentially could be exchanged between the HEI, the industry partner and the student has to be managed. This relationship is referred to as the WIL triad partners. Effective WIL is largely reliant on the managing of information exchanged between the triad partners. Without an effective flow of information, the WIL component will be cumbersome for the triad partners with duplication taking place across faculties. WIL can be optimally managed from a centralised unit to facilitate information flow between the triad partners, but first a framework has to be developed for the IM for WIL.

Frameworks for the IM for WIL have been developed at international HEIs over long periods of time, which have evolved into good practice benchmarks. An investigation into these frameworks offered valuable insights to be tested at a HEI in South Africa. It became clear from this study that significant challenges are in the order of the day, pertaining to the IM for WIL process in place at the University of Johannesburg (UJ). It is paramount that processes and techniques do not stagnate but evolve with time and in line with the latest trends and
technology. Therefore HEIs should be on par and be in line with the latest trends which affect HEIs’ approach to WIL. It is strategic to realise the importance of capacitating students for employment and having the latest, most effective process in place will not only benefit students but add to the value chain of student employability due to strong and established collaboration with industry partners.

The ultimate goal of this study was to develop a conceptual framework for IM for WIL for a HEI. The research resulted in a conceptual framework that would lay the foundation for the ultimate development of a portal, which was identified as the most appropriate platform that could facilitate the creation and development of a centralised solution that would enable IM for WIL processes. Such a platform could then be populated with the relevant data, featuring access functions that will allow for a single repository of data which can be centrally managed. The acceptance of the IM for WIL framework was tested amongst WIL coordinators and a very positive response was achieved. This study could guide and assist the UJ, as well as other HEIs, in developing and structuring of a centralised WIL unit based on an online WIL portal benefiting the role players who are central to the WIL process.

**Keywords:** information management, work-integrated learning, cooperative education, boundary-spanning, Theory of Motivated Information Management, higher education institutions.
Table of Contents

Dedication ........................................................................................................................................ iii
Acknowledgement ............................................................................................................................ iii
Abstract ........................................................................................................................................... iv
List of appendices ........................................................................................................................... ix
List of figures .................................................................................................................................... x
List of tables ..................................................................................................................................... xi
List of abbreviations ......................................................................................................................... xi

CHAPTER 1: INTRODUCTION TO THE STUDY ................................................................. 1

1.1 Background to the study ............................................................................................................ 1
1.2 The need for information management in the work-integrated learning process .......... 2
1.3 Research problem ..................................................................................................................... 4
1.4 Research choice ....................................................................................................................... 6
1.5 Data collection .......................................................................................................................... 6
1.6 Data sampling ........................................................................................................................... 7
1.7 Data analysis ............................................................................................................................. 7
1.8 Chapter outline......................................................................................................................... 8
1.8.1 Chapter 2: Information management for work-integrated learning ......................... 8
1.8.2 Chapter 3: Research design and methodology ................................................................. 8
1.8.3 Chapter 4: Research findings ............................................................................................. 9
1.8.4 Chapter 5: Conceptual framework for information management for work-
integrated learning ......................................................................................................................... 9
1.8.5 Chapter 6: Synthesis, recommendations and conclusion .................................................. 9

CHAPTER 2: INFORMATION MANAGEMENT FOR WORK-INTEGRATED LEARNING . 10

2.1 Introduction ............................................................................................................................... 10
2.2 Information management ......................................................................................................... 11
2.2.1 Finding activities or re-finding activities ......................................................................... 12
CHAPTER 3: RESEARCH DESIGN AND METHODOLOGY .................................................47

3.1 Introduction ...........................................................................................................47
3.2 Ontological assumptions .......................................................................................48
3.3 Epistemological assumptions ...............................................................................50
3.4 Methodological assumptions ...............................................................................50
3.4.1 Research choice ................................................................................................50
3.4.1.1 Phase 1: HEI international lecturers and industry mentors .....................51
3.4.1.2 Phase 2: HEI international industry mentors and students .....................52
3.4.1.3 Phase 3: South African HEI .......................................................................52
3.4.2 Research approach ............................................................................................53
3.4.3 Research strategy ...............................................................................................54
3.4.4 Time dimensions ...............................................................................................54
3.4.5 Methods and process of data collection ...............................................................54
3.4.5.1 Semi-structured individual interviews .........................................................56
3.4.5.2 Open-ended questionnaires .........................................................................57
3.4.5.3 Group interviews ..........................................................................................57
3.4.6 Data analysis ......................................................................................................58
CHAPTER 4: RESEARCH FINDINGS ........................................................................................................... 64

4.1 Introduction ........................................................................................................................................ 64

4.2 Work-integrated learning internationally ......................................................................................... 64

4.2.1 History of cooperative education at the research sites ............................................................... 65

4.2.1.1 University of Cincinnati ........................................................................................................... 65

4.2.1.2 Northwestern University in Illinois .......................................................................................... 66

4.2.2 Cooperative education processes at UC and NWU ...................................................................... 67

4.3 Work-integrated learning at the University of Johannesburg ............................................................ 80

4.3.1 UJ work-integrated learning and reporting structure ..................................................................... 80

4.3.2 Current work-integrated learning processes at UJ ......................................................................... 83

4.3.2.1 Faculty of Engineering and the Built Environment ..................................................................... 84

4.3.2.2 Faculty of Science .................................................................................................................... 89

4.3.2.3 Faculty of Art, Design and Architecture .................................................................................. 94

4.3.2.4 Faculty of Education ............................................................................................................... 99

4.3.2.5 Faculty of Humanities ............................................................................................................ 102

4.3.2.6 Faculty of Health Science .......................................................................................................... 105

4.3.2.7 Faculty of Management ........................................................................................................... 112

4.3.3 Identified WIL process commonalities in the UJ faculties ............................................................... 117

4.3.3.1 Information .............................................................................................................................. 117

4.3.3.2 Registration .............................................................................................................................. 117

4.3.3.3 Placement preparation .............................................................................................................. 118

4.3.3.4 Interviewing for placement .................................................................................................... 118

4.3.3.5 WIL experience ....................................................................................................................... 119

4.3.3.6 Submission and site visit ....................................................................................................... 119
CHAPTER 5: CONCEPTUAL FRAMEWORK FOR INFORMATION MANAGEMENT FOR WORK-INTEGRATED LEARNING ................................................. 122

5.1 Introduction ........................................................................................................... 122
5.2 Proposed conceptual framework for information management for work-integrated learning ............................................................................ 122
5.2.2 The nominal group technique discussion ....................................................... 126
5.2.3 Outcomes of nominal group technique discussion ......................................... 127
5.2.3.1 Responses to Question 1 .............................................................................. 127
5.2.3.2 Responses to Question 2 .............................................................................. 135
5.5 Summary .............................................................................................................. 138

CHAPTER 6: SYNTHESIS, RECOMMENDATIONS AND CONCLUSION ......................................................... 140

6.1 Introduction ........................................................................................................... 140
6.2 Synthesis ............................................................................................................... 140
6.3 Recommendation to UJ WIL framework ............................................................ 143
6.4 Recommendation for further research in this field ............................................ 145
6.5 Conclusion ............................................................................................................ 146

List of references ..................................................................................................... 148

List of appendices

Appendix A: Semi-structured interview questions .................................................... 155
Appendix B: Group discussion questions .................................................................. 156
Appendix C: Questionnaire industry mentors ............................................................ 157
Appendix D: Questionnaire students ........................................................................ 158
Appendix E: Invitation letter from the University of Cincinnati ............................................ 159
Appendix F: Invitation email from the Northwestern University .......................................... 160
Appendix G: Approval email for research .......................................................................... 161
Appendix H: Letter of consent ........................................................................................... 163
Appendix I: Consent form for participants ............................................................................. 164

List of figures

Figure 1.1: Diamond Model of Itin......................................................................................... 3
Figure 2.1: Mapping of PIM needs and information for WIL activities .............................. 12
Figure 2.2: PIM and OIM within the WIL process.............................................................. 16
Figure 2.3 Knowledge gain through the WIL approach applying boundary-spanning .........21
Figure 2.4: Roles and responsibility of triad partners considering boundary-spanning ......22
Figure 2.5: Model of Theory of Motivated Information Management – interpretation phase ................................................................................................................ 26
Figure 2.6: Propositions about relational uncertainty and communication ....................... 29
Figure 2.7: Model of Theory of Motivated Information Management – evaluation phase .... 35
Figure 2.8: Model of Theory of Motivated Information Management – decision phase .......42
Figure 3.1: Phases of the data collection for the qualitative research design process for this study ...................................................................................................... 51
Figure 3.2: Methodological framework ................................................................................. 55
Figure 3.3: Data analysis framework ................................................................................... 59
Figure 4.1: Alternating cycles quarters of cooperative education .........................................67
Figure 4.2: Identified partners in the IM for cooperative education process at the UC and NWU ............................................................................................................. 70
Figure 4.3: Information flows between the triad partners of the first cooperative education process at UC and NWU ............................................................................. 78
Figure 4.4: Information flows between the triad partners of the second to the fourth cooperative education process at UC and NWU ............................................ 78
Figure 4.5: WIL structure at UJ ............................................................................................ 82
Figure 4.6: Information flows between the triad partners of the WIL process at the Faculty of Engineering and the Built Environment ................................................ 86
Figure 4.7: Information flows between the triad partners of the WIL process at the Faculty of Science .......................................................................................................... 92
Figure 4.8: Information flows between the triad partners of the WIL process at the Faculty of Art, Design and Architecture .................................................................96
Figure 4.9: Information flows between the triad partners of the WIL process at the Faculty of Education .................................................................................................100
Figure 4.10: Information flows between the triad partners of the WIL process at the Faculty of Humanities ..............................................................................................103
Figure 4.11: Information flows between the triad partners of the WIL process at the Faculty of Health Science ..................................................................................107
Figure 4.12: Information flows between the triad partners of the WIL process at the Faculty of Management .................................................................115
Figure 5.1: Proposed conceptual framework for IM for WIL at UJ ........................................123

List of tables

Table 2.1: Calculation of number of dyadic relationships ...............................................................23
Table 4.1: The four focus learning outcomes as explained by a co-op advisor .......................73
Table 4.2: Information flow and sources of the co-op process at UC and NWU ..................77
Table 4.3: Information flow and sources of the WIL process for the Faculty of Engineering and the Built Environment ...........................................................85
Table 4.4: Information flow and sources of the WIL process for the Faculty of Science .........................................................................................................................89
Table 4.5: Information flow and sources of the WIL process for the Faculty of Art, Design and Architecture .........................................................................................95
Table 4.6: Information flow and sources of the WIL process for the Faculty of Education ..........................................................................................................................99
Table 4.7: Information flow and sources of the WIL process for the Faculty of Humanities .............................................................................................................102
Table 4.8: Information flow and sources of the WIL process for the Faculty of Health Science ................................................................................................................105
Table 4.9: Information flow and sources of the WIL process for the Faculty of Management ..............................................................................................................113
Table 5.1: Ranking order for Question 1 ....................................................................................128
Table 5.2: Ranking order for Question 2 ....................................................................................135
## List of abbreviations

<table>
<thead>
<tr>
<th>Abbreviation</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>CHE</td>
<td>Council on Higher Education</td>
</tr>
<tr>
<td>Co-op</td>
<td>cooperative education</td>
</tr>
<tr>
<td>CV</td>
<td>Curriculum Vitae</td>
</tr>
<tr>
<td>CVs</td>
<td>Curriculum Vitae's</td>
</tr>
<tr>
<td>DHET</td>
<td>Department of Higher Education and Training</td>
</tr>
<tr>
<td>DSA</td>
<td>Direct Selling Association</td>
</tr>
<tr>
<td>EM</td>
<td>Emergency Medical</td>
</tr>
<tr>
<td>EMC</td>
<td>Emergency Medical Care</td>
</tr>
<tr>
<td>EXCO</td>
<td>Executive Committee</td>
</tr>
<tr>
<td>GG</td>
<td>Government Gazette</td>
</tr>
<tr>
<td>HEI</td>
<td>higher education institution</td>
</tr>
<tr>
<td>HEIs</td>
<td>higher education institutions</td>
</tr>
<tr>
<td>HOD</td>
<td>Head of Department</td>
</tr>
<tr>
<td>HPCSA</td>
<td>Health Professions Council of South Africa</td>
</tr>
<tr>
<td>HR</td>
<td>Human Resources</td>
</tr>
<tr>
<td>IM</td>
<td>information management</td>
</tr>
<tr>
<td>MSWord</td>
<td>Microsoft Word</td>
</tr>
<tr>
<td>NWU</td>
<td>Northwestern University</td>
</tr>
<tr>
<td>OIM</td>
<td>organisational information management</td>
</tr>
<tr>
<td>PIM</td>
<td>personal information management</td>
</tr>
<tr>
<td>POPI</td>
<td>Protection of Personal Information Act</td>
</tr>
<tr>
<td>RAU</td>
<td>Rand Afrikaans University</td>
</tr>
<tr>
<td>SA</td>
<td>South Africa</td>
</tr>
<tr>
<td>SMS</td>
<td>Short Message Service</td>
</tr>
<tr>
<td>STLC</td>
<td>Senate Teaching and Learning Committee</td>
</tr>
<tr>
<td>TMIM</td>
<td>Theory of Motivated Information Management</td>
</tr>
<tr>
<td>TWR</td>
<td>Technikon Witwatersrand</td>
</tr>
<tr>
<td>UC</td>
<td>University of Cincinnati</td>
</tr>
<tr>
<td>UJ</td>
<td>University of Johannesburg</td>
</tr>
<tr>
<td>USA</td>
<td>United States of America</td>
</tr>
<tr>
<td>WIL</td>
<td>work-integrated learning</td>
</tr>
</tbody>
</table>
CHAPTER 1
INTRODUCTION TO THE STUDY

"The secret of joy in work is contained in one word – excellence.
To know how to do something well is to enjoy it."

Pearl S. Buck, 1892-1973, American novelist
(Reilly, 2006:109)

1.1 Background to the study

Work-integrated learning (WIL) is a programme where learning in the classroom alternates with learning in the workplace and allows for the competencies of students to be developed and nurtured by mentors (Jones & Quick, 2007:30). Todd, Zydney and Keller (2011:67) define cooperative education (co-op) as a learning model that integrates theory and practice by having students alternate their work and university terms. By definition the process of WIL and co-op is similar and therefore for the sake of this study these two terms will be used interchangeably for the most part, but in Chapter 4 specific terms will apply. For example, with reference to the United States of America (USA) the higher education institutions (HEIs) apply the word 'co-op', whereas in the South African context, 'WIL' will be used in following of the trends in these two countries.

WIL is not a new concept; it has already started in the early 1900s. The founding father of co-op, Herman Schneider, implemented it at the University of Cincinnati (UC) in 1906 and his belief was that co-op will be the bridge between academic work and practical work (Cates & Cedercreutz, 2008:18). Dewey's view in 1938 was that a given experience is the result of an interaction between what the student brings to a given situation and what happens there (Chisholm, Harris, Northwood & Johrendt, 2009:326). According to Chisholm et al (2009:326), Dewey was an education theorist of the twentieth century and one of the founding fathers and developers of experiential learning. Experience can be seen as an essential component of the academic process. Students learn through their actions and not through the actions of their lecturers (Walsh, 2007:79). WIL is a multi-disciplinary approach based on four individual

Costa (2009:37) mentions that WIL is a three party relationship between students, industry partners and HEIs, that work together to produce graduates that are more “work-ready”. The growing demand for relevant workplace skills of new graduates and potential employees have increased over the years, as the linkage process improved between practice and academia (Wei, Siow & Burley, 2006:125). According to the Incorporating Service-learning Model of Wei et al, (2006:127) there is a flow of communication and information between the student, HEI and industry partner, the so-called three parties or triad partners.

Effective WIL is largely reliant on the managing of new information gained by the three parties involved. Without effective flow of information the WIL component will be generally less useful and of minimal value to the three parties specifically. WIL can only be successful if the flow of information between the three parties is managed optimally. Wei et al, (2006:131) state that the success of WIL should take into account the quality of the relationship between the three parties. This relationship is hugely information dependent and information rich and therefore the management of information will most likely be necessary in the WIL process.

1.2 The need for information management in the work-integrated learning process

According to Hinton (2006:2) IM should be seen as the conscious process by which information is gathered and used to assist in decision making. The effective management of information rests on good IM principles and an understanding of everyone’s potential needs for use of, creation and exchange of information (Powell, 2003:2). IM is about determining which information created and received by the organisation is valuable in some way and optimising the use of valuable information to the advantage of the organisation. It is based on the content; ensuring that the information is properly protected, stored, shared and transmitted. Information should be easily available to the people who need it, when they need it and in a format that they can rely on (Kahn & Blair, 2009:7). IM is critical to ensure optimal use of information in any organisation and seeing that WIL is an information intensive process, the management of the information would be critical.
WIL offers opportunities for students to learn through experience and relies on cooperation between different role players at HEI and industry. WIL is based on IM principles where each of the parties involved have a unique and critical role to play effectively and applicable to the specific circumstance (Abeysekera, 2006:8). In a developing country such as South Africa the unemployment rate of graduates remains at around 5% (CDE, 2013). According to Brauns (2013:1) most graduates are lacking the essential experience of the workplace and industry are seeking graduates who have all skills to do a job and the ability to use those skills effectively in the workplace. Spowart (2006:11; 2011:171) states that HEIs are under increasing pressure to prepare their graduates for the world of work by including a component of WIL to achieve these expectations. Dressler and Keeling (2004:11) believe that students benefit academically as a result of WIL because their disciplined thinking skills will increase and their learning, problem-solving, and motivation for learning will improve.

The sharing of experience, knowledge, ideas and resources is the foundation for IM good practice principles as it will ensure an optimal WIL procedural facilitation of the WIL process (Cooper, Orell & Bowden, 2010:5). The Diamond Model of Itin (Chisholm et al, 2009:327) underpins much of what happens in the WIL process and can be used to explain the three party relationship of WIL as shown in Figure 1.1.

![Diamond Model of Itin, 1999 (Chisholm et al, 2009:327)](image)

Figure 1.1: Diamond Model of Itin, 1999 (Chisholm et al, 2009:327)

A factor measuring an optimal WIL procedural facilitation is based on communication, practical ideas and continued facilitation between these parties, the student and educator, as shown in Figure 1.1 above. Truthful and effective communication between
parties involved in the WIL relationships will ensure enhanced outcomes of the WIL component of HEIs (Cooper, Orell & Bowden, 2010:6).

The information flow between the parties involved with WIL, that is, the student, educator and industry, should be meaningful information exchange or feedback (Chisholm et al, 2009:327). This feedback allows the parties involved in the WIL relationship to support an efficient allocation of educational resources (Cates & Cedercreutz, 2008:28). However, the feedback in the Diamond Model of Itin has the learning environment as its focus and does not accommodate the entire WIL process with its required information flow. Therefore this study is conducted to model an educational solution based on the fact that the information process has to be recorded, verified, archived and managed in a way that will render the best results to ensure an overall successful WIL process for all parties involved.

1.3 Research problem

HEIs, each with specific learning offerings, often require teaching and learning to include WIL; one such university is the University of Johannesburg (UJ). Often a lack of structure regarding the WIL process from its inception to completion across departmental silos typically leads to different processes being followed for UJ's WIL component. Because this may not be the case at UJ only, dealing with this problem, may also have significance to other HEIs. The different learning options provided by various faculties have unique and diverse processes which justify the differences in the WIL process. According to Powell (2003:55) IM ensures that information of lasting relevance is recorded and placed in a well-structured organisational archive. Other HEIs have seen this centralised solution as an answer to developing well-structured organisational archives for the WIL process. At the WACE 8th International Symposium, two of these organisations were identified as suitable international HEIs to investigate their approach towards their centralised solution. For this reason their approach were chosen to be investigated in order to interpret whether UJ can simulate or learn from the approach taken by these two identified institutions (discussed in detail in Chapter 4).

A lack of structure for IM can impact negatively on the optimal utilisation of the WIL process. The focus of this study will be to design an IM framework for WIL that will
assist the UJ to develop a centralised solution, which will allow all administration related to WIL to be managed centrally. This will allow lecturers responsible for WIL to focus on WIL visits and guide the WIL triad partners appropriately, rather than being engaged in WIL administration. According to Cates and Cedercreutz (2008:28) a feedback process focused on student learning will allow the three parties involved in WIL an efficient and fitting allocation of educational resources. In order to establish effective information transfer, the information that currently is and that potentially could be transferred between the HEI, the industry partner and the student, has to be managed. Against this background, the research objective is next stated.

**Research objective**

The objective of this study is to develop and present a conceptual framework to manage the information of the work-integrated learning process at a higher education institution.

**Research question**

How can information be managed to facilitate the work-integrated learning process for various faculties at a higher education institution?

**Sub questions**

- What information categories or sources need to be managed in the work-integrated learning process?
- How do the processes regarding work-integrated learning of various faculties and departments in the same higher education institution differ from each other?
- What are the information management requirements for different applications of the work-integrated learning process?
- What are the current good practices internationally for the management of work-integrated learning information at higher education institutions?
- What information management framework would resonate with the work-integrated learning practitioners of the University of Johannesburg?
1.4 Research choice

A qualitative multi-method design was used in this study. Although methods are briefly mentioned here, the research design and methods are discussed in detail in Chapter 3. Qualitative researchers study phenomena in their natural settings to make sense and interpret meaning (Creswell, 1998). A phenomenological approach was adopted, which can be described as a type of research that seeks to explore, describe and analyse the meaning of an individual or individuals’ lived experiences (Marshall & Rossman, 2009:19). Related literature within the field of IM, WIL and HEI is discussed to build the conceptual foundations for this study (Marshall & Rossman, 2009:77). The research, study and analysis of literature advice, guide, clarify and identify material that supports evidence of weaknesses and strengths in IM for WIL.

1.5 Data collection

According to Miles and Huberman (1984:42), knowing what you want to find, leads inexorably to the question of how you will get that information. Data collection for qualitative research can take place in many ways, for example through interviews, observations and document studies (Henning, Van Rensburg & Smith, 2004:5). The UJ, a comprehensive university in South Africa (SA), the University of Cincinnati (UC), and the Northwestern University (NWU) in Illinois in the USA, were investigated. The study focused on the IM for WIL process within the mentioned HEIs.

Collection of data at UJ was drawn from the various faculties mentioned in the methodological framework in Figure 3.2 (cf Section 3.4.5). Semi-structured individual interviews were conducted with the HEI lecturers and industry mentors of each department involved with WIL placements. Group discussions were done with the WIL students of each identified faculty as shown in Figure 3.2. On completion of the semi-structured individual interviews and the group discussion with the HEI lecturers, industry mentors and students, the data of these interviews was transcribed and analysed.

The processes of data collection pertaining to the identified international HEIs were conducted based on the proven success of the management of the information in the WIL process of these HEIs. Specific HEI lecturers, industry mentors and students of various faculties and departments were identified as mentioned in the methodological
framework (cf Figure 3.2). They were approached for semi-structured individual interviews and open-ended questionnaires.

1.6 Data sampling

Data sampling was done from the three HEIs namely UC, NWU and UJ. The sampling framework is discussed in detail in Section 3.4.5. Multiple data collection methods including semi-structured individual interviews, open-ended questionnaires and group-discussions were used to collect the data from the total sample of 219 participants.

1.7 Data analysis

The data collected through the various research methods will be meaningless if it is not analysed. According to Merriam (2009:175) data analysis is the process of making sense and meaning of data collected. The data will be meaningful after interpretation by the researcher on completion of interviews. Data analysis gives order, structure and interpretation to the mass of collected data: "It is a messy, ambiguous, time-consuming, creative, and fascinating process" (Marshall & Rossman, 2009:210).

According to guidelines as suggested by Berg (2009:339) transcribed audio interviews from the semi-structured individual interviews, group discussions and open-ended questionnaires were analysed by using a qualitative data analysis software programme called Atlas.ti™, version 6. Data coding were used to develop categories of WIL as experienced by the three parties. This reduction of data into themes is a simple but effective form of data analysis that leads to the identification of themes (Ruona, 2009:9).

The analysis framework in Chapter 3 (cf Figure 3.3) indicates the process that was undertaken to analyse the relevant data for the research. Each aspect of the research process is discussed following the analysis framework discussed in detail in Chapter 3. After the analysis of the data a conceptual framework for the IM for WIL was developed for the UJ environment. Thereafter a nominal group technique was applied with the UJ lecturers who were involved in the study. During this nominal group technique the conceptual framework was introduced and a group discussion followed to find out from UJ lecturers whether they agreed with the conceptual framework and if there were any
adjustments that were still required. The results of the nominal group technique were used to interpret and adjust the final conceptual framework for IM for WIL for the UJ environment as presented in Chapter 5. The build-up to final chapter, Chapter 6, is outlined below.

1.8 Chapter outline

Following on the introduction to the study and the research problem being stated in this chapter, Chapter 1, the next chapter is assigned a review of the literature focused on the importance of IM for WIL.

1.8.1 Chapter 2: Information management for work-integrated learning

Chapter 2 provides the theoretical foundation of the study and reviews the importance of IM for WIL. Personal information management (PIM) and organisational information management (OIM) are identified as the two main levels of IM that form part of the WIL process on an academic and administration capacity level. By distinguishing these two main levels in the IM for WIL process lessens the complexity of the triad partnership namely; 1) the HEI lecturer and the HEI administrator / WIL coordinator, 2) the industry liaison and the industry mentor, and 3) the student and the student administrator / WIL opportunity – these partnership roles will be discussed in more detail as the study progresses. In Chapter 2 it is clear that the complexity of the triad partnership needs strengthening through boundary-spanning and therefore the Theory of Motivated Information Management (TMIM) forms the foundation for this study.

1.8.2 Chapter 3: Research design and methodology

Chapter 3 describes the research process, highlighting the research design choices and assumptions that underpin this study. The study is based on the qualitative method using semi-structured individual interviews, group discussions and open-ended questionnaires as secured from the two international HEIs and the UJ. This research design and methodological process is used to guide, interpret and facilitate the contribution made by the exchange of information. Ontological, epistemological, methodological and axiological assumptions form the foundation of this chapter.
1.8.3 Chapter 4: Research findings

Chapter 4 discusses the history of WIL at the identified research sites as well as the findings collected from the sites. In this chapter the analysis of the semi-structured individual interviews at the UC and the NWU with the identified HEI lecturers, industry mentors, and faculty advisors were done. The open-ended questionnaires from the industry mentors and students were analysed and the analysis models of the data collected provided the current good practices for the IM for WIL process. Thereafter the existing procedures for the IM for WIL process at the UJ were analysed through semi-structured individual interviews and group discussions conducted with the HEI lecturers, industry mentors and students. The good practices of the UC and NWU were used to develop a conceptual framework for IM for WIL.

1.8.4 Chapter 5: Conceptual framework for information management for work-integrated learning

In this chapter a conceptual framework for IM for WIL is presented. A nominal group technique was used to indicate priority adjustments to the conceptual framework of the IM for WIL process to determine an IM for WIL framework that would resonate with UJ WIL practitioners. The final IM for WIL framework is then presented.

1.8.5 Chapter 6: Synthesis, recommendations and conclusion

The final chapter provides a synthesis and conclusion to the study. The research provides insight into the diverse nature of WIL engagements as managed by UJ. The experiences of the triad partners engaged in WIL and areas which were identified as requiring intervention are synthesised. The need for developing a centralised WIL unit is identified as a critical part of the process of strengthening and facilitating the relationship between the WIL triad partners. The WIL unit will address gaps in the IM for WIL process and allow proper IM for WIL management and administration, resulting in multiple benefits to the triad partners. This centralised solution will allow triad partners to have insight and a better understanding of the process, improve record keeping and archiving of WIL information and records and will act as a central point of contact for all triad partners of WIL. Finally recommendations for further research in this field are provided.
CHAPTER 2

INFORMATION MANAGEMENT FOR WORK-INTEGRATED LEARNING

"Another way to teach people to swim is by kicking them of the dock."

_Herman Schneider, 1872-1939, American educator, founder of cooperative education_

Sketch by an early cooperative education student, proof of just how often Herman Schneider must have voiced his maxim (Reilly, 2006:15).

2.1 Introduction

The previous chapter established the context of the study, namely the work-integrated learning (WIL) process at higher education institutions (HEIs), and specifically the management of information.

The focus in this chapter is to review information management (IM) for the WIL process. The IM for WIL process distinguishes between two main levels of IM which are referred to as personal information management (PIM) and organisational information management (OIM). The concept of 'boundary-spanning' is also discussed as it impacts on the relationship between the triad partners specifically with regard to the IM function related to WIL. To strengthen this boundary-spanning between the triad partners of WIL the Theory of Motivated Information Management (TMIM) provides the foundation on which uncertainty that develops within the triad partnership of WIL can be used to facilitate solutions. The triad partnership of WIL is based on relationships. These relationships are critical to managing the information for WIL as it requires specific links between the triad partners to facilitate an effective and efficient IM approach for WIL.
2.2 Information management

IM is aimed at managing information which is obtained to address a specific need. People extract information through their senses and understand the world by way of processing information (Jones, 2012:1). Information is widely available as can be experienced when accessing the Internet and other forms of media. On the Internet, for example, all that is required is a couple of clicks and any subject matter can be obtained and studied. This is the information age which allows access to as much and more information as needed. The challenge is however to manage this information. The volume of information requires the filtering and management thereof as not all information is authentic, relevant or appropriate to address the need. According to Jones (2012:1) well-managed information will give a range and reach that far exceeds the limit of our physical selves. This experience with information makes the realisation of management of information a critical function. The challenge is to ensure control which will allow for only relevant information to be stored, analysed and shared. Information is a crucial aspect of daily lives and therefore it must be managed. Information is not only relevant on a personal level but just as critical on an organisational level. According to Doom (2010:8) information has become an integral part of any organisation and IM is of critical importance. Management of information takes place on a daily basis either on a personal level or an organisational level in all workplaces.

Management of information has various core areas which require multiple interventions at different levels of management. One of the core areas of IM for WIL is personal information management. PIM is the management of information in the every-day lives of individuals, how information is accessed that is needed to address business and personal needs. The PIM process includes how the information is categorised and stored for future use on a personal level. According to Jones (2008:75) PIM activities are those efforts of establishing, using and maintaining the "mapping of information and needs" as seen in Figure 2.1. Jones (2008:75) further argues that information finding or re-finding activities, information keeping activities and meta-level activities are essential PIM activities.
Figure 2.1 illustrates mapping activities such as information finding or re-finding, information keeping, and meta-level activities and provides examples relevant to WIL on a PIM level. Each of the mentioned types of activities is unique and relevant to each level of PIM and constantly changes. To distinguish between these activities the different terms are discussed next.

### 2.2.1 Finding activities or re-finding activities

These activities relate to a user who is actually engaged in a process of seeking, finding and researching data or other information sources. These searches are done in order to find and secure information which can be used to study or provide direction on a topic being developed. The use of the Internet, libraries and media publications are well-known sources and widely accepted as information resources to address personal needs.
2.2.2 Keeping activities

When engaged in the individual search for information, the user is obligated to make decisions on sources accessed. The individual scanning the sources of information has to evaluate and quantify the value of information and priority thereof. It has to be clear to the user what information has to be saved, or used for record keeping purposes, and what not. The user has to decide if the information has to be archived for later use, or just noted as background to the search being conducted. The decision made in managing this information is critical to the process and has to be done on completion of analysis after each search.

2.2.3 Meta-level activities

This activity involves the grouping and classification of information obtained. All the information obtained has to be categorised in usable formats which will allow searching and retrieval of data or information. The information that was obtained has to be saved and stored in files or other means of saving information. Specific processes have to be followed which allow the information to be searchable and accessible after defined or undefined periods of time. At the meta-level, information is used which involves activities that will assist the user to access information when needed and still be able to make sense thereof at a later stage.

In Figure 2.1 the information categories on the right hand side of the figure relates to information shared by way of verbal communication and non-verbal communication, such as emails, SMS, twitter or hand-outs to students by a HEI lecturer. In the example [A] students are provided feedback on their CVs as presented, with comments on the quality of the document. This feedback can be provided verbally in class, but is also documented as an information source. This information source is posted on a student portal (viz organisational website) and archived for posterity; the source thus evolves into an organisational source of information (the concept of ‘organisational information management’ will be elaborated on later in this section after the discussion on PIM had been fully introduced). In Figure 2.1 the example [B] is given of training on CV preparation and interview skills that have to be communicated by the HEI lecturer with students using online communications such as email or student portals. This information category is channeled using the mapping structure suggested by Jones (2006:8). These mapping activities address the PIM needs of the triad partners relating
to WIL, namely information finding or re-finding, information keeping, and meta-level activities.

The needs category as displayed on the left hand side of Figure 2.1, relates to the need for information by the triad partners. The need can vary between data sources such as a research paper or the need for a telephone number of an industry mentor to arrange interview appointments for students. The need for information can also have an instructive message such as an email to prepare for an interview at a specific date and time for consideration of a WIL appointment, or may include advice on how to dress professionally. On a personal level the student, in order to prepare a CV or prepare for an interview, has a need for information and will search for such information using a variety of information sources, and thus the concept of PIM in WIL.

PIM is a critical part of every individual's life and is based on specific principles similar to organisational information management. The main difference between the PIM environment and the OIM environment is in terms of an organisational versus personal level of management. OIM is considered as another core area of IM for WIL. Hicks, Culley and McMahon (2006) define IM from an organisational perspective, saying that it includes activities that support the information lifecycle from creation, representation and maintenance, to communication and reuse, as part of the management process of information. Sheriff, Bouchlaghem and Yeomans (2012:170) further state that an information-intelligent organisation understands the value of information. The value of information is based on the successful search, locate, assemble, analysis, use and reuse of all forms of information products required for a task. If for example a financial institution does not have a highly controlled and credible IM system for their information it may have a catastrophic impact on the viability of the organisation.

Organisations rely on various critical systems which allow control of all information in whatever way it applies to the organisation. These organisations base the effectiveness of the organisation on a reliable and credible IM process, which can be audited to ensure accountability based on sound management of information. HEIs are typically organisations that are hugely reliant on management of information sources. HEIs have an obligation and responsibility to manage all types of information in a responsible and secure manner. This statement is supported by way of the following practical example. Student X is studying at the department of Hospitality Management. This student is a third year student and the progress of the student is recorded on the information
database of the HEI. This includes the academic history and financial status of the student. Among many other applications, the system also provides for progress on the WIL status of the student. At times the progress of the student pertaining to WIL involvement affects the student’s standing in terms of qualifying for final exams, based on the result of WIL deployment. Should the WIL record for the student become unavailable or compromised on the system, it may have devastating effects on the student. The information breakdown can affect student throughput or graduation which is reliant on OIM. The organisation places the same value on this information as it affects the overall control of credible records within the organisation. Organisations need strict control of their systems to be in place to manage information, in certain circumstances they are required by specific legislation regulating the IM, for example, the Protection of Personal Information (POPI) Act (GG, 2013:37067). After the ratification of the bill on 29 November 2013, organisations such as HEIs will now have to strongly rely on IM for WIL in line with POPI regulations (the principles and application of legal information management fall beyond the scope of the current research, but has to be noted here).

Information is the "fuel" of an organisation (Ladley, 2010:7). Furthermore, Wilson (2010:5) says that it is fair to suggest that managing information is as important as making a profit in an organisation, which is the main driver for engaging in an organisation. Organisations have to be based on "solid principles" says Johnson (2007:484) to survive in the competitive environment in which they function. The survival of an organisation is primarily focused on achieving profit margins and the level of IM controls it has, has a critical impact on this process. According to Sheriff et al (2012:170) managing information is a core requirement for doing business, for improving organisational performance, and obtaining operational efficiency; it is as important as having a competitive advantage today. Therefore the effectiveness of the organisation is directly impacted by the way in which information is controlled and managed.

The mentioned examples above have an impact on all organisations which include HEIs. HEIs have the obligation and strategic insight to grasp the serious value of a well-structured IM process. HEIs that have WIL as one of their teaching offerings have to consider it as a critical function to manage and facilitate the IM for WIL effectively. In the context of WIL, HEIs have to manage this process based on information related to the triad partnership. The South African Council on Higher Education (CHE) (2011:13)
stated that curriculum development always has to address multiple interests and needs. It should encompass processes of designing, implementing, evaluating and adjusting programmes of study in the triad partnership as shown in Figure 2.2. This partnership includes the HEI lecturers, industry mentors and students.

The management of OIM in terms of WIL has different layers of activities and responsibilities. The triad partnership based on the relationship between student, HEI lecturer and industry mentor has to have a well-structured and credible IM model. On the personal level the triad partnership is based on individual roles and responsibilities, as described above and illustrated previously in Figure 2.1 as mapping activities.

Following on the above discussion, the sharing of information and interaction of the triad partners in the PIM and OIM environments require a well-managed information model based on good IM principles. An overarching principle, the Janus principle, is developed for this study. This means the partners in the relationship each has doors to open and close as they move between PIM and OIM (cf Figure 2.2, crossing the dotted line). Depending on their roles within the relationship each partner has two levels with different responsibilities. On a PIM level as illustrated in Figure 2.2 with border arrows stretching along the periphery, the student has to manage information on a personal level such as studying and completing a CV and has to make personal decisions on

Figure 2.2: PIM and OIM within the WIL process (own source)
what information will be recorded in the CV and which information is required in order to complete the document. The student may need to be advised and require interaction with the HEI lecturer and/or the industry mentor. This is an example of the PIM experience of the student attending to a request from the HEI lecturer and/or the industry mentor, for the student's CV. The HEI lecturer, for example, has the same PIM environment (visualise the ends of the peripheral arrows [A], [B] and [C] in Figure 2.2 being pulled together and upwards, forming a pyramid, thereby creating a continuous, three faceted PIM environment, divided by Janus doors). The HEI lecturer may have questions which need to be responded to by the student or the industry mentor in order to guide and advise the student on the CV completion. The HEI lecturer has to determine what the latest process and correct CV submission requirements are and guide and teach the student accordingly. The HEI lecturer has to manage the information in such a way that the student is correctly advised and properly briefed on the process in accordance to the industry process requirements, for instance. The industry mentor on the PIM level has to decide what the critical skills are and qualifications which would best suit the organisation that requires the services of the student and HEI lecturer. The industry mentor has to be sure what has to be contained in the documents and what information has to be provided to ensure the most appropriate candidate is identified for interviewing. This example refers to an elementary and single incident of CV writing as just one of many instances where PIM and OIM takes place during the course of the WIL process. The partners in the WIL process thus have Janus doors to open and close in between PIM and OIM. Also, the PIM levels of the triad partners meet in the form of a pyramid (cf Figure 2.2)

The above pyramid and Janus door description fit the organisation of HEIs which typically have multi-level organisational structures that impact on the level of expertise required to effectively manage information in such a structure. HEIs differ in size and capacity based on geographical and demographical areas which the institutions serves. A HEI such as the University of Johannesburg (UJ) have nine faculties and each faculty consist of between four and nineteen departments. Within the different UJ faculties there are various and unique role players who are responsible for providing quality education to students. The development and education of the student is of the utmost importance and is the main focus of this organisational domain. Academic personnel, supported by administrative units are on a continuous basis engaged in resourcing and capacitating student learning facilitation. Based on these various role players and their unique functions and responsibilities is it critical that extensive OIM
practices and policies have to be in place. The process of managing, recording and archiving all these functions is a critical process to ensure UJ student development and teaching is based on fact, as recorded in OIM systems. Activities related to student and HEI lecturer engagement should be effectively documented and recorded by way of several processes. Examples of these processes are academic records, student portal engagement of activities, class attendance records, electronic assessment logs and all other diverse information sources. OIM is crucial and have to be managed as a critical part of IM, however when the PIM level is encountered the same commitment and professionalism of engagement is required.

On a PIM level the complex decisions and interaction by the triad partners have to be based on well-structured IM principles and guidelines. The volume of information and the scale of decisions which have to be made on this level are immense and have further to contend with interpersonal information sharing. These interactions are within the personal interaction milieu. The PIM level which requires the sharing of information and interpersonal engagements naturally evolve into the next level of IM which is referred to as OIM. On this level the OIM of the triad partners now source and share information on an organisational level. In summary, the information activities of the WIL triad partners are complex and the management of information is required to address the partners’ expectations of WIL.

2.3 Information management for work-integrated learning

IM for WIL is a critical process which impacts on the effectiveness of the WIL process to address the triad partners’ expectations. WIL is critical to the HEIs obligation to address employment expectations of students and provision of well-trained individuals for the work place. WIL is a departure point for students to apply learning that focuses on work experiences under the supervision and mentoring of the industry (Kamper & Du Plessis, 2014:81). According to Brauns (2013:3) an education system is focused on producing graduates who have the right mix of skills required for industry. Spowart (2011:169) further argues that industry indicated that students often lack certain soft skills when they enter the world of work and requested the HEIs to ensure that transferable skills are included and assessed as part of the curriculum.
Studies from the last few decades have raised concerns about the work-readiness of graduates in terms of their generic employability skills (Onatur, 2013:2). Onature (2013:3) further argues that there is a need for HEIs’ curricula to include WIL to improve work experience and to monitor the students involved in the WIL process. According to Kamper and Du Plessis (2014:83) a transactional gap can exist between the student and HEI as well as between students and the HEI lecturer. Based on IM principles this process has to be managed as the information pertaining to WIL needs to be available and searchable from various users' perspectives. Information is at the core of the WIL process and has to be managed across institutional silos.

The WIL process guides the triad partnership which requires well-managed information sources pertaining to the different functions and activities of IM for WIL. According to Burton and Thakur (2006:80) boundary-spanning is an IM technique which dictates the roles and the functions of specific individuals who are responsible for communicating with external role players communicating with the organisation. Burton and Thakur (2006:80) further argue that personnel responsible for boundary-spanning have to process information pertaining to changes in the external environment and represent the organisation in dealing with these changes. Boundary-spanning is based on the principle that the triad partners are allocated specific functions and exchange information between the entities engaged in WIL, not only across institutional silos, but also across organisations. According to Draft (2010:150) boundary-spanning is concerned with the effective exchange of information.

In the case of WIL the triad partners have specific functions pertaining to each facet of the process. The triad partners have to link as if in a chain and there must be a mutual benefit for all partners in this relationship. Pruitt and Schwartz (1999) say that boundary-spanning is a concept that links organisations to one another in order to create mutually beneficial relationships. Boundary-spanning monitors the roles and communication which have to be well coordinated and recorded. Beechler, Sondergaard, Miller and Bird (2009:124) describe boundary-spanning as a fluid, evolving way, seen as a piping system and the information that flows through them. All information which may change pertaining to any of the triad partners has to be updated and be available for perusal in order to make the correct decision.

In addition Peach, Cates, Baden-Wuerttemberg, Jones and Lechletter (2011:94) explain that the boundary-spanning activity has the capacity to help HEIs respond to
demands for continuous quality improvement and to increase capacity to react to environmental change and uncertainty. HEIs can be affected by an economic downturn, globalisation and ecological challenges as well as high levels of unemployment which occurs in organisations, because environmental shifts simply happen so quickly (Draft, 2008:83). Boundary-spanning is used as the critical tool by the HEIs to understand the dynamics of these environmental issues which impact on the organisation and how to respond to such challenges. Therefore it is crucial that all parties engaged in IM for WIL are committed – meaning they understand their functions, roles and contributions in order to address the challenges faced by the HEIs in terms of environmental uncertainties as mentioned above.

The triad partnership underpins work related programmes as the partners all have a role in creating environments where boundary-spanning is understood, valued and made possible so that the benefits are distributed (Peach et al, 2011:100). Boundary-spanning has a critical beneficial impact on the triad partnership as it allows all partners to interact with each other more effectively based on enhanced interrelationship interaction. The benefit of using boundary-spanning allows for well-structured IM sources which is critical to an effective WIL programme. The relationship between the triad partners as monitored by boundary-spanning will strengthen and promote collaboration between partners (Li & Randhawa, 2009:1003).

The benefit derived when boundary-spanning is managed effectively, for example, is when a student who changes a programme and has to be placed at a different industry partner has a smooth transition. If this change in the status of the student has not been updated on the IM system, the information exchange between the student and the HEI administrator would not be captured. The result would be that the student would not be registered on the system for WIL, resulting in a delayed or turbulent transition.

In HEIs, boundary-spanning records the transfer of knowledge and skill between triad partners to build a clear linkage between the three fields as shown in Figure 2.3 (Peach et al, 2011:104). The knowledge gained through the WIL process is made up of three different fields; namely the academic field, the educational field and the professional practice field (CHE, 2011:9). Clear linkages between these fields are designed to benefit student learning.
Figure 2.3 Knowledge gain through the WIL approach applying boundary-spanning (CHE, 2011:9)

Figure 2.3 shows a WIL process of how knowledge is exchanged and built on the boundary-spanning applied concept. The academic staff does research and develops curricula for specific programmes. In order to complete this curriculum development cycle of research, academic staff consults with industry partners as part of the professional practice stage in Figure 2.3. The dotted line in Figure 2.3 shows that there is not a rigid separation between the academic and professional element of WIL. The shaded areas in Figure 2.3 show that the focus of WIL is in the professional-oriented education, based on the needs of industry partners. There must be a clear linkage between the three fields shown in Figure 2.3, which corroborate the importance of boundary-spanning. The boundary-spanning concept will be well founded if the links between the three fields in Figure 2.3 are working optimally. The rationale behind this school of thought is ensuring the correct concept is applied, to allow for a well-developed and effectively working IM process for WIL. The goal being strived for is to ensure that the triad partners share all the relevant information. This is done to ensure the process works which prepares students for deployment at industry level on graduation. It is critical to ensure the focus is on graduates' employability by providing well prepared academic individuals, who would enhance the employment milieu. Boundary-spanning is a complex concept that is found both at personal and organisational levels. Referring back to Figure 2.3 and linking forward to the concept of boundary-spanning, Figure 2.4 next illustrates the multi-faceted structure which
constitutes the IM process for WIL in a triangular configuration with arrows on the outside and on the inside.

Figure 2.4 illustrates the complexity of boundary-spanning in the triad partnership for WIL. The outside arrows indicate the triad partners which are based on the principle of management of information in an organisational environment, be it on a PIM or OIM level. The inside arrows indicate the triad partners responsible for administration and management of the IM for WIL process on a PIM or OIM level. The multi-level structure is based on personal level interaction between the academic and administration triad partners. Mentioned triad partners have specific and unique responsibilities and functions which have to be fulfilled. From an organisational perspective mentioned (outside arrows), phased groups on different administrative levels also cooperate and interact based on boundary-spanning concepts. The HEI lecturer and HEI administrator have different functions and are appointed to provide services in line with these allocated responsibilities. The HEI lecturer, for example, is responsible for preparing the student for the work place; the HEI administrator is responsible for the placement of the students in industry. At some departments these individuals are the same person fulfilling the roles of HEI lecturer and HEI administrator (cf Section 4.3.2.1, discussion of findings), in other departments there are more than one individual responsible for these tasks, which affects the complexity of the interactions.
These different groups with their unique functions and responsibilities provide insight and understanding on the complexity of relationships within the organisational structure. On industry level the industry mentor is responsible for overseeing the student while doing their WIL placement. The industry liaison is the person responsible for the placement of the student in the organisation. Sometimes the role of the industry mentor and industry liaison can be fulfilled by the same person due to budgetary constraints. The boundary-spanning concept is a good practice concept which guides intricate relationship responsibilities. These responsibilities are part of the personal and organisational level collaboration. Relationships are multi-faceted based on the groups or individuals involved. The numbers of groups and individuals involved in this triad partnership have a complex nature which has to be founded on a well-developed strategy. Hargie (2011:452) states that the number of groups and levels of interaction influences the complexity of the interrelationship between the partners.

According to Hargie (2011:452) to determine the potential two-way relationship, the formula to chart the number of dyadic relationships \( R \) in a group, as a factor of number of members \( n \) is as follows:

\[
R = \frac{n(n - 1)}{2}
\]

The following examples explain the complexity of three scenarios for WIL dyadic relationships, between the academic and administration triad partnership as shown in Figure 2.4. The complexity of information flow between triad partners is affected by the number of partners involved in the WIL process. The number of triad partners as shown in Table 2.1 can differ and based on the number of partners involved it can have a direct impact on the number of dyadic relationships.

**Table 2.1: Calculation of number of dyadic relationships**

<table>
<thead>
<tr>
<th>Example group</th>
<th>HEI Admin</th>
<th>HEI Lecturer</th>
<th>Student</th>
<th>Student Admin</th>
<th>Industry mentor</th>
<th>Industry admin</th>
<th>Total members involved in relationship</th>
<th>( n )</th>
<th>( (n - 1) )</th>
<th>( \frac{n(n - 1)}{2} )</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>6</td>
<td>6</td>
<td>5</td>
<td>15</td>
</tr>
<tr>
<td>B</td>
<td>2</td>
<td>2</td>
<td>250</td>
<td>250</td>
<td>150</td>
<td>1,254</td>
<td>1,254</td>
<td>1,253</td>
<td>1,253</td>
<td>785,631</td>
</tr>
<tr>
<td>C</td>
<td>1</td>
<td>80</td>
<td>500</td>
<td>500</td>
<td>665</td>
<td>95</td>
<td>1,841</td>
<td>1,840</td>
<td>1,840</td>
<td>1,693,720</td>
</tr>
</tbody>
</table>
To explain this trend a sample of one HEI lecturer, one HEI administrator, one student, one student administrator, one industry mentor and one industry administrator, makes up the full dyadic relationship cycle. In using the dyadic relationship calculation the complexity value of the relationship is reflected in the $R$ value. The $R$ value refers to the number of separate potential two-way relationships between the triad partners. When the formula group consists of six members in a relationship, the calculation is done as follows. The formula group (*cf* Table 2.1: Example group A) would then consist of $\frac{6 \times 5}{2} = 15$ separate potential two-way relationships between members.

The second example group (*cf* Table 2.1: Example group B) from the Electrical Engineering Department at the UJ consists of the following triad partners on an academic and administration level. Two HEI lecturers, who are also responsible to act as HEI administrators, 250 students from the same department (*viz* student sample group) and these students also act as 250 student administrators (*viz* responsible for administering their own studies). An average of four industry mentors (per company) and 150 industry administrators (companies) make up the industry component of the triad partnership. The total members in the relationship consist of 1,254 members. The dyadic relationship calculation would then be $\frac{1,254 \times 1,253}{2} = 785,631$ separate potential two-way relationships between members. This number reflects the massive increase in dyadic relationships when minimal numbers of individuals are added to the triad partnership.

The Faculty of Education at UJ is the third example group to display the complexity of the WIL dyadic relationship where the numbers of the triad partners increase substantially. The third example group (*cf* Table 2.1: Example group C) consists of 80 HEI lecturers and one HEI administrator. The HEI lecturers are made up as follows, 25 HEI lecturers involved in preparing students for WIL and 55 HEI lecturers assessing students during WIL placement. In this example 500 fourth year students are part of this example group and they also act as the 500 student administrators. The industry mentors total 665 individuals that are made up of 95 industry facilities namely schools which have appointed an average of seven industry mentors per school. The 95 industry facilities form the number of industry administrators. The total members in the relationship consist of 1,841 members. The dyadic relationship calculation would then be $\frac{1,841 \times 1,840}{2} = 1,693,720$ separate potential two-way relationships between
members. Note the complexity of Example group B and group C discussed in Section 4.3.2.1 and Section 4.3.2.4.

The complexity of the dyadic relationships in the IM for WIL process increases with the number of triad partnership members involved in the process. The rationale of exposing the complexity of relationships based on number of partners involved, impacts on the realisation that the information related to these relationships have to be well-managed. The management of these relationships is done on the IM for WIL principles, which requires serious planning, proper systems and well recorded system updates, of any activities which relate to WIL. The number of role players will dictate the complexity of the IM model which in turn requires a critical concept and theory to manage the process effectively.

The concept of boundary-spanning has to be put in place which allows building and maintaining relationships that are necessary to support effective boundary-spanning (Beechler et al, 2009:131). Boundary-spanning with the student and the industry serves two purposes for the HEI, they detect and process information about changes in the industry and they represent the HEI's interests to the industry. If there is no boundary-spanning between the triad partners in the IM for WIL, the partners will experience uncertainty of what is expected from each member in the triad partnership.

If the triad partners are uncertain about what they have to do in this relationship, or what is expected of them, they will become emotional or some of the partners may experience anxiety. These negative feelings or experiences can have a negative impact on the outcomes of the WIL programme. To have an effective IM for WIL model, the exchange of information between the triad partners must be done through effective boundary-spanning. The feelings of uncertainty and emotions which are partly addressed by boundary-spanning are further addressed in parallel with the Theory of Motivated Information Management (TMIM).

2.4 Theory of Motivated Information Management

The TMIM is a theoretical framework developed to account for individuals’ decisions to seek out or avoid information regarding particular issues (Fowler & Afifi, 2011:510). Fowler and Afifi (2011:510) state that TMIM expanded on the foundation of several
theoretical frameworks, namely uncertainty management theory, problematic integration theory, the heuristic systematic model, social cognitive theory and emotional appraisal theory. Interpersonal relationships were further examined by Afifi and Weiner (2004) which consequently lead to developing the TMIM. The objective of this theory is to provide insight into decisions made during interpersonal encounters.

The focus of TMIM is to address specifically the interpersonal encounters by the information seeker or – in this study – the information exchanges between the triad partners of WIL. Afifi (2010:96) argues that the TMIM brings together the diverse findings related to uncertainty management in interpersonal encounters, explicates the role of efficacy in the process, and offers a framework that explicitly recognises both the information seeker and information provider in the information exchange.

To visualise the TMIM process, Figure 2.5 presents the roles of 'information seeker' and 'information provider' in an attempt to offer insight into the flow of information. A discussion relating specifically to the IM for WIL follows to highlight the information in this example.

![Figure 2.5: Model of Theory of Motivated Information Management – interpretation phase (adapted from Fowler & Afifi, 2011:512)](image-url)
The TMIM provides a framework to interpret and predict information seeking decisions of a user. In terms of the WIL process the triad partners are all engaged in information seeking in some way or another. The TMIM model guides the process as graphically displayed in Figure 2.5, showing the phases (viz interpretation, evaluation and decision phases) in which the triad partners engage to seek and provide information. The model distinguishes between the different information that forms part of the TMIM phases and indicates the different processes which are part of this theory.

When the information seeker is required to obtain information, the seeker of this information has to determine which sources of information may provide the required information. The information seeker has to make a decision whether or not to request information from identified sources with the purpose of obtaining information that is required to make decisions. The unique roles and functions of the information seeker are discussed as part of all three phases in the TMIM model. The unique roles and functions of the information provider are discussed as part of the evaluation and decision phases.

TMIM is represented by the three phases, which moves from interpretation phase, to the evaluation phase reaching finally the decision phase. These three phases are discussed in more detail to explain the IM for WIL process as engaged by the triad partners in this study. The first phase of the TMIM is the interpretation phase (cf Figure 2.5, highlighting the interpretation phase for clarity, and dimming or 'hiding' the two other phases on the figure, right).

### 2.4.1 Phase 1: Interpretation

According to Afifi and Weiner (2006:36) this phase involves individual assessments of the discrepancy between the information available and the information that the partners in this relationship desire. Awareness has to be improved in addressing uncertainties which may develop due to discrepancies between people, issues and level of uncertainty as experienced by partners involved in this relationship (Afifi & Morse, 2009:88; Afifi, 2010:97). In this study the awareness has to be improved to address uncertainties between the triad partners namely the HEI lecturers, HEI administrators, students, student administrators, industry mentors and industry administrators (cf Section 4.3.2.2 and Section 4.3.2.5, discussion of findings). Fowler and Afifi (2011:511)
further argue in order to recognise the realisation of the uncertainty factor of the decision is to continue with the search for information or to avoid the search for information, which may result in a not anticipated negative outcome thereof. Even if information is relevant the user can decide to avoid the information for the sake of uncertainty.

The HEI lecturers have to prepare the students for the WIL programme. These HEI lecturers have to liaise with industry mentors who are responsible for the WIL programme during the student placement. The HEI administrator has to find a placement for the students by liaising and communicating with the industry administrators within the specific identified industry. Due to the number of HEI lecturers, HEI administrators, students, student administrators, industry mentors and industry liaisons, the process of coordination becomes highly complex. The number of people in the mentioned groups and the complexity of these relationships where multiple role players are involved are graphically displayed in Table 2.1 and discussed above. Due to the complexity of multiple role players involved in the IM for WIL triad partnership the chances for uncertainty and discrepancies will increase.

Each bit of information that is acquired decreases the levels of uncertainty (Afifi & Afifi, 2009:1). One method by which people reduce, manage, or increase their uncertainty involves regulating their communication with others through revealing and concealing information. These uncertainty discrepancies have to be addressed through the concept of boundary-spanning. The HEI lecturer and HEI administrator can reduce the uncertainty discrepancy gap by involving all other role players of the triad partnership in the information exchange. Regulating uncertainty also involves managing, seeking, or filtering the information that is likely to affect the degree of uncertainty that is felt. Individuals sometimes also avoid seeking information because they are afraid of the outcome (Afifi & Afifi, 2009:2).

To complete the discussion on the interpretation phase, uncertainty will be discussed using Figure 2.6 which illustrates the propositions relating to relational uncertainty. Thereafter the emotional impact will be discussed. The rational uncertainty is supported by the six propositions identified by Knoblock and Satterlee (2009:111) as they correspond with features of interpersonal communication (cf Figure 2.6).
Relational uncertainty analyses the way searchers of information produce messages and thereafter process these messages. Message production is affected by three phases, namely 1) elevates face threat, 2) encourages avoidance, and 3) impedes planning.

1) Elevates face threat

When the image of certainty is threatened or discredited in terms of what the person wishes to project, a face threat develops. People when uncertain do not want to communicate this image, as it may reflect negatively on what they perceive it to be. A further factor which may impact on the face threat of an individual applies when the searcher is unsure of the potential risk. The individual may also be unsure of other risk factors when compiling a message resulting in avoidance. People generally have a preferred image of themselves. Also in the triad partnership of WIL the partners involved have a preferred image of themselves. For example, if the HEI lecturer or HEI administrator is uncertain of the industry needs, this uncertainty may reflect negatively on the capacity of the HEI lecturer or HEI administrator to provide professional guidance to the industry mentor and/or student.
2) Encourages avoidance

People avoid incidences which may possibly threaten their image which will have an embarrassing impact on their competency and professionalism. To avoid potential instances which could expose or result in an incidence of embarrassment for an individual then generally the incident is rather avoided. It is as if the individual would rather avoid being exposing by not becoming involved in incidents which could harm the individual's image. For example, HEI lecturers or HEI administrators have to represent the institution in a professional and competent manner. In similar fashion the representatives will then – if experiencing a threat of being exposed to an incident which could harm their image – opt to avoid any such incidents.

3) Impedes planning

As relational uncertainty increases, message planning is affected in a negative way as a result of the increase. People construct messages based on their knowledge, strategies and the impact of the message. For example, an increase in relational uncertainty, such as a HEI lecturer or HEI administrator new to the WIL process, will have to communicate messages when unsure of what has to be shared. This HEI lecturer or HEI administrator may not know what is expected in terms of services to triad partners and may be influenced by feelings of uncertainty. The HEI lecturer or HEI administrator is also influenced by the threat of not generating the appropriate message, resulting in feelings of uncertainty. Changes in the WIL process will have a significant impact on the information exchange value chain as it affects all the different levels of the triad partnership.

The second phase of Figure 2.6 in terms of the relational uncertainty pertains to message processing, which is also divided into three phases, namely 1) promotes bias, 2) diminishes confidence, and 3) heightens negativity.

1) Promotes bias

Relational uncertainty affects people’s capacity to interpret messages based on insufficient background required to interpret a well prepared message. People who are under pressure may not take note of the full impact of the message and just simplify the information contained therein, to simplify the task and manage message volumes. HEI lecturers and HEI administrators are most of the time the same person within the
organisation who has to manage all processes related to this responsibility. The responsible individual who communicates information flow to the triad partners has to be aware and have the capacity to communicate effectively resulting in the receivers of information understanding the full impact thereof.

2) Diminishes confidence

Relational uncertainty affects the self-value people have when communicating with others. People under relational uncertainty conditions may distrust their own skill level and knowledge base, thereby affecting their overall capacity to communicate effectively. For example, a HEI lecturer undertakes an interview with an industry mentor on good practice models that are required to identify the most effective way for students to experience client communications within the industry environment. During formulation of this process the HEI lecturer may become uncertain of his/her ability, to secure the required information which may impact on relational uncertainty. This uncertainty may result in a feeling of being unsure even though the HEI lecturer has the required expertise to develop the model formulation for student assessments for the WIL process.

3) Heightens negativity

Relational uncertainty results in negative perceptions on the capacity of individuals to handle interpersonal relationships. Relational uncertainty relates to negative feelings such as anger, frustration and poor self-confidence. HEI lecturers are people and do have emotions and also have individual experiences of feeling angry and frustrated at times. As representatives of HEI institutions there is immense pressure on them to liaise and communicate professionally with industry mentors and students. During these interactions instances may develop which can generate emotions such as anger or frustration. These emotions impact on the mental state of the HEI lecturers. These HEI lecturers have a unique and important role to play in the IM for WIL process which is reliant on interpersonal relationship communication. Although the proportions about relational uncertainty (cf Figure 2.6) was illustrated from the perspective of the HEI lecturer and HEI administrator it should be kept in mind that the student and industry partners could experience similar relational uncertainties when in the role of information seeker.
In the above explanation of the message production and message processing of relational uncertainty, the uncertainty of the HEI lecturer or HEI administrator increases. This increase in uncertainty is the result of for example the HEI lecturer being unsure of what is expected of him/her or if he/she has the capacity to place the students for the WIL phase in an industry placement. This placement has an impact on the throughput rate of the students. The impact in terms of the capacity of the HEI lecturer to influence placement is critical as students will not be able to graduate, unless they have completed the WIL module. In the interpretation phase the HEI lecturer and HEI administrator consider information from students and industry. The HEI lecturer and HEI administrator could develop feelings of uncertainty which may result in negativity or an emotion or anxiety.

For example, in the role of information seeker (cf Figure 2.5, TMIM), the HEI lecturer and HEI administrator when confronted with the decision to request information may at times experience feelings of anxiety which is an emotional state nestled in uncertainty. This feeling of uncertainty which results in an emotional state is the first flow of the information process as depicted by the arrow marked A in Figure 2.5. This uncertainty discrepancy causes anxiety or emotions in the triad partnership, which consequently impacts on the value of information exchange. The HEI lecturers involved in WIL have to sensitise the students and industry mentors to be aware of possible emotional issues, such as anxiety or anger which may have an impact on the information exchange.

The HEI lecturer is often expected to visit the student during the student’s WIL placement term. As shown in Table 2.1 above, in the example depicting the Electrical Engineering Department (viz example group B), the HEI lecturers and administrators are the same two individuals. High levels of anxiety have been reported by the HEI lecturers (cf Section 4.3.2.1 discussion) due to the obligation placed on HEI lecturers to visit students at industry level on site visits. Due to the geographically location of the different industry partners, the sheer number of sites and student placement locations result in too many sites and students to be visited by the limited number of HEI lecturers (viz two individuals). The inability of the HEI lecturers to visit students at industry level creates feelings of anxiety which the HEI lecturer has no control over.

Another example reported that causes a feeling of anxiety by the HEI lecturer, is to ensure the students’ logbooks with the required assignments are available to be
marked by a specific due date. The marking of these industry assignments are critical
to corroborate practical deployment success in terms of competency which is the
requirement for the WIL module. These emotional anxiety levels have a direct impact
on the evaluation and decision phases of the information seeker (cf Section 2.4.2,
Figure 2.7, Section 2.4.5, and Figure 2.8 discussed further below).

The triad partners will not move to the evaluation phase in the TMIM model if they do
not feel comfortable because of levels of uncertainty. According to Johnson (2009:188)
the uncertainty of information sources affects people’s perceptions which can impact
on employees’ job satisfaction, productivity and overall performance and attitude,
affecting stress levels and feelings of discomfort resulting in uncertainty.

When experiencing an emotion of uncertainty, the HEI lecturer or HEI administrator will
enter the evaluation phase in an affected state. The HEI lecturer or HEI administrator
develops a perception of how effective a specific IM strategy is to assess the capacity
of the HEI lecturer or HEI administrator in an effective information exchange. The HEI
lecturer may then become anxious because of his/her perceived incapacity to place all
students in terms of the WIL process based on the (in)availability of industry jobs. The
negative outcome expectancy or negative efficacy judgements of the evaluation phase
(cf Figure 2.5, arrows marked B1 and B2), lead to the second phase, namely the
evaluation phase. Before the second phase is discussed it is important to understand
that the seeking of information takes place during all three phases of this theory.

During each phase the triad partners of the WIL process seek information to address
levels of uncertainty. The model of TMIM distinguishes between the information seeker
and information provider. The information provider only forms part of the evaluation
phase and decision phase and will be discussed as part of these phases. The unique
and specific role players within the domain of TMIM have individual characteristics
which distinguish their roles and functions. Any one of the triad partners plays the role
of information seeker or information provider at any time of the WIL (cf Figure 2.2 and
Figure 2.4, Janus principle, pyramid with Janus doors). However due to the illustrative
nature of the current discussion the process is discussed in a simplistic way, from one
perspective only.
2.4.2 Phase 2: Evaluation

This phase consists of two sets of perceptions namely the outcomes expectancy and the efficacy judgements as shown in Figure 2.7. Outcomes expectancy refers to the information which will be yielded when information exchange takes place (Afifi & Weiner, 2004:175). According to Afifi and Weiner (2004:175), when engaging in a search for information by an individual in order to reduce anxiety, the individual's self-image is addressed when engaging in the information exchange.

Outcome expectancies and efficacy judgements or beliefs are central to human behaviour (Afifi & Morse, 2009:88; Fowler & Afifi, 2011:511). In the triad partnership when engaging on a personal level, individuals may differ in terms of the value and return they expect to achieve during an information sharing experience. The result of the sharing will assist in shaping the efficacy judgements. For example, some HEI administrators consider finding placement for students with an industry liaison as an important part of the WIL process, while other HEI administrators do not consider finding placements for students as important because they only facilitate the process where students source their own individual placements (cf Section 4.3.2.1, discussion of findings). Therefore the difference in the expectations of the HEI administrators will be determined by the responsibilities and duties of the HEI administrators within the institution. The difference in the expectations of the seeker of information will be based on the anticipated value of shared information.
According to Guerrero, Andersen and Afifi (2011:84) people who feel a discrepancy between the actual and desired uncertainty, will rely on this phase. The TMIM propositional framework applies only where individuals are actively interested in managing information and can see the value impact of the information to them. These individuals will intentionally engage cognitive and other resources (Afifi, 2010:96). According to Afifi and Weiner (2004:172) the IM process must begin with clarification and addressing the levels of uncertainty. If in the triad partnership one or more partners feel uncertain about anything, emotions will appear that will have an influence on the evaluation phase.
Afifi and Morse (2009:89) and Afifi and Weiner (2006:37) argue that this phase assesses their efficacy judgements in IM of the potential outcomes. As shown in Figure 2.7 above the evaluation phase has two assessment factors based on the principle of an individual assessment of the benefits and cost to implement a specific IM strategy. This is done to first determine the outcome expectancy and the different efficacy judgements (Afifi, 2010:97). The decisions of the individuals depend on efficacy judgements and outcome expectancy.

2.4.2.1 Outcome expectancy

The outcomes part of this phase reflects on the expected outcome. It is important for all triad partners to know what is expected from them and what the outcomes must be (cf Section 4.3.2.2, Section 4.3.3.3, and Section 4.3.3.4). There is a shift to reduce discrepancies detected and instead focus on outcomes expected. This outcome may be positive or negative based on the experience of the triad partners. The information seeker may have feelings of success in gathering correct information and identify positively with the result. The success of this relationship experience can affect partners' willingness to turn intention into action (Guerrero et al, 2011:84).

Chang (2009:9) explains that there is a higher likelihood for an individual to make information seeking decisions if more information is expected, which will add more to gain and have more rewards than risks. If the information seeker is under the impression that the information which will be secured will not add value to the information already secured, the information seeker will refrain from searching this information to address the need of the uncertainty. The expected outcomes relate back to the securing of information. The HEI lecturer queries the industry mentor on student progress and levels of performance within positions as facilitated by WIL placement. The HEI lecturer realises that requesting for information will have an impact on the efficacy judgements in terms of the benefits and cost associated with information exchange. The benefits and cost factor refers to the information gained process which is also called the efficacy factor (Afifi, 2010:97).

The arrow marked [C] in Figure 2.7 reflects the positive outcome expectancy that is associated with the efficacy judgements which act as a mediation phase. If the outcome expectancy is positive then the efficacy judgements will be depicted by the arrow marked [D], which moves the process into the decision phase. The decision
phase will be discussed after the efficacy judgements are explained in more detail below. The efficacy judgements are influenced by the different efficacy components as depicted by arrows marked \([C1]\), \([C2]\), \([C3]\) and \([C4]\) (cf Figure 2.7).

### 2.4.2.2 Efficacy judgement

Outcome expectancy focuses on results of conduct where efficacy focuses on the capacity of the information seeker to provide certain information. This process of information seeking has consequences which the information seeker has to contend with. For example the student requests the results of an industry mentor report as provided to the HEI lecturer by the industry liaison or industry mentor (cf Figure 2.2 and Figure 2.4, Janus principle, pyramid with Janus doors). This request for information can have detrimental consequences as the student may have failed practical tasks which have to be completed at industry level. The student continues with the request for information whatever the outcome.

As a theory, the TMIM distinguishes between four unique types of efficacy judgements. According to Afifi and Weiner (2004:178) and Afifi and Morse (2009:89) these efficacy judgements are identified as; 1) communication efficacy, 2) coping efficacy, and 3) target efficacy which has two dimensions, namely target ability and target honesty. These efficacy judgements are discussed below.

#### 1) Communication efficacy

Communication efficacy speaks of process C1 in Figure 2.7. Communication efficacy relates to the capacity of the searcher for information being competent in searching targeted information sources (Afifi & Morse, 2009:89). Afifi and Weiner (2004:178) state that communication efficacy takes place when information seekers feel that "they possess the skills to complete successfully the communication tasks involved in the information management process". The HEI administrators have to believe in their capacity or ability to fulfil the task presented, such as placement of students in terms of the WIL process. Communication efficacy has a detrimental impact as some of the HEI administrators are not familiar with or uncertain of the consequences of questioning information sources. These HEI administrators may also be unsure what action to take if there is a failure in communication efficacy processes. The information seekers (viz the HEI administrators) have to believe they do have the competency to search for
information of which they might feel ignorant of and how to share these feelings with the student or industry liaison.

2) Coping efficacy

Coping efficacy speaks of process C2 in Figure 2.7. Coping efficacy provides insight into the capacity of the searcher of information having the required resources, be it emotional or otherwise to cope with information secured (Afifi & Morse, 2009:89). Afifi and Weiner (2004:178) argue that the coping efficacy provides levels of belief that the individuals have in coping with emotional, instrumental and other resources, to secure the required information based on the IM levels to be achieved. The belief system of the triad partners in searching for information and anticipating the results of the information exchange which was unexpected could result in feelings of discomfort or awkwardness.

An example is that the HEI administrator has to clarify the placement of students in terms of the WIL process and might experience uncertainties if they are responsible for finding placement for students. This uncertainty is experienced by the HEI administrators because of the expected outcome of this enquiry pertaining to the successful placements in terms of the students for the WIL process. This uncertainty results in feelings of anxiety associated with the request for placement and refrains from process as not being able to "handle" the outcome.

3) Target efficacy

Target efficacy speaks of process C3 as well as C4 in Figure 2.7. Target efficacy relates to the reliability of the source of information being searched to provide the required information. Target efficacy is based on whether the searcher of information has accessed the needed information and will be honest in providing such information (Afifi & Morse, 2009:89). The efficacy targets the value of the source of information provided to secure the required information. The honesty of the search partner provides a truthful response to the result of the search (Fowler & Afifi, 2011:511). Fowler and Afifi (2011:511) further argue that efficacy beliefs impact on individuals' IM choices based on the ability of the information provider and his/her trustworthiness. Target efficacy is when the triad partners are confident in each other's ability to exchange trusted information on request.
The dashed lines of B3 and E in Figure 2.7 above represent paths that are partly mediated by other variables, with which the relevant variables have associations (Afifi, 2010:96). The size of the paths, for example, the minor or major effect of emotion regarding the uncertainty discrepancy on the IM decision, will become reduced due to the effects of the direct (solid) paths. In other words, the uncertainty discrepancy related to emotions is still expected to play some direct role in the IM decision, but a small part of it.¹

The TMIM theory as shown in Figure 2.7 above clearly illustrates the presence of an information provider which is affected by the same processes of IM as the information seeker. According to Guerrero et al (2011:84) the information provider is challenged by similar factors in order to present the correct information to the correct information seeker. The main information providers in the WIL process are the triad partners, namely HEI lecturers, HEI administrators, industry liaisons, industry mentors, students and student administrators.

The uncertainties that sometimes influence the relationship between the triad partners have two unique features. The relationship firstly focuses on the value of information gained with this interpersonal communication. The second feature focuses on the value of the information provider. This unique feature of the TMIM directly acknowledges the role played by the information providers in the IM process (Afifi & Weiner, 2004:183; Guerrero et al, 2011:84).

The information provider as contained in Figure 2.7 shares the TMIM structure with the information seeker. From previous discussions these processes are interdependent and part of the same process. The information provider role is clarified with specific responsibilities which are interlinked with the information seeker. The TMIM theory discusses specific stages pertaining to the role of the information provider and information seeker. According to Sprecher, Wenzel and Harvey (2008) TMIM has four stages which specifically look at unique applications to analyse relationships pertaining to information seeking and provider provisioning. The four stages are discussed from the perspective of IM for WIL process as follows –

¹ Personal communication with Afifi (2013)
Stage one in this study focuses on the experience of the individuals involved in the triad partnership seeking information. The triad partners involved are seeking information for WIL purposes. Students for example are seeking information about CV writing from their HEI lecturer. The HEI lecturer seeks information from students and industry about students’ performance and working experience. The industry mentors or industry liaisons request information from the HEI lecturer, for example, on students’ confirmation letter or proof of students’ registration for WIL.

Stage two impacts on the expected result of the search of information. The value of the information in the triad partnership is determined by the relationship between the information seeker and the information provider. The student on completion of CV writing session provides the HEI lecturer and HEI administrator with the information which was requested. This information exchange impacts on the expectations of the information provider who is the student and on the information seeker namely the HEI lecturer and HEI administrator. The expectations differ from the perspective of the information provider namely the student expecting a WIL placement based on the student’s CV. The HEI lecturer and HEI administrator as information seekers are expecting a well worded and complete CV as expected from a trained student with knowledge in compiling the required document.

Stage three relates to the search for information – be it directly or indirectly. The information seeker can search passively or actively. The basis of the search is founded on the uncertainty level experienced by any one of the triad partners. Information may even be ignored or not taken into consideration based on the uncertainty level of communication of the triad partnership. The student is uncertain about the quality of other CVs provided to HEI lecturer and HEI administrator. This uncertainty can indirectly in a passive or directly in an active way influence the student on the value of information exchange. There might be no grounds for this uncertainty but the mere possibility of uncertainty in the information exchange can have an impact on the information seeker.

Stage four relates to the provider of information. Information have value to both seeker and provider and the relationship of these two parties affects the value of
the information shared, based on communication in the triad partnership. The student and industry mentor provide the HEI lecture with a feedback form based on performance and experience in the working environment. This information exchange affects all the triad partners; the student's career path development is affected, the industry evaluation process has an impact, and the HEI lecturer receives information on the standard of education shared with the student.

Multiple information exchanges corroborate the view that the information seeker and information provider have an intertwined relationship and share functions and responsibilities. The complex nature of this relationship can be managed more effectively if an IM framework for WIL, strengthened by boundary-spanning is put in place to manage the triad partnership for the WIL process. This IM framework for the WIL process will support the mutually beneficial relationship for all the parties involved in the complex triad partnership.

The complexity of the IM for WIL process between the triad partners together with the associated information flows and relevant sources in this study find parallels with the TMIM. Afifi and Weiner (2006:36) comment on IM actions that are accounted for and recorded with the TMIM capacity. IM for WIL is an information-based process guided by PIM and OIM strategies. The third phase of the TMIM theory – the decision phase – entails strategy for managing information.

2.4.3 Phase 3: Decision phase (information management strategy)

The third phase of TMIM theory is the decision phase as shown in Figure 2.8. In this phase the information seeker is confronted with the decision to search the source of information.
According to the TMIM the process of decision making has three phases which are unique (cf Figure 2.8). During the decision phase the information seeker has to decide to seek relevant information, avoid relevant information, or engage in cognitive reappraisal (Afifi & Morse, 2009:89; Fowler & Afifi, 2011:512). These three IM strategies will be defined next, elaborating on IM for WIL examples.
2.4.3.1 Seek relevant information

Individuals engage in searches for information. The search for information results in levels of uncertainty with the seeker of information. The information seeker being uncertain of the results of the search will be affected by feelings of anxiety which impacts on the search being instituted. For example, to address the threat of uncertainty the HEI administrator may adopt an approach which would allow the information seeker the opportunity to change the information exchange criteria. The HEI lecturer and HEI administrator invite students to training sessions where information exchange takes place allowing the student as seeker of information to be informed of what is required and thereby addressing any level of uncertainty. During the information exchange process the value of information presented may impact on the anxiety of the information seeker, who may then implement measures to value the information exchange. If the information exchange is not relevant the second strategy namely to avoid relevant information will apply.

2.3.4.2 Avoid relevant information

An individual searching for information may at times make a decision to avoid information which may or may not be relevant to the information exchange objective. The information seeker's decision is based on the evaluation of the information exchange which values the relevancy of the information being exchanged. The information seeker would rather avoid the result of the search, which may in fact provide relevant information but instead chooses to terminate the search for information rather than face the result of the information exchange. For example, the student has to engage with the HEI lecturer to secure a placement opportunity, for which the student's CV is a requirement. The student as information seeker would refrain from requesting the result of placement rather than requesting information of placement appointments. The uncertainty of placement experience by the information seeker may result in the student withdrawing from the process due to feelings of anxiety. The information seeker, if not successful during this information exchange strategy, evolves into the third strategy namely cognitive reappraisal.

2.3.4.3 Cognitive reappraisal

In this strategy the information seeker makes a cognitive decision to change his/her mindset to address feelings which impact negatively on the information exchange.
addressing levels of anxiety and emotion the individual reappraises the request for information in order to secure the required information. This process is not influenced by superficial emotional stress to withdraw the information exchange but to remove feelings of anxiety cognitively from the information exchange (Afifi & Weiner, 2004:183). For example, the HEI lecturer when experiencing levels of uncertainty during information seeking exchanges may have different ways in which to address uncertainty levels. The HEI lecturers are under extreme pressure to balance the placement of students at industry level and expectations of industry liaisons receiving well-prepared CVs. The feelings of emotional stress experienced by the HEI lecturer is managed by way of reappraising the levels of anxiety and focusing on the provisioning of the required candidates and industry partners based on the information exchange.

The principle of information exchange is associated with sharing of information between the triad partners. This sharing of information has certain consequences for the triad partners such as emotions surfacing when engaging in an information exchange. It is clearly displayed in the role of the information seeker and information provider roles within the TMIM theory. The process of requesting information and the activities related thereto has the consequence that the information seeker experiences emotions based on a personal perspective. The information seeker is unsure of the consequence of seeking information thereby displaying his/her inadequacy of competency by requesting the information.

The information seeker's feeling of anxiety is compounded by the feelings of not having the required knowledge and the information seeker has to engage in information exchange. This feeling of being uncertain is amplified by resulting emotions which develop into feelings of anxiety. Feelings of anxiety are then filtered in terms of the TMIM model to determine whether the decision to engage in information exchange will be proceeded with or refrained from. The resulting outcomes are associated with feelings of anxiety which is then filtered to the phases of outcomes expectancy and efficacy judgements previously mentioned. This process in turn results in positive outcomes being sorted by the various efficacy judgements cycles, in a positive process.

Should the process however become negative this means that the anxiety factor will have the effect that the information seeker refrains from the information exchange and thus no sharing of information takes place. By addressing the emotional inadequacies
of the information seeker, be it the student, industry mentor or HEI lecturer the same principle applies. Anxiety will be part of information exchange which is part and parcel of the process of addressing emotions associated with information exchange. In summary, the TMIM describes the core of the IM process and unlocks the complexities of IM for WIL.

### 2.5 Summary

In this chapter the important role of the triad partnership is highlighted through the review and analysis of the existing literature in the field of IM and how it pertains to WIL at HEIs. The importance of the relationship is grounded in the interaction of the triad partners on an academic as well as on an administrative level, between all partners namely the HEI lecturer, HEI administrator, student, student administrator, industry liaison and industry mentor. Through boundary-spanning the sharing of information between the triad partners becomes well-managed. This is critical to the success of the IM for WIL process. The many actions of information flow and other changes are monitored by boundary-spanning. Boundary-spanning improves IM – it is referred to as the process of information exchange. Information exchange in the IM for WIL domain can take place on organisational and personal levels. At these levels, IM is referred to as organisational information management and personal information management. OIM and PIM take place inside and across the triad partnership through Janus doors at all organisational levels, involving the HEI, industry and student engaged in the WIL process.

When information exchange takes place it is critical to record these transactions which are part of the boundary-spanning milieu. The exchange has to be monitored to ensure the IM for WIL process works well. When using boundary-spanning to facilitate the IM for WIL process, the parallels of boundary-spanning and the TMIM become clear. The parallels being shared in using this TMIM theory as well as the concept of boundary-spanning provided insight into the need to better manage the IM for WIL process.

Mentioned above, the IM for WIL process is a complex process involving PIM as well as OIM. In this study, OIM is the core focus area which has to be managed and developed to international standards at HEIs. Certain IM strategies and measures have to be put in place to ensure the IM for WIL process is effective and addresses the
information exchange requirements of the triad partners. Without a well developed and researched IM for WIL process the complexity of WIL information and processes and the lack of a strategy for the management of information will compromise the efficiency of the WIL programme.

The next chapter deals with the research methodology applied by this study, to gather the required information necessary to elevate the IM for WIL to international standards.
CHAPTER 3

RESEARCH DESIGN AND METHODOLOGY

"Enter into the world. Observe and wonder. Experience and reflect. To understand a world you must become part of the world remaining separate, a part of and apart from."

Halcolm's Methodological Chronicle
(Patton, 2002:84)

3.1 Introduction

The previous chapter establishes the theoretical foundation of the study by reflecting on the importance of information management (IM) for the work-integrated learning (WIL) process. A well-developed and researched IM for WIL strategy will improve the efficiency of the WIL programme. In order to answer the research question of this study a research paradigm has to be identified and selected. The primary focus of this study is to determine how information can be managed to facilitate the WIL process for various faculties at a higher education institution (HEI) (cf Section 1.3).

The rationale of this chapter is to explain and justify the selection of a qualitative research paradigm as the most appropriate paradigm for this study. The approach and design of the study is discussed in terms of the research methodology. Data was secured by way of semi-structured individual interviews, group interviews and open-ended questionnaires within the University of Cincinnati (UC), Northwestern University (NWU) in Illinois in the United States of America (USA), and the University of Johannesburg (UJ) in South Africa (SA).

The worldview that guides this investigation influences not only the choice of method, but also ontologically and epistemologically fundamental thoughts. In the next section the choice of philosophy, research approach and strategy, time dimensions, and method of data collection along with the processes of recording and data analyses are described.
3.2 Ontological assumptions

Ontology phrases our philosophical question of how we make sense of phenomena. With regard to this study an interpretivist approach is used in order to make sense of the IM for WIL process. The problem being researched by this study is influenced by the perspective of the participants (viz those experiencing the phenomenon); thus the interpretation and reporting thereof ask for an interpretivist approach to the research.

According to Daymon and Holloway (2011:102) interpretive researchers, aka interpretivists, are not interested in predicting behaviour but rather interpret human understanding of individual experiences. Interpretivists base their interpretation on multiple realities and truths that can change because individuals interact socially which result in multiple realities (Daymon & Holloway, 2011:102). In this study an empathic understanding of how the triad partners feel and interpret their experiences regarding the management of information in the WIL process, was done through interpretivism. According to Rubin and Babbie (2013:55) interpretivists focus on gaining an empathic understanding of how people feel inside, interpreting experiences, feelings and seeking reasons for their behaviour.

As mentioned above, the study focuses on understanding the phenomenon in the context of management of information by the WIL triad partnership. The triad partners' interpretation and sharing of experiences are based on the feelings and interpretive arguments presented by the interviewees, that is, the participants of the study. Myers (2009:38) argue that an interpretive study focuses on the complexity of human sense-making as the situation emerges and attempts to understand phenomena, through the meanings that people assign to them.

The subjective interpretation of this study relates to the mental state of the HEI lecturer and industry mentor as influenced by colleagues and sub culture groups within their diverse environments. It is not about what the HEI lecturer and industry mentor experience but how this shared experience is discussed with the interviewer. According to Perri and Christine (2012:230) subjective interpretations home in on people’s mental lives, in social groups and by thought styles, by which it is not meant what people think, but the way in which they think. The objective interpretation in this study relates to how HEI lecturers and industry mentors interpret the sharing of information, not from a subjective perspective but from an objective perspective, which include the feeling and
perception of the group and not just the individual. In this study it is important to distinguish between primary and secondary interpretation.

The primary interpretation in this study is when the HEI lecturer and industry mentors in the triad partnership provide feedback and share their experience of the IM for WIL process. This sharing of information is done by way of speech, written feedback and body language. In the interviews the HEI lecturer and industry mentor may at times also share and discuss their experiences pertaining to the IM for WIL. According to Perri and Christine (2012:232) sharing of information by participants by way of speech, text or behaviour which is guided by their experiences within their world, is referred to as primary interpretation.

The effectiveness of the information gathering process with the triad partners is based on the secondary interpretation phase principles, which require optimal levels of observation pertaining to speech, written word and body language. The interview phase is also complimented by the additional interview criteria which allow the interviewer, for example, to observe the body language of the interviewee. This observation with the appropriate questioning can secure more critical information because of an extended interview. According to Perri and Christine (2012:232) the accuracy of secondary interpretation is based on the standard of interviewer to fully interpret and capture the essential structure and details of the interviewees' experiences as shared in an interview.

The emic perspective in this study relates to cultural categories which can be interpreted by the interviewee. From an etic perspective the interviewer's scientific perspective does not make sense to the interviewee, however, the interpretation does make sense to the interviewer. To address the etic perspective of the interviewer in this study, the interviewer analyses the information provided during the interview – should the interviewee's responses to the questions not address the concerns of the interviewer, then more clarifying questions will be posed. Perri and Christine (2012:232) argue that there is a close relationship between primary and secondary interpretations although there is a clear distinction between emic and etic interpretation. The ontological assumptions in this study apply through the interpretive philosophy influences and link to the epistemological, methodological and axiological assumptions discussed next.
3.3 Epistemological assumptions

In terms of the epistemological assumption this study does not focus on the generalisation of information and prediction of human behaviour, rather it focuses on the knowledge generated from the triad partners’ experiences of the IM for WIL process. This assumption focuses on human knowledge and the origin thereof within the "relationship between the knower and the known" (Klenke, 2008:16). This is guided through the understanding of the perceived knowledge from the triad partners involved in the IM for WIL. As mentioned above, the study homes in on the specific phenomenon of the triad partnership involved in the management of information for the WIL process at HEIs. At the international HEIs participating in this study, IM for WIL relates to multiple cases that were investigated to determine if the good practices of UC and NWU can fit into the UJ environment to streamline the IM for WIL. In order to thoroughly investigate the good practices of the mentioned international HEIs and the current IM for WIL process at UJ, the methodological assumptions are explained next in further detail.

3.4 Methodological assumptions

The methodology assumed in this study focuses on the process flow pertaining to the data collection, interpretation, evaluation and the presentation of the results. Through this study the experience of the triad partners involved in the IM for WIL is studied. Also, through this study the influences from both technical and personal experiences of the triad partners are valued. Klenke (2008:18) stated that methodology pertaining to philosophical issues relates to epistemology (cf previous section). Epistemology relates to an integrated structure formulating processes pertaining to how we know what we know. Therefore a qualitative research approach is followed with interviews and group discussions as a method to obtain an in-depth understanding of the triad partners' experiences of the IM for WIL process.

3.4.1 Research choice

Qualitative research aims to understand the phenomena in context-specific settings, such as a "real world setting, where the researcher does not attempt to manipulate the phenomenon of interest" (Patton, 2002:39). In this study, the triad partnership's involvement in information seeking and providing information in the WIL process, encapsulates the phenomenon being studied. Phenomenological research emphasises
the understanding of the phenomenon as experienced by the individuals engaged in the study (Clark & Creswell, 2010:239).

The researcher used the data that was collected to explore the involvement of HEI lecturers, industry mentors and students in the IM for WIL process. HEI lecturers, industry mentors and students involved in the WIL process were included in semi-structured individual interviews, group interviews and open-ended questionnaires. The four academic departments at UC involved in the study were; Civil and Environmental Engineering, Architecture, Construction Management, and Information Systems. At the NWU the three academic departments involved were; Analytical and Bio Analytical Chemistry, Electrical Engineering, and Mechanical Engineering. The data collection took place in three phases as explained in Figure 3.1.

3.4.1.1 Phase 1: HEI international lecturers and industry mentors

In the first phase of the study, HEI lecturers from UC and NWU involved in the IM for WIL process participated in this study which entailed semi-structured individual interviews. At the NWU industry mentors were involved in semi-structured individual interviews to investigate the current feedback processes for IM for WIL. The UC and NWU in the USA were visited in person; however, seeing that the industry partners where the students were working were spatially distributed at various locations across the USA, it was impossible to conduct semi-structured interviews with industry or to conduct group interviews with the students. Therefore the second phase of this study was adapted to using an open-ended questionnaire. This questionnaire formed part of
the students’ and industry mentors’ evaluation report to the HEIs, UC and NWU, at the end of their WIL term. By having the questionnaire included in the evaluation report assisted in achieving higher response rates.

### 3.4.1.2 Phase 2: HEI international industry mentors and students

This part of the study was to determine the students’ and industry mentors’ experience of the current feedback system in place for the IM for WIL. The group of respondents in this case included WIL students and industry mentors at UC enrolled within the mentioned Departments. At the NWU semi-structured interviews with industry mentors and faculty advisors were done and open-ended questionnaires were sent to students from the participating departments.

### 3.4.1.3 Phase 3: South African HEI

The third phase of the study focuses on seven identified UJ faculties and 16 academic departments involved in the IM for WIL. The academic departments spread across faculties involved were; Electrical Engineering, Mechanical Engineering, Mining, Bio Technology, Food Technology, Analytical Chemistry, Architectural Technology, Clothing, Curriculum and Instruction, Public Relations and Communication, Tourism, Hospitality, Marketing, Radiography, Emergency Medical Care, and Environmental Health.

HEI lecturers and industry mentors involved in the IM for WIL were included in semi-structured individual interviews. Students from the identified departments involved in the WIL process took part in group interviews. In this phase the current variety of processes were investigated in the identified faculties and departments related to the WIL process. This phase of comparative analysis allowed the identification of the good practices for WIL. The development of data collection for Phase 3 was developed as a cross-cutting analysis to streamline the diverse processes at a HEI in the South African context.

Marshall and Rossman (2011:19) state that a qualitative phenomenological approach typically involves several long, in-depth interviews with individuals who have experienced the phenomenon of interest. Therefore qualitative research design that follows the phenomenological approach is the best fit for this study. This is due to the interviewer investigating the current feedback system and process at two international
HEIs and securing the inner experiences of participants. The inputs from the two international HEIs' good practices will assist in developing a framework for a comprehensive HEI such as the UJ. This framework would be used in collaboration with the complex combination of subjects from a South African perspective. Qualitative research was chosen for this study to understand the involvement of the HEI lecturer, industry mentors and students in the IM for WIL process from an in-depth point of view.

Following on the research choice, it also has to be determined how a current IM process can be developed and adjusted for a HEI in a South African environment. The research approach is discussed next.

### 3.4.2 Research approach

The research approach is a set of procedures to answer the research question in this study. The appropriate reasoning for this study is the retroductive reasoning. According to Christ (2010:663) retroductive analysis focuses on inductive and deductive reasoning and should be done to identify and verify the best solution based on participants learning experiences.

The deductive reasoning part of this study is based on the IM for WIL process that is already in place at the UC and NWU. The identified partners and structure as shown in Figure 4.2 is already in place and the gaps in this IM for WIL process was identified during the semi-structured individual interviews and open-ended questionnaires. The IM for WIL process has to be adjusted in order to be applied in a South African HEI. Deductive reasoning of a study starts with a theoretical system, develops operational definitions of the proposals and concepts of the theory. It will then match these theories to the empirically developed body of data. With deductive reasoning it needs to identify data which will match the theory and allow the classification of statements being definitively true (Teddlie & Tashakkori, 2009:43; Perri & Christine, 2012:76).

The inductive reasoning part of this study was through the semi-structured individual interviews, group interviews and open-ended questionnaires. During the interviews information was gathered, analysed and interpreted to identify good practices at UC and NWU. These good practices were analysed to determine which of these can be applied to better facilitate the IM for WIL process at UJ and to determine if what was learned at the international HEIs can result in a cross-cutting process, streamlining the diverse processes of UJ.
With the use of the deductive and inductive reasoning certain gaps were identified. The retroductive reasoning was used to address these gaps and identify alternative solutions which may address the identified gaps. The identification of gaps, with the use of deductive and inductive information, resulted in the development of the IM for WIL framework for the UJ.

3.4.3 Research strategy

According to Myers (2009:73) the purpose of the case study is to use empirical evidence from real people in real organisations to contribute to knowledge. Yin (2009:46) argues that there are different types of case study designs namely single, embedded and multiple cases.

In this study a multiple-case design was used. Multiple HEIs were studied namely two in the USA and one South African HEI. Semi-structured individual interviews, group discussions and open-ended questionnaires were used to collect data at all three mentioned HEIs to understand the processes and systems in place for the IM for WIL process.

3.4.4 Time dimensions

The time dimension of this study is a cross-sectional study focused at a specific point in time. It should therefore be pointed out that changes in the WIL process at any of the institutions could mean that the suggested recommendations based on the findings might have to be reviewed. The advantages of conducting cross-sectional research are that on a practical level the application of the recommendations would be relevant at that specific point in time.

3.4.5 Methods and process of data collection

As indicated in the three phases in Figure 3.1, the first two phases consisted of the UC and NWU and the third phase is the UJ. During Phase 1 and the first part of Phase 3 semi-structured individual interviews took place at the UC, NWU and UJ. During Phase 2, UC and NWU were provided with open-ended questionnaires. Part of the third phase included group discussions which took place within UJ. The methodological framework in Figure 3.2 shows the process and methods of data collection.
Figure 3.2: Methodological framework (own source)

Evaluation research of the processes for the development of an IM for WIL process in a Higher Education Institution

TOTAL SAMPLING 219

Phase 3

University of Johannesburg
(69 respondents)

Faculty of Engineering and the Built Environment Participants involve:
- Electrical Engineering
- Mechanical Engineering
- Mining

Faculty of Art, Design and Architecture Participants involve:
- Architectural Technology
- Clothing Management
- Graphic Design

Faculty of Management Participants involve:
- Tourism
- Hospitality
- Marketing

Faculty of Education Participants involve:
- Curriculum and Instruction

Faculty of Health Science Participants involve:
- Radiography
- Emergency Medical Care
- Environmental Health

Faculty of Humanities Participants involve:
- Public Relations and Communication

Phases 1 & 2

University of Cincinnati
(123 respondents)

Northwestern University of Engineering in Illinois
(27 respondents)

Faculty of Management Participants involve:
- Civil and Environmental Engineering
- Architecture
- Construction Management
- Information Systems

University WIL representative Participants involve:
- Analytical & Bio Analytical Chemistry
- Electrical Engineering
- Mechanical Engineering

Sample:
- Individual interviews with departments (1 interview with each WIL liaison) per HEI (Sample = 7, comprising UC and NWUE)
- Semi-structured individual interviews and group interviews with industry mentors involved with WIL placement at NWUE (Sample = 8)
- Semi-structured individual interviews with faculty advisors involved with WIL placement at NWUE (Sample = 4)
- Open-ended questionnaire to ALL industry mentors and students from mentioned departments involved with the WIL process at UC (Sample = 32 industry mentors and 87 students)
- Open-ended questionnaire to ALL students from mentioned departments involved with the WIL process at NWUE (Sample = 12)

Analysis of existing procedures from UJ and frameworks from UC and NWUE
Nominal group technique UJ HEI lecturers (Sample = 9)
3.4.5.1 Semi-structured individual interviews

The data collected for Phase 1 and the first part of Phase 3 of the study took place by way of semi-structured interviews (cf Appendix A). The reason for using this method is best described by De Vos, Strydom, Fouché and Delport (2005:297), namely "to gain a detailed picture of a participant's beliefs about, or perceptions or accounts of, a particular topic". Semi-structured individual interviews provided a better understanding and insight into the current IM for WIL at the mentioned HEIs. According to Lazar, Feng and Hochheiser (2010:190) and Wilson (2010:138) semi-structured interviews are the most appropriate when the interviewer has to dig deeper in search of critical comments, design requirements, and other insights.

The flexibility of the semi-structured individual interviews allows HEI lecturers and industry mentors to talk freely about their experience and feelings of the IM for WIL. According to Hesse-Biber and Leavy (2011:102) semi-structured interviews allow individual respondents some latitude and freedom to talk about what is of interest or importance to them and the interviewer allowing significant flexibility in the interviewing process. During information gathering sessions it is expected that information can be shared during session which was not available before session started (Hesse-Biber & Leavy, 2011:102) Semi-structured individual interviews allow uncomplicated sharing of information with the possible result of facilitating the development of new concepts and information. In other words, current sources of information and concepts may result in new concepts and information relevant to the study. During semi-structured individual interviews the interviewer can request the interviewee to shed light on a specific issue which is not clear to the interviewer.

The researcher’s reasoning was that with semi-structured individual interviews an in-depth understanding of new or additional information could possibly be discovered. Also Hesse-Biber and Leavy (2011:102) say that semi-structured individual interviews lead to new discoveries rather than just a confirmation of what is already known. In addition, by utilising open-ended questions it allows the participants to share their views, thoughts and experiences on the phenomenon being studied (Lodico, Spaulding & Voegtle, 2010:38). One broad open-ended question supported by "a set of predetermined questions on an interview schedule", will guide this semi-structured individual interviews and group discussions (Merriam, 2009:89; Hesse-Biber & Leavy, 2011:102).
In the current study, the interview process allowed for the expression of experiences and for investigating the thoughts, feelings and concerns of participants with regard to the IM for WIL process. The interview process is therefore compared to a conversation with a specific purpose and the interviewer projected an attitude that whatever the participant is saying is of value and useful (Berg 2009:101, Merriam, 2009:88; Marshall & Rossman, 2011:145). This motivated the interviewees to be relaxed and speak freely and share more of their thoughts and feelings about the subject, which in turn gave the interviewer the opportunity to understand the implications of their daily WIL endeavours related to seeking and providing information and all the intricacies it involved.

3.4.5.2 Open-ended questionnaires

According to Teddlie and Tashakkori (2009:232) open-ended questionnaires allow research participants to express their attitudes, beliefs and feelings towards a topic of interest. An open-ended questionnaire for students (cf Appendix B) and industry mentors (cf Appendix C) in UC and students from NWU were used for the collection of data in Phase 2 of the study. Participants voiced their experiences in an unconstrained manner and expressed their attitudes, beliefs and feelings towards the feedback system for the IM for WIL process. This is recommended by Johnson and Christensen (2010:169) who explain that participants can respond in any way that they please. Also Clark and Creswell (2010:257) and Kumar (2011:153) comment on the free sharing principle of open-ended questionnaires allowing participants free sharing of information as they are comfortable to share their perspective on questions raised in an unconstrained way.

3.4.5.3 Group interviews

The data collection for students involved in the IM for WIL process at UJ took place by way of six group interviews (cf Appendix D). This type of interview structure allowed participants to share their experience of the WIL process in their departments at UJ, by way of a conversation with each other and correcting one another, providing examples and/or motivations when they were not in agreement with their peers. Often during group interviews, says Flick (2009:197), the danger exists that illogical or ridiculous comments could be made. These comments have to be validated, shared, or moved into context by sharing inputs with the group, addressing such illogical comments. The
group is the catalyst which promotes and enhances the ideas shared and ensures comments made are recorded in context which may be used in further research.

In group interviews, participants provide a broad range of viewpoints and insights which stimulate participants to further raise issues that they might not have identified in individual interviews (Lazar et al, 2010:192-193). According to Teddlie and Tashakkori (2009:228), observations of interactions among group members are considered a major part of data collection in a group. The method of qualitative group interviews was selected in this study because, in order to develop a relevant framework for IM for WIL at UJ, relevant information had to be secured based on *inter alia* the real experiences of the students of UJ involved in the IM for WIL process.

According to Liamputtong (2011:39) participants in group interviews discuss a focused issue of concern and therefore it can be said that the participants share information regarding their experiences, opinions and failures. During the group interviews conducted for data collection in the current study the participants shared information regarding their experiences, opinions and failures of the IM for WIL process at UJ. According to Flick (2009:197) group interviews is a medium that allows shared group opinions which go beyond individuals' opinions. Wodak, De Cillia, Reisigl and Liebhart (2009:107) state that group interviews are a forum where inputs are more easily shared which gives participants the opportunity to share experiences. It is this opportunity to share freely that allows maximum benefits resulting from interviews. The discussions are viewed as a forum which allows free speech and sharing of information. The interviewer facilitates the interview and only intervenes when necessary, for example, to clarify points that arise during discussions (Boeije, 2010:63; Saunders, Lewis & Thornhill, 2009:318; Silverman, 2011:208). According to Flick (2009:196) group interviews stimulate a discussion and use the dynamic of developing the conversation in the discussion as the central source of knowledge.

### 3.4.6 Data analysis

All the information gathered during the interviews was transcribed and analysed using inductive content analysis. Marshall and Rossman (2011:161) describe the notion of content analysis as an "objective and neutral way" to secure qualitative descriptive data, where specific words are counted. In this study, the data analysis was designed according to the structure illustrated in Figure 3.3.
As the current study progressed, the researcher realised that the inductive content analysis was appropriate for "describing and interpreting the written productions" of the responses as explained by Marshall and Rossman (2011:161). The observation of Marshall and Rossman (2011:161), namely that the greatest strength of inductive content analysis is that it is discreet, rings true with the researcher. Researchers who choose inductive content analysis are advised by Elo and Kyngas (2008:109) to organise the qualitative data through open coding, creating categories for abstraction. Elo and Kyngas (2008:109) further explain open coding involves writing notes in text during the process of reading, which is then reread and headings recorded in margins, to clarify content.

The transcribing of recorded data is an intricate, time-intensive task. The processes of transcribing and coding of data require judgements and interpretation on the part of the researcher and since we do not "speak in paragraphs nor do we signal punctuation" during speech, the process of inserting a comma, a full stop or a semicolon during transcription becomes a complex process and hence can shape or change the meaning of the data (Marshall & Rossman, 2011:164). Thus, careful consideration was given to the transcribing of the data from the recorded interviews. According to Thomas...
(2006:241) inductive coding begins with close reading of text and comprehensively considering the multiple meanings that are inherent in the text.

### 3.4.6.1 Preparing the data for analysis

All interviews in the form of audio recordings and questionnaires were organised in groups. Audio data was recorded and copies were safely stored as audio files, downloaded onto a computer, and written to compact discs (CD) for archiving purposes (Thomas, 2006:241; Clark & Creswell, 2010:279). Copies were used to transcribe the audio files. The audio interviews were transcribed verbatim into a Microsoft Word (MSWord) document. The transcribed MSWord files were uploaded into Atlas.ti™ version 6 for analysis.

### 3.4.6.2 Exploring the data

The typed transcriptions were perused several times before starting the process of analysis to become familiar with the dataset – this was done according to the guidelines provided by Henning, Van Rensburg and Smit (2004:104), Thomas (2006:241), Clark and Creswell (2010:279). Once familiar with the content it allowed for insight and understanding of the text and the codes, themes or categories could be assigned to the events covered in the text. Taylor and Lindlof (2010:247) further indicate that through the inductive process of data analysis the analyst must explore and do close reading, several times before the "chunks" of data will have meaning.

### 3.4.6.3 Analysing the data

Inductive data analyses were done in this study. According to Teddlie and Tashakkori (2009:251) inductive data analysis leads to themes or theoretical criteria that are "grounded in the data, and are not given a priority". As mentioned above, in this study the Atlas.ti™ version 6 was used as a qualitative data analysis software programme. Friese (2012:4) states that "computer-assisted analysis can be thought of as a journey", while Greyling (2007:83) rightly points out that the construction of meaning cannot be left up to a machine, and is the responsibility of the analyst. During the transcription process the transcriptions were checked for accuracy and the files entered into the qualitative data analysis software programme.
Coding of data is a complicated and advanced skill that requires the revisiting of material and recoding of information (Saldana, 2011:8). The material, revisited and recoded in this study, created data from which links could be made to interpret and analyse concepts and issues relating to the IM for WIL at HEIs. According to Richard and Morse (2007:137) the links in the data help develop ideas from the data interpretation and analysis. Through this process the essence of the terms of the available data are captured in a written word or in short phrases (Saldana, 2011: 3); coding categorises data and enables clustering into categories or themes. According to Clark and Creswell (2010:279) coding helps to reduce the data into themes or categories that emerge from the analysed data.

In this study, codes were linked into categories after the first round of coding. According to Elo and Kyngas (2008:111) the purpose of creating categories is to provide a means of describing the phenomenon, to increase understanding and to generate knowledge. The purpose of this process is to look for the possible grouping of the codes by codifying the data. According to Saldana (2011:8) codifying is when –

(... codes are applied and reapplied to qualitative data. This process permits data to be segregated, grouped, regrouped and relinked in order to consolidate meaning and explanation.

As categories and themes were developed integrative interpretations were offered of what was learned. As Marshall and Rossman (2011:219), a "story could be told" bringing meaning and coherence to the themes, patterns and categories, developing linkages that make sense and is engaging to read.

3.6.4.4 Validating the data and results

Data triangulation in this study consists of gathering the data from different sources. According to Farquhar (2012:80) triangulation is a key concept in a case study research especially with reference to triangulating data sources or data methods. The multiple research method is a well recognised part of qualitative studies. The credibility of the findings of this research is founded on triangulation principles which are supported by semi-structured interviews, group interviews and open-ended questionnaires. Multiple resources of research inputs are required to provide an inter
validation in order to corroborate research findings. The triangulation of data sources is critical in order to persuade the reader of this study.

To improve and ensure the quality of the study, more than one method of data collection were used to examine the phenomenon of the participants involved in the WIL triad partnership. Also, more than one method was used to examine the phenomenon from different angles – this was done in an attempt to triangulate the data. Through triangulation a more accurate, comprehensive and objective representation of the data was achieved. Marshall and Rossman (2011:252) further indicate that triangulation is the act of bringing more than one type/source of data to bear on a single point and therefore strengthen the usefulness of the study.

### 3.5 Axiological assumptions

Axiom assumption refers to the values and the ethics in this study. The participants of this study received a letter of consent that explained to the participants the scope of study and the reasons thereof. The participants signed a consent form to agree to participate in the study and were allowed to view the results after completion.

The interpretive philosophy based on the assumptions discussed above, assists the process to understand the experience of the management of information between the triad partners. Participants were lecturers and students from all the departments of the faculties in the UJ and industry in SA, as well as the UC and the NWU in the USA. The international institutions were approached by written communication (cf Appendix E and Appendix F); and written permission was obtained from UJ (cf Appendix G). The participants were not unnecessarily classified in terms of race, age or gender. The participants for this study were approached with a letter explaining all facets of what is expected and what the purpose of the study is (cf Appendix H). The participants were further allowed to decide on their involvement and participation and could withdraw at any time without any consequence. Proper consent was secured from all participants, with the use of a signed agreement of informed consent (cf Appendix I). Participants were assured of confidentiality and anonymity. Viewing of the findings (member checking) by participants was used to validate data, for ethical reasons.
3.6 Summary

Chapter 3 focuses on the research design and methodology which form the foundation of the study. This chapter explains how the research was conducted in the qualitative research paradigm with the aim to secure corroboration and interpretations of facts on IM for WIL good practice. The research identifies several factors with unique academic references, along with a variety of interpretive definitions. These definitions provide insight into the research and the interpretation of the findings.

This chapter elaborates on the methods used for data collection. Interviews were the major contributor to research content and value, and the interview data was interpreted and coded to allow insight into information secured, to support research findings and interpretations. In the next chapter a detailed description of the findings of this study follows.
CHAPTER 4

RESEARCH FINDINGS

"Experience is by industry achieved and perfected by the swift course of time."
William Shakespeare, 1564-1616 English playwright and poet
(Reilly, 2006:143)

4.1 Introduction

In this chapter, the research findings of the study are discussed based on the analysis of the data collected. The data analysis was conducted based on data gathered by way of qualitative methods, as described in Chapter 3. These processes included semi-structured interviews, group discussions and open-ended questionnaires. In the previous chapter, the research design was presented, namely a multiple-case design whereby three higher education institutions (HEIs) were studied; two international HEIs and one in South Africa. This was done in order to understand the processes and systems in place for the process of information management (IM) for work-integrated learning (WIL) and to conceptualise a framework for IM for WIL for the University of Johannesburg (UJ). The data collected from the multiple-case case study will be analysed in this chapter. First this chapter presents a brief overview of the history of WIL at the different research sites, followed by a detailed presentation of their current IM for WIL processes and good practices. The final part of this chapter involves the identification of the similarities for the researched faculties at the UJ.

4.2 Work-integrated learning internationally

This section discusses the history of WIL at the research sites and reports the findings relating to IM for WIL at the two identified HEIs in the United States of America (USA). The terminology used at the University of Cincinnati (UC) and Robert R. McCormick School of Engineering and Applied Science Northwestern University (NWU) in Illinois is cooperative education (co-op). The researcher uses case-specific terminology in the analysis and discussion of the findings below.
4.2.1 History of cooperative education at the research sites

In 2010 at the WACE 8th International Symposium on work-integrated learning in Graz, Australia, during a round-table discussion, a methodology to develop an information management framework for work-integrated learning at HEIs were discussed. After this symposium an email was distributed by the researcher to 38 HEIs in 17 countries. From the responses, the University of Cincinnati (UC) and Northwestern University (NWU) were selected for their centralised units that have been developed at their institutions. These two international HEIs based in the USA were selected because of their involvement with co-op since the early 1900s. Co-op has developed over long periods of time at the identified HEIs and was identified and included in this multiple-case case study because of their leading role in this domain. These HEIs are extensively engaged in this environment and they have been shaping the most effective working model based on experience and decades of developments. These years of development have evolved in the structuring of a centralised co-op managed solution based on good practice frameworks for IM for co-op internationally.

4.2.1.1 University of Cincinnati

The UC is the founding institution for co-op (Cates & Cedercreutz, 2008:18). In 1906 Herman Schneider became convinced that in order for a student to understand and master the many professional concepts and skills that they have learned in the classroom, it can only be learned effectively if it is done with practical experience. Schneider launched co-op in 1906 at the UC and his plan to bridge the gap between theory and practice was an idea that was right for its time (Reilly, 2006:15; Cates & Cedercreutz, 2008:6). He was an engineering professor, later an engineering dean and university president at the UC (Sovilla & Varty, 2011:3). Co-op at the UC had been evolving for 107 years based on learning approaches developed and improved with use at this HEI. UC developed a co-op feedback system after receiving extensive funding from the USA government. According to Cates and Cedercreutz (2008:28) the feedback process allows increased allocation of educational resources to the triad partners namely the HEI lecturer, student and industry mentor.

UC was identified as one of the research sites due to its rich history of co-op and the IM feedback process for co-op. This IM feedback process for co-op was created based on a strong historical baseline which allows for effective assessment of student
performance and tracking students' progress in the co-op programme (Cates & Cedercreutz, 2008:18). The process details and the findings of this feedback process, is discussed in detail in Section 4.2.2. The second research site for this study was the McCormick Office of Career Development at the Robert R. McCormick School of Engineering and Applied Science Northwestern University (NWU) in Illinois in the USA. In the study when referring to the McCormick Office of Career Development it is referred to as the NWU.

4.2.1.2 Northwestern University in Illinois

NWU is well known as one of the most prestigious programmes in the USA, involved in co-op with industry, providing educated specialists to facilitate the professional deployment of students (NWU, 2011a:1). In the 1930s, Walter P. Murphy, a leading Chicago industrialist, funded this particular HEI with $36,000,000 to establish a school of engineering. The Murphy gift was the largest contribution ever made by an individual in American history to a single institution in support of training and research in one field of learning (Scott, 1952:92). This funding was used to implement cooperative engineering education as a pedagogical experiment (NWU, 2011a:1). Dr. Charles Kettering, a technologist, inventor, and Chief Research Engineer for General Motors, collaborated with Dr. Herman Schneider (mentioned above) from the UC. Dr. Schneider became known as the "Father of Cooperative Education" and Dr. Kettering became known as one of the most innovative engineering educators. Mr. Murphy was convinced that co-op is a "superior form of engineering education" (NWU, 2011a:1).

Dr. Walter Dill Scott, president of NWU stated in his biography of Mr. Murphy that anyone of the above mentioned, Murphy, Kettering and Schneider, recognised that industry furnishes the best training laboratory for engineers (Scott, 1952:82). Scott further lists the three mentioned individuals to be the first in their fields to do the following regarding co-op:

Herman Schneider was the first to make this idea the basis for education in engineering.

Charles Kettering was the first to make it respected by the industrial leaders of America.
Walter P. Murphy was the first who was willing and able to consider the desirability of subsidizing a conclusive experiment in co-operative education.

(Scott, 1952:82, own emphasis added)

Building on its solid foundation, the NWU has been maintaining the co-op programme since 1940 (NWU, 2011a:1). This co-op programme allows undergraduate students in engineering to alternate periods of academic study with periods of paid work experience (NWU, 2011b:1). The findings relating to the IM process for co-op feedback for both UC and NWU are discussed in detail below.

### 4.2.2 Cooperative education processes at UC and NWU

In this section the processes of the international research sites are discussed. These institutions' processes are similar but where they do differ, these differences are highlighted. It was determined that these HEIs, although they are located in the same country, also differ in their approach and management of the co-op process as illustrated in Figure 4.1, and discussed hereafter.

![Figure 4.1: Alternating cycles quarters of cooperative education (adapted from Cates & Cedercreutz, 2008:23)](image-url)
Similarly, the co-op programme of the research sites in the USA is based upon full-time, alternating quarters of study as shown in Figure 4.1. The structures of the co-op programmes at the two HEIs are the same, except that at the UC co-op is mandatory and at NWU co-op is voluntary. The numbers one to six in Figure 4.1 indicate when the students are in the industry for their co-op work experience. The students per qualification are divided into two groups namely Student group 1 and Student group 2. These two student groups will alternate their co-op work experience and the academic work cycles. The selections of the groups are done in various ways. The selection can be done randomly based on a first-come-first-selection basis. These students are selected based on their completed registration of co-op and consequent successful placement. The second placement is done of Student group 2 by way of students who require a second chance and have successfully completed their coursework. Another factor which impacts on placement is students' individual responsibilities such as involvement in sport that dictates the dates the student can attend industry placement. Seasonal timeframes on the annual calendar can impact on placement dates. Some placements are affected by seasonal factors such as tax season which require students involved in the tax learning environment to be placed during tax season. Other financial students may need different time periods in terms of their obligations at industry level. This means that if Student group 1 is doing co-op work experience, then Student group 2 will attend their academic classes doing their academic part of their qualification (cf Figure 4.1, University, red blocks).

At the NWU the students that would like to register for co-op will meet with their faculty advisor. The session with faculty advisors typically entails the creation of a degree plan to see how they can fit in the co-op work experience, while doing their academic part of their qualification. The co-op work experience for both HEIs begins in their sophomore year (viz their second year of study), spreading over three years. The students must complete a minimum of four co-op quarters, although the majority of students complete six (Cates & Cedercreutz, 2008:23). At the UC the students are required to remain with an employer for a minimum of two quarters and at NWU the students are required to remain with an employer for their full period of their co-op, in order to provide a reasonable depth of experience.

From the above discussion it is clear that UC and NWU apply co-op differently, based on their specific needs and approach. The study period of co-op students for their qualification is also extended accordingly. This extension allows for additional time for
students to be deployed to industry for exposure to real work environments. The relationship developed between student and employer may allow for possible future employment. Students that have been working at a company for some time could be evaluated on work performance and are then recruited.

The administration of co-op at UC and NWU are done from a centralised institution-wide function. Using this centralised unit refers to the HEI lecturer and HEI administrator as the co-op advisor. UC and NWU have dedicated appointed co-op advisors per department, at the centralised co-op unit. This appointed co-op advisor will assist the student throughout their co-op experience. Co-op advisors assigned to the UC and NWU were interviewed to provide reports on co-op findings.

The main partners involved in the UC and NWU IM feedback process are the co-op advisor, the student, the student administrating his/her co-op opportunity, an industry liaison and an industry mentor. At the UC and NWU the industry mentor and industry liaison can sometimes be one person. However most of the time it is two separate people, because the industries in the USA are using their Human Resources (HR) departments, to recruit co-op students. To support HR involvement in student placement some industry mentors are engaged in recruiting their own co-op students. This is done by these industries because they know what type of student they are looking for. The student and student administrating their co-op opportunity is one person because students administer their own co-op process.

The identified partners in the dyadic relationship at the UC and NWU co-op process are displayed graphically in Figure 4.2. There are four partners involved in the co-op programme at these HEIs. On the top part of the diamond, the triangle between the student, student administrator / co-op opportunity, co-op advisor, industry liaison and the industry mentor is a solid line. Students apply learning and the student administrating the co-op opportunities are the same person. However the co-op administrator could be a different person to the co-op advisor, but in some cases it is the same person. In industry the industry liaison could be a different person to the industry mentor. In some cases however the industry liaison can be someone from the industry HR department, that are doing the recruiting and placement of co-op students. The dual role at industry level allows for one person that can be responsible for both roles.
The fourth partner involved in this relationship at both these international HEIs is referred to as the faculty advisor. Placement of students is done after meetings are completed between the faculty advisor and students. During these meetings the faculty advisor is responsible to discuss the course load of the student up to their graduation and sign the student's degree plan. Both the faculty advisor and student sign the degree plan. By signing the degree plan the student undertakes to complete the qualification accordingly. Students have to plan their four term co-op related working schedule with their course load in consultation with the faculty advisor. A prerequisite when students plan their co-op working schedule, is that students have to plan for at least four co-op quarters placement during their term of study. However students can
do up to six quarters of co-op placements as shown in Figure 4.1. These processes in
terms of schedules have to be properly planned and managed accordingly.

In Figure 4.2 the dotted lines reflect on the minimum information flow between the
faculty advisor and the triad partners in the top triangle of the diamond. Therefore the
role of the faculty advisor in this relationship is mainly to sign off on the degree plan of
the student. Faculty advisors also help the students to manage their qualification, to be
able to complete the qualification within the scheduled time. One of the faculty advisors
confirmed this by saying, "they need my signature to take registration for classes for
the next quarter. It is also an opportunity for the students to talk about their career
plans and how they are doing in school and how the co-op went".

The information flowing between the co-op advisor and the faculty advisor is a
feedback report from the centralised office to the faculty advisor. The faculty advisor
uses this information for accreditation purposes for their qualification programmes. The
information exchange between the faculty advisor and the industry mentor is at a
minimum or non-existence. During the interview one industry mentor said, "there isn't
as much communication with the faculty advisors". The faculty advisor is only involved
in the signing of the degree plan and the receiving of the final report of the co-op
students.

The triad partners in the co-op relationship feel that the co-op programme would be of
a greater benefit to all if the faculty advisor was more involved in the programme and
not only involved for accreditation purposes. The students are in agreement, they share
the need for improved communication between students, faculty advisors and co-op
advisors. The industry mentors feel that there is no enforcement of a structure of liaison
between the faculty advisors, students, co-advisor and industry mentor. The faculty
advisors do attend meetings scheduled at the co-op centers between faculty advisors
and industry mentors. This "brings together co-op employers and faculty department
curriculum chairs in a workshop [setting]. So we can talk about the co-op programme
generally and what it is about the students' preparation that's good". The co-op advisor
also mentioned, "What I had in my head was that we are standing holding the
employer's hand and the faculty hand and we are hoping the electricity is passing
through us as we are sending all this data back and forth". The role of the faculty
advisor could be expanded to include more involvement in the co-op programme.
The rest of the discussion in this section focuses on the triad partners at the top triangle of the diamond in Figure 4.2. The process of registering students on the co-op programme is recorded according to each step the three parties has to engage in. Students are exposed to co-op in their freshmen year and are briefed on the co-op programme and awareness of its importance is created. Students are then placed in the co-op programme in their sophomore year and doing co-op through to their junior year (that is, their third year of study) and senior year (that is, their fourth year of study). This is done according to specified steps, with corresponding responsibilities performed any one or more persons in the triad partnership of the co-op programme (cf Table 4.2, tabled later in this discussion, together with Figure 4.3). Table 4.2 reflects the corresponding information flow and information sources that exchange hands within the triad partnership engaged in the co-op process of the UC and NWU; and Figure 4.3 reflects the IM for the co-op process and all administration involved at UC and NWU (tables and figures are presented as a unit only after the endeavor to systematically discuss the complexities of the Janus door effect below).

Figure 4.3 (cf top one of four triangles), reflects the first cycle when students register for the first time as explained in Table 4.2 (cf co-op process 1). The student registers for the programme and is sent for training on Curriculum Vitae (CV) writing and interviewing skills. The completed CV is registered in an electronic system and loaded for use during the co-op appointment process. All related information is hosted on a centrally located repository, which records all information related to the co-op process. The central co-op office at the HEIs distributes students' CVs to the different industry liaisons. The potential employers on industry level search and study the available CVs on the central database. After perusing the available CVs the potential employer identifies the students they have interest in placing for the duration of the co-op process. The co-op department of the HEI facilitates the interview process between the student and the industry liaison at this stage. After the interview the student is informed of the outcome of the interview. Upon securing a successful interview with the employer, an appointment letter is provided by the industry liaison to the student. This allows the employer to set the terms of employment. These terms may include projects that have to be completed by the student and evaluation standards that have to be achieved.

The central co-op office allocates four specific focus learning outcomes that each student has to complete during placement with the employer. The employer and the
student will meet at the first opportunity of the student co-op work experience. During this interview a decision will be made on the outcomes that would have to be achieved during the co-op quarter. One of the outcomes must be one of the specific focus learning outcomes prescribed by the central co-op office as listed in Table 4.1.

Table 4.1: The four focus learning outcomes as explained by a co-op advisor

<table>
<thead>
<tr>
<th>Four focus learning outcomes</th>
<th>Description of outcomes</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Organisational culture</strong></td>
<td>Students finding and analysing the company’s mission statement to see if the company is operating within it and if it affects positively or negatively on productivity (<em>verbatim</em>)</td>
</tr>
<tr>
<td>(during their first co-op placement)</td>
<td></td>
</tr>
<tr>
<td><strong>Professional ethics</strong></td>
<td>Students are required to find the ethics code for the company or for the industry and compare it to their understanding of it and come up with a scenario of a potential ethics concern for their industry (<em>verbatim</em>)</td>
</tr>
<tr>
<td>(during their second co-op placement)</td>
<td></td>
</tr>
<tr>
<td><strong>Social responsibilities</strong></td>
<td>Students are asked to look at companies’ capability to be a socially responsible company and the student might choose to write about the fact that the company is for example recycling or helped out with the tsunami (<em>verbatim</em>)</td>
</tr>
<tr>
<td>(during their third co-op placement)</td>
<td></td>
</tr>
<tr>
<td><strong>Theory and practice</strong></td>
<td>The student will go out, so that will be after a year’s worth of experience approximately. The student would look at what he’s learning on the job in relationship to the curriculum that he is following (...) the student will interpret knowledge at industry level based on academic studies and apply knowledge secured (<em>verbatim</em>)</td>
</tr>
<tr>
<td>(during their fourth co-op placement)</td>
<td></td>
</tr>
</tbody>
</table>

The industry mentor hereafter assesses the student according to the outcomes which was decided on during the first interview of co-op quarter. The student has the opportunity to assess the industry mentor on his or her performance in guiding the student during the co-op placement. This allows the student also to comment on the assistance and guidance received by the student from the industry mentor during the co-op placement. This process was committed to during the first co-op interview between the student and industry mentor on the four focus learning outcomes.

Over a period of time, the central co-op offices of both HEIs had developed electronic forms which are accessible on a system to be completed by the student and industry mentor after completion of the duty cycle at the industry. The completed forms are made available to the central co-op office to reflect the performance of the student. The
student has to make a final appointment after completing the co-op placement session with the co-op advisor at the HEI, at which time the student discusses experiences when placed with employer.

Figure 4.3 reflects the IM for the co-op process and all administration involved at UC and NWU. The second to the fourth cycle of the IM for the co-op process as indicated in Figure 4.1 (cf alternating university and work cycles in blocks) is recorded in Figure 4.4 [A], [B] and [C]. In order to understand the details of Figure 4.3 and Figure 4.4 it is necessary to highlight three elements to the discussion. The first is to clarify the [A], [B] and [C] parts of Figure 4.4. This is followed by Table 4.2 reflecting the information flow and sources of the IM process which is then graphically represented in Figure 4.3 and Figure 4.4 as a unit.

Figure 4.4 [A] is a graphical interpretation of students staying with the same company for the entire co-op working experience. The [B] part of Figure 4.4 is a graphical interpretation of when students need to change from employer due to unforeseen reasons. Reasons for this change in employer placement include enrichment or exposure expectations of the student that are not being met. Furthermore some students can feel that placements do not pose the right opportunity for them personally to grow or improve in the initial co-op placement and they may then request a change. The last part of Figure 4.4 [C] is the same as Figure 4.4 [A], seeing that flow after a change in placement return to the original flow in the cycle. Each of the parts [A], [B] and [C] requires some further elaboration, keeping in mind that Table 4.2, Figure 4.3 and Figure 4.4 should be read in conjunction.

Figure 4.4 [A] reflects the IM for co-op process when a student remains with one employer for the full placement period of their co-op work experience. Students have to register for every co-op quarter and step one will be repeated at the beginning of each year. Based on students having had a previous registration on the co-op system the student is already active on the system. The students also provide their CVs which was registered on the co-op system and distributed to different employers. Therefore step two to step seven is not applicable if the students remain with the same employer for their co-op quarters four to six. The students are issued with their appointment letters during their first co-op quarter. The student and employer only have to reschedule an interview to discuss expected outcomes during the placement for the new phase. During this interview parties discuss the new targets which have to be achieved as
displayed graphically by step eight shown in Figure 4.4 [A]. The targets and assignments have to be completed on one of the specific criterions as shown in Table 4.2. These targets which have to be achieved are required by the central co-op office and electronic assessment forms have to be completed online. Hereafter interviews take place with a HEI co-op advisor, to secure feedback on the term of placement session with employer and what results were achieved. This process is repeated from the sophomore year to the senior year, during the study period of the student.

Figure 4.4 [B] makes provision for the students registered on the co-op system and who have provided their CVs, who are however experiencing difficulties at the original placement and have to make changes with regard to the employer. One example that was mentioned by a co-op advisor, "We have had some issues with sexual harassment from one particular company. We take that very seriously and that did not have to wait until the end of the term". In this scenario the student was removed from the company immediately and changed to a new employer. This change of co-op employer requires changes starting from step four (cf Table 4.2), when the students’ CVs are electronically sent out to the employers. When the need arises for students to change an employer, a new interview with the new employer should be conducted. If the student is successful and has difficulty with the four assessments, as required by the co-op advisor, it has to be addressed with the employer. The system allows changes to be made. Students are able to make changes and if student changes from a co-op employer it has to be addressed with the specific triad partner group. This triad partner group entails the student, industry liaison and co-op advisor. The system allows changes to be made according to practical experiences in the field by the various triad partners – the system is robust, practical and user friendly to the needs of the users.

The scenario of a student changing from employer during the co-op placement quarters is shown in Figure 4.4 [C] which reflects a different triad partnership involved in the IM for co-op process. The steps in this triad partnership show a repeat of what has taken place in Figure 4.4 [A], with the exclusion of steps 2–7 but returning to steps 1, 8–11 (cf Table 4.2). In this study, as can be seen in Table 4.2 and other tables, the flow of information and the applicable or resulting sources of information (viz documents, email, feedback, et cetera) were identified. These documents are numbered i) to xxxvi) and used accordingly in Table 4.2 to Table 4.9. The list of information sources or documents is as follows:
i) Registration document for co-op or WIL
ii) Degree plan for co-op
iii) Soft skills training documents (e.g. examples of CVs, job hunting methods, interviewing skills)
iv) Final CVs of students (students send CVs to co-op advisor or HEI administrator)
v) Email with students’ CVs attached (email from either the co-op advisor or the HEI administrator to industry liaison)
vi) List of students from industry (e.g. email to co-op advisor to invite listed students for interviews or industry mentor emails or phones students for interviews)
vii) Email from industry liaison to inform students if they were successful
viii) Agreement letter from industry
ix) Outcomes of assessment criteria for the work period from student and industry mentor
x) Assignments done by students (e.g. projects, reports and logbooks)
xii) Site visit report
xiii) Oral examination or presentation
xiv) Invitation to soft skills training or workshop
xv) Email with student’s CV (student sends email to industry liaison or industry mentor)
xvi) Notification form
xvii) Learning guides and logbooks to student and industry
xviii) Employer guide
xix) Template for reports
xx) List of potential employers
xi) Information from attending class (e.g. class notes, tutorial class material, audio recording, video)
xxi) List of students where they want to be placed
xxii) Email with list of students going to work at industry (HEI administrator/WIL coordinator to industry liaison)
xxiii) Service level agreement
xxiv) List from students where they want to be placed
xxv) Simulation with HEI lecturer
xxvi) Patient care records
xxvii) HEI lecturer assessments, industry mentor assessments, or clinical tutor assessments
xxviii) Shift rosters
xxx) Records of hours
xxx) Four case studies
xxxii) Reflection journals
xxxii) Data number audits
xxxiii) Workshop notes
xxxiv) Expo letter
xxxv) Interview documentation
xxxvi) Order forms

The sheer number and variety of the above listed documents allude to the need for IM for the co-op process. As illustrated in Table 4.2, many of these documents feature in the co-op process at the UC and NWU. It should be noted that unique numbers are assigned to types of sources in the table below as well as in consecutive tables, for example, source [ix] features with step 10 and step 11.
Table 4.2: Information flow and sources of the co-op process at UC and NWU

<table>
<thead>
<tr>
<th>Co-op process</th>
<th>Information flow</th>
<th>Information source</th>
</tr>
</thead>
</table>
| 1. Students register for co-op (→) | Student administrator / co-op opportunity to co-op coordinator | i) Registration document for co-op
| | | ii) Degree plan for co-op
| 2. Students have to attend the training in CV writing and interviewing skills (↔) | Student (apply learning) to student administrator / co-op opportunity to co-op administrator to co-op advisor | iii) Soft skills documents: CVs and examples of CVs from co-op advisor; invitation from HEI administrator / co-op coordinator
| 3. Students write their CVs and submit their CVs on the electronic system (→) | Student administrator / co-op opportunity to co-op coordinator | iv) Final CVs of students
| 4. Centralised co-op division will send out the CVs to the employers (→) | Co-op coordinator sends CVs to industry liaison | v) Email with students’ CVs
| 5. Employers will arrange with the centralised co-op division for an interview day when they will interview the students on campus (→) | Industry liaison to co-op coordinator Co-op coordinator to student administrator / co-op opportunity for interview time | vi) List of candidates email
| 6. Employers inform students if they were successful (→) | Industry liaison (phone or email) to student administrator / co-op opportunity to inform if they are successful | vii) Email from industry liaison to inform students if they were successful
| 7. Employers provide students with an appointment letter (→) | Industry liaisons to student administrator / co-op opportunity Student administrator / co-op opportunity send agreement letter to co-op coordinator | viii) Agreement letter or appointment letter from industry
| 8. Students and employers agree on outcomes for their work period and students will be assessed accordingly (↔) | Student administrator / co-op opportunity to industry liaison Student administrator / co-op opportunity to co-op coordinator | ix) Paper of outcomes for work period
| 9. Students have to do assignments on four criteria for the centralised co-op division (→) | Student (apply learning) to student administrator / co-op opportunity to co-op coordinator to co-op advisor | x) Assignments done by students
| 10. Employer and student have to complete electronic assessment forms at the end of the work placement about their performances (→) | Student (apply learning) to student administrator / co-op opportunity to co-op coordinator to co-op advisor Industry mentor to industry liaison to co-op coordinator to co-op advisor | xi) Assessment documents done by industry mentor and students
| 11. Students have to make a 15-45 minutes appointment with their Co-op advisor, to discuss feedback and experience during placement (↔) | Student (apply learning) to Student administrator / co-op opportunity to co-op coordinator to co-op advisor | xi) Assessment documents industry mentor and students

This arrow represents one way flow of information and information sources from one triad partner to another.

This arrow represents a two way flow of information and information sources between triad partners.
Figure 4.3: Information flows between the triad partners of the first cooperative education process at UC and NWU (own source)

Figure 4.4: Information flows between the triad partners of the second to the fourth cooperative education process at UC and NWU (own source)
Based on the feedback received from students and industry mentors the IM for co-op process at UC and NWU along with the electronic system is working smoothly and generates immediate reports. There is however room for improvement at these two HEIs regarding the IM for co-op process. These recommended improvements are based on the comments received in the semi-structured individual interviews and open-ended questionnaires with industry mentors and students respectively. The following suggestions for improvement in the IM for co-op process are made by students and industry mentors:

- Students commented on the standard of the co-op online questionnaires which were found to be vague and repetitive. This in turn allows students to respond with vague and generalised responses. Another gap in the questionnaires on online assessment of the co-op is the absence of a summarised guideline on what the assessment process entails. Industry mentors experience that the online assessment system does not allow for comments on the system, and they find giving their input a cumbersome process. These comments do not adequately indicate levels of performance. The students and industry mentors feel that the questions of the online co-op assessment questionnaires need to be revisited. This should be done in close consultation with the users.

- Students were of the opinion that there was too little human interaction and suggested more human interactions by way of face-to-face meetings. These face-to-face meetings refer to students, industry mentors and co-op advisors. Another proposal by students was the planning and scheduling of a strict calendar of meetings within a specific time frame involving the triad partners. Industry mentors support face-to-face meetings and want at least one meeting per quarter. Industry also supports scheduled workshops with co-op advisors to review programmes and facilitate suggestions on improvement of the co-op process. Industry Site visits by co-op advisors where students are placed would enhance interaction between the triad partners and improve human interactions. Both the student and industry mentors feel that face-to-face meetings with all partners involved are necessary to “further the partnership”.

- Students feel that assessments and feedback of co-op placement is reported on at the end of the placement term but they require mid-term assessment and feedback as well. This end term evaluations affect the overall success of placement as
students need to have issues or challenges experienced at industry level addressed during placement period and not at the end of placement. Issues develop during placement which the student needs guidance on and they cannot resolve the issue because the co-op advisor assessment is only done at the end of the term. The students feel that there has to be a mid-term evaluation.

- The last suggestion for improvement from the student's perspective was that there has to be more communication between the co-op advisor and the industry mentor. These meetings between co-op advisors and industry mentors will improve communication and ensure all the parties are "on the same page”.

The overall impression from the students and industry mentors was that the co-op programme is a success. The students feel that the co-op programme has many opportunities "for aspiring leaders". The industry mentors feel so strong about the co-op programme and the success thereof, that they used their co-op students as tour guides in their industries. The industry mentors also used their co-op students during career fairs to recruit potential students for future co-op placements at their businesses. The good practices from UC and NWU are used to assess its applicability at the UJ.

4.3 Work-integrated learning at the University of Johannesburg

This section discusses the origin of the UJ, reporting structure of WIL and the findings of the interviewed faculties mentioned in the previous chapter (cf Figure 3.2). The terminology 'WIL' at the UJ means the same as 'co-op' at UC and NWU. This term will be used in a South African context when reporting on the history and findings of WIL at UJ.

4.3.1 UJ work-integrated learning and reporting structure

In 2004 the two campuses of the Vista University, namely the Soweto and East Rand Campuses were incorporated into the Rand Afrikaans University (RAU) (Brink, 2010:9). In 2005 the UJ was structured as a result of the merger of two HEIs, named RAU and Technikon Witwatersrand (TWR) which became the UJ in 2005. The UJ is located in Gauteng, the economic hub of SA. It is a well-known HEI generating a high number of graduates annually to industry. The graduates, upon graduation, leave UJ with the
expectation of a position in industry. This expectation is based on an investment made in terms of human capital to undergo specialised education to secure a skill set that is focused on advanced skill application as needed by industry. UJ as a HEI provides various HEI qualification programmes to facilitate career training for professionals. Some of these programmes offer opportunities for industry placement according to the WIL process per faculty.

According to Taylor (2010), the UJ WIL process is similar to co-op at international HEIs and is based on classroom learning and practical sessions which are complemented by structured, real-life experiential learning. WIL is a recognised project within UJ, which conforms to the Green Paper for Post-School Education (DHET, 2012:36). This includes training proposals aimed at enriching and equipping graduates for employment by industry (Taylor, 2010). At UJ WIL is done for the same benefits as described in Section 2.3.

One of the benefits of WIL is that students should be gaining valuable life and work experience prior to graduating. Companies can "try before they buy" entry level staff, says Taylor (2010), and the HEI and its lecturers are in the position to ensure that the programmes offered remain up-to-date and relevant to the industry or sector needs. By ensuring a "best match" between student skills, personality and company culture, the WIL placements often result in full-time graduate placements, which is an incentive for students and companies (Taylor, 2010).

A strategy for WIL has been developed at the UJ in order to implement WIL. Part of the strategy is to enhanced relationships between HEI lecturers responsible for WIL at UJ and WIL mentors in industry. Taylor (2010) explains that the focus of the WIL office within UJ is to "open doors" for WIL in industry and to facilitate relationship building between the UJ HEI lecturers that are subject experts and relevant industry mentors. The WIL process was rolled out in 2011 by way of a WIL Forum, comprising of specific structures and responsibilities and the UJ WIL management strategy was implemented in 2011. Figure 4.5 illustrates the reporting structure of WIL at the UJ.
The structure for WIL in UJ is displayed in Figure 4.5. The reporting protocol starts with the Departmental WIL Coordinators displayed on the far right of Figure 4.5. These coordinators submit reports to Faculty WIL Coordinators for consolidation and feedback at the UJ WIL Forum. The WIL Forum Chair in turn reports to the Senate Teaching and Learning Committee (STLC). The purpose of the UJ WIL Forum is to provide a report on WIL at UJ and to maintain awareness of international and national developments.² The faculties that are part of the UJ WIL Forum are represented by the middle column in Figure 4.5.

The only faculty that is doing WIL at UJ, but is not part of the UJ WIL Forum, is the Faculty of Education. The Faculty of Education places students at schools which is part of the Department of Higher Education and Training (DHET) process. WIL principles are applied with these placements, explained one interviewee, but "it's funded [by the DHET and the Faculty of Education] don't want to get involved". Therefore the Faculty of Education places students at schools which address their need and responsibility in

² Personal communication with Taylor (2011)
terms of WIL placements. The Faculty of Education directly engages with schools (industry) which is a unique relationship pertaining to placement of these students, as part of a government structure. The WIL Forum is populated by the remaining six faculties that acknowledge and accept the WIL Forum.

The partners involved in the UJ WIL triad partnership and the complexity of the relationship is explained in depth in Section 2.3 (cf Table 2.1, examples). Also Figure 2.2 and Figure 2.4 (cf the Janus principle, pyramid with Janus doors) provide a graphic interpretation of the roles and responsibilities of the partners involved. The following section will expand on the current process of the identified faculties and their departments within UJ.

4.3.2 Current work-integrated learning processes at UJ

In this section the processes of the identified faculties and departments are discussed. The WIL process in UJ is a decentralised function (cf Figure 4.5). The representatives on the UJ WIL Forum are the Executive Director of Academic Development and Support, the Head of the Unit for Quality Promotion, the UJ WIL Coordinator and the various faculty coordinators. The departmental coordinators (cf Figure 4.5) report to the Faculty WIL Coordinators, who in turn give feedback to the UJ WIL Forum. The UJ WIL Coordinator briefs the Executive Director of the Division of Academic Development and Support on the status of the WIL process. The Executive Director of the Division of Academic Development and Support chairs the WIL Forum. Mentioned Executive Director is part of the Senate Teaching and Learning Committee mentioned earlier. This Executive Director intern reports to the STLC on the status of WIL in UJ. It is important for the UJ WIL Coordinator to be aware of all matters related to WIL in UJ to ensure the different faculties’ and departments’ WIL information is available when needed.

The processes relating to IM for WIL at the UJ and the findings per identified faculty and the particular faculty’s departments (cf Figure 3.2), are discussed in more detail in the next section. The HEI lecturer and HEI administrator / WIL coordinator for each of the identified departments at UJ (cf Figure 4.6), is at times the same person. The student (apply learning) and student administrator / WIL opportunity is always the same person. The complexity of the dyadic relationships has been illustrated in detail in Section 2.3, Table 2.1 under the complexity example of the Department of Engineering
at UJ. In this example it shows 785,631 possible interactions in relationships for an average year with 250 students in one of the departments of the Faculty of Engineering and the Built Environment.

4.3.2.1 Faculty of Engineering and the Built Environment

The Faculty of Engineering and the Built Environment hosts three departments involved in WIL namely the Department of Electrical Engineering, Mechanical Engineering and Mining. The WIL process in the Department of Mining takes place in the second and third year of their diploma. The departments Electrical Engineering and Mechanical Engineering have WIL processes taking place in their third year of their diploma. Therefore the information sessions with the students, to prepare students for the workplace for the Department of Mining, will be in their first year of study.

The departments Electrical Engineering and Mechanical Engineering conduct interviews with students during their second year of study. The students for the Department of Mining are placed in the WIL programme in their second year for six months and another six months in their third year. The departments of Electrical Engineering and Mechanical Engineering students are placed in the WIL programme in the last year of their qualification for 12 months.

The IM for WIL process for these three departments are shown in Table 4.3 and reflects the corresponding information flow. The table also displays the information sources that were used in information exchange within the triad partnership during the WIL process. As in the above discussion of findings pertaining to the international HEIs, the same approach is followed here in Table 4.3. In other words, the unique numbers assigned to different types of sources are applied in the same fashion here, for example, information source number [vii] features in both Table 4.2 and Table 4.3 as it represents the same type of information source (viz email or telephone call) and is repeated in step 3 and step 4 of Table 4.3. These unique 'codes' (Roman numerals) therefore do not have a sequential function.
<table>
<thead>
<tr>
<th>Information Source</th>
<th>A</th>
<th>B</th>
<th>C</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. HEI lecturer information session with students at the end of second year</td>
<td>HEI lecturer information session with students in first year to prepare the students for the workplace</td>
<td>iii) Logbooks, CVs, examples of CVs from HEI lecturer, job-hunting methods in industry</td>
<td></td>
</tr>
<tr>
<td>2. HEI administrator / WIL coordinator sends out CVs of students to industry</td>
<td>Students apply at companies for a WIL position</td>
<td>v) Email with CVs attached</td>
<td></td>
</tr>
<tr>
<td>3. Industry invites students for interview</td>
<td>vi) Email or telephone call</td>
<td></td>
<td></td>
</tr>
<tr>
<td>4. Industry informs students if they were successful</td>
<td>vii) Email or telephone call</td>
<td></td>
<td></td>
</tr>
<tr>
<td>5. Students register for WIL in 3\textsuperscript{rd} year</td>
<td>Students register for WIL in 2\textsuperscript{nd} year</td>
<td>i) Registration document for WIL and logbook</td>
<td></td>
</tr>
<tr>
<td>6. Students fill in the confirmation letter at the back of the logbooks. Students take it out and send it to HEI administrator / WIL coordinator with a confirmation letter from the company – must be sent during the first week of placement</td>
<td>viii) Agreement letter</td>
<td></td>
<td></td>
</tr>
<tr>
<td>7. Site visit from HEI lecturer</td>
<td>xii) Site visit report</td>
<td></td>
<td></td>
</tr>
<tr>
<td>8. Students complete assessments in logbook and industry mentors sign it as proof that they have done it</td>
<td>Students hand in their logbooks as final assessment document to HEI lecturer</td>
<td>xi) Logbook with all assessments</td>
<td></td>
</tr>
<tr>
<td>9. HEI Lecturer evaluates the portfolio and talks student through it and then have a verbal or oral examination</td>
<td>xiii) Oral exam and logbook</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

This arrow represents one way flow of information and information sources from one triad partner to another. This arrow represents a two way flow of information and information sources between triad partners.

In Table 4.3 the arrows pointing to one side represent that there is a one way information exchange between the identified partners only. An example is the information session with students, held by the HEI lecturer, which is not necessarily one way communication, but the purpose of information exchange initiates with the HEI lecturer and the resultant information source(s) provided by the HEI lecturer to the student. The same principle applies to the arrows in Figure 4.6 and other figures.
following. For example, where the HEI lecturer evaluates the portfolio and talks the student through it and the student then has a verbal or oral examination, the double-side arrow stretches across the HEI lecturer block and student block. In this example, this process only applies to the Department of Mining and thus the arrow is marked [9C] (cf Figure 4.6).

**Figure 4.6: Information flows between the triad partners of the WIL process at the Faculty of Engineering and the Built Environment (own source)**

With regard to the Faculty of Engineering and the Built Environment, the findings of the semi-structured individual interviews and group discussions show that the processes of the current IM for WIL practice need to be addressed and analysed to identify gaps and improve processes accordingly. In this faculty there are unique challenges and experiences which influence the overall effectiveness of the IM for WIL process. The HEI lecturers in this faculty are of the opinion that site visits are the only way which allow for proper engagement with industry mentors at industry level. These site visits also allow engagement with placed students. HEI lecturers mentioned the challenge being experienced with these site visits are shortage of staff which make it difficult to attend to the visits. This staff shortage supports the complexity example shown in Table 2.1, Example group B, as calculated by the dyadic relationship formula by Hargie (2011:452) as well as the explanations following on Table 2.1. The time needed to
travel to sites and the time spent during the visit takes significant effort from the appointed HEI lecturers’ schedules, while having other responsibilities to attend to. As a result these HEI lecturers express their limited capacity to spend the time needed to engage in site visits. Overall staff capacity probably needs to be increased to attend to proper site visits. The main challenge, says the HEI lecturers, is time limitations to do site visits in the WIL programme, as there is not an appointed HEI lecturer to conduct these visits on a full-time basis. The time taken for site visits is further complicated by the geographical dispersed locations where students are placed. Students’ comments reflect these complaints, saying that they do not receive any site visits during their industry placement and they are only required to complete the prescribed report without a HEI lecturer site visit happening.

Industry mentors experienced that communication with HEI lecturers are not up to a required standard. To support this statement one of the interviewed industry mentors commented, "...an email was sent to a HEI lecturer without a response for months. I’ve dropped emails to the point contact at UJ, at times either weeks or months [passed] without [a] response. [Even after phoning] I just get nothing". Industry mentors repeatedly commented on poor communication with HEI lecturers, specifically at the initial stage of student placement at industry. The industry mentors in this faculty feel very strongly that there is a need to create a central office for WIL. This central office has to utilise an IM for WIL process that will ideally allow the exchange of information between triad partners, to be more effective and allow optimal flow of information.

The Department of Mining is the only department that has a very strong partnership with industry, because of their allocation of bursaries to students employed within the industry. The Department of Mining is accredited by the Mining Executive Committee (EXCO), which allows industry to evaluate the HEI curriculum on this field of study annually. The mining sector allocates bursaries to a large number of students and because of this investment the industry engages the UJ regularly. This regular engagement is intended to ensure the curriculum and material that students study, is relevant and in line with what is expected of students at industry level. All the mining industry students complete a "government certificate of competency" after graduation. The other two departments within this faculty (viz Department of Electrical Engineering and Department of Mechanical Engineering) do not have this strong relationship with industry because of the absence of industry engaging the HEI on curriculum content.
The feedback link between the triad partners in the IM for WIL process in this faculty is also not that good. Students receive a logbook containing expected outcomes during WIL placement. This logbook is completed by students and includes an assessment form which the student and industry mentors have to sign. During the group discussion with students it was determined that students were not positive regarding this method of feedback. The students feel industry is not serious about this logbook; one of the students summarised the general feeling, saying, "[the industry mentor] just came in to sign, so (...) it was more like a paper exercise to them, they were never interested".

According to the industry mentor the student is supported by the industry coach who can also assist in the feedback process. The industry mentors further commented on the need for an additional monthly report to the logbook. Industry commented on the quality of the logbook, stating it can be manipulated, "A student can forge the logbook very easily". The students from the Department of Mining have to complete an oral exam on campus, as facilitated by the HEI lecturer. Through this process of examination the HEI lecturer verifies the information in the student's logbook. According to the HEI lecturers the rationale of the oral exam is to allow them to have insight into the work performed by the student at industry level. The HEI lecturers suggest that it will be a good practice if the industry mentor can attend the mentioned oral exams even possibly using video conferencing software or Skype. These suggested interactions could improve and strengthen the feedback process. The triad partners involved in the mentioned process will be provided with information pertaining to feedback on work done at industry level and address the challenges with logbook manipulation. The triad partners from this faculty feel that the following improvements need to be done in the IM for WIL process.

**Recommendations for improvement:**

- HEI lecturers would welcome industry mentors during oral exams.
- Students requested monthly one on one feedback with HEI lecturers and industry mentors.
- Industry requires face-to-face meetings with HEI lecturers at least twice a year, to secure feedback on student logbooks, the standard thereof and if any gaps were identified which can guide industry on what to address.
The above list of recommendations concludes the analysis of the findings and discussion with regard to the Faculty of Engineering and the Built Environment. Generally, WIL is working well according to industry as it facilitates student growth and interaction with industry. Industry provides students with practical knowledge and insight on how things work and it broadens their insight and understanding of their field. The students feel exposure to industry provides them with the opportunity to experience pressure, to resolve equipment on the factory floor which affects production directly, saying, "...I learnt how to work under pressure".

4.3.2.2 Faculty of Science

In the Faculty of Science the WIL process for two of the three departments investigated in this study, namely Bio Technology and Analytical Chemistry, takes place in their third year for only six months. The Department of Food Technology's WIL process takes place during the last six months of their second year and the first six months of their third year. In the Department Bio Technology the students do not receive any training to prepare them for WIL placement. Students of the departments Analytical Chemistry and Food Technology do receive training to prepare them for the WIL placement environment. However the Analytical Chemistry students receive their training in the third year and the Food Technology students receive their training in their second year. Both these departments do WIL training during the semester prior to students going out for their WIL placements. The only department in this faculty sending the students' CVs to the different industry liaisons is the Department of Food Technology. In Table 4.4 the IM for WIL process for mentioned departments reflects the corresponding information flow.

Table 4.4: Information flow and sources of the WIL process for the Faculty of Science

<table>
<thead>
<tr>
<th>Information Source</th>
<th>Department of Bio Technology (3\textsuperscript{rd} year)</th>
<th>Department of Analytical Chemistry (3\textsuperscript{rd} year – only last 6 months of Diploma)</th>
<th>Department of Food Technology (2\textsuperscript{nd} semester of 2\textsuperscript{nd} year and 1\textsuperscript{st} semester of 3\textsuperscript{rd} year)</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Students register for WIL in 3\textsuperscript{rd} year (.watermark)</td>
<td>Students register for WIL in their 2\textsuperscript{nd} year (watermark)</td>
<td>Students send through CVs to industry (watermark)</td>
<td>i) Registration document for WIL</td>
</tr>
<tr>
<td>2.</td>
<td>During 1\textsuperscript{st} semester of 3\textsuperscript{rd} year students receive training (watermark)</td>
<td>During the 1\textsuperscript{st} semester of their 2\textsuperscript{nd} year students receive training on placement (watermark)</td>
<td>i) Registration</td>
<td></td>
</tr>
</tbody>
</table>

Chapter 4: Research findings
<table>
<thead>
<tr>
<th>Department of Bio Technology (3rd year)</th>
<th>Department of Analytical Chemistry (3rd year – only last 6 months of Diploma)</th>
<th>Department of Food Technology (2nd semester of 2nd year and 1st semester of 3rd year)</th>
<th>Information Source</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>B</td>
<td>C</td>
<td>iii) Soft skills training on CV writing, interviewing skills and job hunting</td>
</tr>
<tr>
<td>3. Students apply at companies for a WIL position (→)</td>
<td>Students prepare CVs and send through to HEI administrator (←)</td>
<td>vii) Email from industry</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>xv) Email from student to industry</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>iv) CV from students</td>
<td></td>
</tr>
<tr>
<td>4. Industry invites students for interview (→)</td>
<td>HEI administrator sends CV to industry liaison (→)</td>
<td>v) HEI administrator sends email to industry liaison</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>viii) Email from industry</td>
<td></td>
</tr>
<tr>
<td>5. Industry informs students if they were successful (→)</td>
<td>HEI administrator puts up a list on the notice boards for the students to inform them when they may be called from a company which the HEI administrator provided with student CVs (→)</td>
<td>vii) Email from industry</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>viii) Agreement letter</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>vi) List on notice board for students</td>
<td></td>
</tr>
<tr>
<td>6. Students fill in the confirmation letter at the back of the logbook, take it out and send it to HEI administrator / WIL coordinator with a confirmation letter from the company – they must send it during the first week of placement (→)</td>
<td>Industry invites students for interview (→)</td>
<td>xii) Site visit forms</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>vii) Agreement letter</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>vi) Email from industry to arrange interview with student</td>
<td></td>
</tr>
<tr>
<td>7. Site visit from HEI lecturer (←)</td>
<td>HEI administrator / WIL coordinator gives students a notification form once they have gone for the interview and accepted employment (→)</td>
<td>xii) Site visit forms</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>xvi) Notification form</td>
<td></td>
</tr>
<tr>
<td>8. Students hand in their logbooks as final assessment document (→)</td>
<td>HEI administrator / WIL coordinator gives students a learning guide (→)</td>
<td>xi) Logbooks</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>xvii) Learning guide</td>
<td></td>
</tr>
<tr>
<td>9. Students send notification form back to HEI administrator / WIL coordinator (→)</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>10. HEI administrator / WIL coordinator sends an email to industry liaison (→)</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>11. Students send through a report every 3 months (→)</td>
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</table>

Chapter 4: Research findings 90
The flow of information sources that are exchanged in the triad partnership during the WIL process is displayed in Table 4.4 above. And in Figure 4.7 the IM for WIL processes between the triad partners are displayed graphically, identifying and focusing on the complexity of all information exchanges between the triad partners. The roles and functions of the triad partners are challenging and are managed within a restrictive space. The full resourcing and prioritisation of the process has not yet evolved sufficiently to allow maximum drive of process, ensuring students’ exposure is
supported by industry and resulting in the full impact and broad benefits for WIL being achieved. This is yet to happen.

In the Faculty of Science there are unique challenges and experiences which influence the overall effectiveness of the IM for WIL process. In this faculty the HEI lecturers visit and meet with industry mentors and guide these industry mentors to expose students optimally. Students confirmed site visits of HEI lecturers and industry mentors who actually engaged students on site. During these visits the students were questioned on their projects and whether they could explain what was required of them. Furthermore the students requested that these visits need to take place during the middle of their placement period and not at the end of the placement period because they experience challenges during earlier stages of placement. Industry mentors commented that they do not have a good relationship and collaboration method with HEI lecturers who are responsible for WIL. Industry mentors commented that because of this poor interaction, opportunities for placement are negatively affected, saying, "I actually don't have a clue how it works or who to speak to". Also industry mentors commented that they were unsure of what their responsibilities were and what students were allowed to do. These findings of uncertainty concur with the statements made by Afifi and Morse (2009:88)
and also Afifi (2010:97) as discussed in Section 2.4.1 and therefore the uncertainty of the partners must be addressed. When HEI lecturers interact more with industry, these issues would decrease, as there will be optimal information exchange and guidance to industry mentors and students.

At the Department of Food Technology the HEI lecturer expects students to keep a logbook and to do a presentation on the company they were deployed at. This presentation is intended to comment on the division in which the student worked at and on the actual work that was done as well as what the benefits of this exposure were. These sessions also allow students to share their experiences and allow fellow students to ask questions. Students can compare experiences and exposure at the different industry positions. These sessions are peer reviewed by other lecturers in this department and also by fellow students. The departments Bio Technology and Analytical Chemistry make use of logbooks as a feedback mechanism and the logbooks are an integral part of the WIL assessment. These documents are part of the development plan of students, reflecting what students were exposed to, and what was learnt from the placement experience. Students on placement need assistance from industry with the completion of their logbooks. One challenge that the Faculty of Science experience with industry is that some industry mentors comment on the WIL process as being an opportunity that "provides us with a relatively cheap employment". Some students experienced placement as lacking training or educational capacity building empowerment which has to be addressed where not achieved. Instead students are used to do odd jobs, menial tasks and even "pick up trash". Therefore, from the interviews with the triad partners involved in the Faculty of Science, the following improvements are suggested based on the data collected during interviews.

**Recommendations for improvement:**

- To improve the WIL process HEI lecturers proposed a virtual system allowing students and industry mentors to remotely log into the system, as a type of management system. By registering industry partners as WIL service providers these partners will have to adhere to predefined criteria to make them eligible to be recognised as a WIL service. The industry also supports this virtual system which includes feedback system questions such as laboratory requirements and safety.
• HEI lecturers proposed more regular meetings with industry, focusing on guiding the industry trainers on what has to be done as expected from a HEI perspective.

• Industry wants feedback during HEI lecturer site visits on areas that are lacking, for example, "...if the University comes to visit us, the students can actually present to both the University and the company present to tell us what they've learned [and] what they feel they need to still learn" (sic).

• The students proposed a letter that should be provided by HEI lecturers informing industry on what students are expected to do and the industry mentors should provide students with similar documents to communicate the expected job description. In terms of outcome expectancy, this recommendation for improvement concurs with the statements made by Guerrero et al (2011:84) as discussed in Section 2.4.2.1 and therefore the outcome expectancy of the partners must be addressed.

In the Faculty of Science, the HEI lecturers support WIL as it improves overall capacity of students. Students support developmental opportunities to improve levels of self-confidence when exposed to circumstances in industry, realising that they can actually handle such incidents. The industry is of the opinion that the WIL process is mutually beneficial. This statement is supported by industry confirming that they have access to the best students available and students are provided with real live exposure. Industry feels students have to rotate and experience different companies and various processes, saying, "I believe work-integrated learning makes it better, but unfortunately, if you only go to one company, you only get one perspective".

4.3.2.3 Faculty of Art, Design and Architecture

In the Faculty of Art, Design and Architecture the WIL process in the departments Architectural Technology and Clothing Management are not taking place in the same year of study. The Architectural Technology students are doing WIL during the second year and have to complete 800 hours. In the Department of Clothing Management the WIL process takes place in the third year during the last six months of students' studies. In the Department of Architectural Technology the HEI lecturers brief the students on what WIL is about and what to expect in the industry during work
placement. On the other hand, the Clothing Management students do not receive any training or preparation of what is to be expected in the industry during work placement. At the Department of Architectural Technology the students receive a list of potential employers and they must apply for a work placement. In the Department of Clothing Management the HEI administrator / WIL coordinator sends through the CVs of the students to industry liaisons.

The flow of information sources that are exchanged in the triad partnership during the WIL process is displayed in Table 4.5.

Table 4.5: Information flow and sources of the WIL process for the Faculty of Art, Design and Architecture

<table>
<thead>
<tr>
<th>Information Source</th>
<th>Department of Architectural Technology (2nd year)</th>
<th>Department of Clothing Management (last 6 months of their 3rd year only)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. HEI administrator / WIL coordinator briefs students at the end of the first year on what WIL entails (→)</td>
<td>HEI administrator / WIL coordinator sends students’ CVs to industry liaison (→)</td>
<td>iii) CV writing, interviewing skills and job hunting</td>
</tr>
<tr>
<td>2. HEI administrator / WIL coordinator have a list of potential employers, students must find their own WIL placements (→)</td>
<td>Students register for the module in the 3rd year of study (→)</td>
<td>v) Email with CVs attached</td>
</tr>
<tr>
<td>3. Industry invites students for interviews (→)</td>
<td></td>
<td>vi) Email from industry</td>
</tr>
<tr>
<td>4. Industry confirms with students if they were successful (→)</td>
<td></td>
<td>vii) Email from industry</td>
</tr>
<tr>
<td>5. Students register for WIL in 2nd year (→)</td>
<td>Students do six assessments during placement</td>
<td>i) Registration document</td>
</tr>
<tr>
<td>6. Students receive learning guide from HEI lecturer (→)</td>
<td>Students do a final presentation of experience (←)</td>
<td>x) Email to HEI lecturer</td>
</tr>
<tr>
<td>7. Students receive confirmation letters from industry (→)</td>
<td></td>
<td>xvii) Learning guide</td>
</tr>
<tr>
<td>8. HEI lecturer receives weekly reports from students (→)</td>
<td></td>
<td>xiii) Present final experience to HEI lecturer</td>
</tr>
<tr>
<td>9. Students attend classes five times a year for a week (←)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>10. HEI Lecturer visits 50% of students (←)</td>
<td></td>
<td>xii) Site visit reports</td>
</tr>
<tr>
<td>11. Student submits final report (→)</td>
<td></td>
<td>x) Report</td>
</tr>
</tbody>
</table>

This arrow represents one way flow of information and information sources from one triad partner to another. 
←→ This arrow represents a two way flow of information and information sources between triad partners.

Chapter 4: Research findings 95
In Figure 4.8 the IM for WIL process between the triad partners are graphically displayed, identifying the complexity of all information exchanged between the triad partners. As multiple departments and triad partners are involved with their unique requirements, it is critical to understand the multi-faceted nature of the relationship. This relationship focuses on the realisation of student placements (that is, making placements happen), empowering these individuals to experience real life working conditions related to their studies. Industry partners have to generate the benefits from this process for the students, and the HEI lecturers are the facilitators that make this process workable, thereby benefitting all within the triad partnership.

The Faculty of Art, Design and Architecture has unique challenges which have an impact on the effectiveness of the IM for WIL process. In this faculty, the Department of Clothing is still trying to build a triad partnership with the industry and students. The HEI lecturer succinctly stated the problem with WIL as follows, "we don't have much of a relationship". The students from this faculty feel that the interaction between the triad partners is minimal, although the HEI lecturers do in practice engage with industry mentors. Communication during placement is mainly between students and industry mentors, with HEI lecturers' presence being minimal. The students also feel that the partnership between students and HEI lecturers are not very good due to the fact that...
the HEI lecturers do not know what students are doing during industry placements, saying, "Varsity didn't know what we were doing at work throughout the whole year and only at the end of the year when we did the report".

The students feel that the HEI lecturers do not prepare them sufficiently, as some students are only briefed for 30 minutes and the relationship between HEI and industry is not up to standard, "They just told us how to behave and [without ongoing], they didn't go in depth". The students also feel that the relationship link and information exchange between the HEI lecturer and industry mentor is problematic. Industry commented HEI lecturers just visit students during placement, to confirm students are on site and working. These visits lacked content as no real information is shared; it allows industry to handle students as they see fit, leaving room for unfortunate wasting of learning opportunities.

The assessments in this faculty work different in terms of the two identified departments. In the Department of Clothing the HEI lecturer feels multiple checks are built into the assessment process, such as interviews with industry, student projects and formal assessment documents which are marked. Another measure is the feedback presentations attended by student peers and other lecturers within the department to ensure comprehensive feedback is secured from student peers as well as others. The students appreciate and support the feedback proceeds – presenting what they had been doing at industry and receiving input – but find that industry is not involved.

In the Department of Architecture the HEI lecturers require four to five monthly reports from students during their WIL placement, which they generate from their weekly reports to industry mentors. The industry mentor has to sign off the weekly reports. Students remarked that they do complete these reports, commenting that they could however write whatever they feel and industry will sign it, there is no gauge, "We could have literally written anything to please the Varsity and they would have signed it because according [to the] Varsity standards we need X amount [of hours] for each term". Industry confirmed the weekly reports and the report signing procedure, mentioning that they are only requested by HEI lecturers to provide an assessment on students' performance on specific areas annually.
Another problem at this faculty, which was also mentioned in the discussion of the Faculty of Science above, is students may be used for "cheap labour" or placed incorrectly. Students commented on their incorrect placement and them being used as for example delivery persons, driving around all day. One student explains, "that is why I actually left that one company, because I was basically sent around driving like crazy, [and] I think I drove, 4000 km in 4 months". In this faculty the proposed improvements from the triad partners are suggested as follows.

**Recommendations for improvement:**

- The students suggest integration of work that has to be done between industry and the HEI. There is a misconception between what industry wants and what students actually learn. HEI lecturers should adapt processes where students do one project for industry and at the same time do another project for the HEI. This would necessitate better HEI lecturer-industry collaboration.

- Students experience that communication between HEI lecturers and industry mentors are lacking. Students are of the opinion that the HEI lecturer has to brief and advice industry on what is expected and clarify what has to be done by the students. Students, when deployed for WIL placement, are shocked when exposed to industry expectations and what students have been learning in the past three years. Industry experience a major gap in what HEI considers a designer should know and what industry believes a designer should know. To remedy this situation greater collaboration between HEI and industry is vital (cf Section 2.4.2.1, Guerrero et al, 2011:84).

In the Faculty of Art, Design and Architecture both students and industry feel very strongly that although WIL is currently working, it can be significantly improved if the relationship between the triad partners improves. Students feel they learned more from industry than at university. This experience made students realise the limited knowledge they have of industry employment. Industry identifies employable students with the required talent during WIL placements, saying, "It gives us as a company an opportunity to source potential talent".
4.3.2.4  Faculty of Education

In the Faculty of Education the WIL process takes place from a student's first to fourth year of study. According to HEI lecturers the certification of students to be qualified in their working environment has to be deployed successfully into WIL. Should this process not be there the students cannot be certified as qualified "without the school experience which is work-integrated learning then we cannot send our teachers as qualified teachers" (sic). The flow of information sources that are exchanged in the triad partnership during the WIL process is displayed in Table 4.6, showing the difference of the Faculty of Education and other faculties, notably in their approach to WIL in their Curriculum and Instruction learning offering.

Table 4.6: Information flow and sources of the WIL process for the Faculty of Education

<table>
<thead>
<tr>
<th>Curriculum and Instruction (1st year – 4th year)</th>
<th>Information Source</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Students register in 1st year through to 4th year for the subject called Practicum component: 1st year = 1 week, 2nd year = 3 weeks, 3rd year = 4 weeks and 4th year = 10 weeks</td>
<td>i) Registration documents</td>
</tr>
<tr>
<td>2. Two workshops for industry mentors</td>
<td>iii) Workshop notes</td>
</tr>
<tr>
<td>3. HEI administrator / WIL coordinator places students at one of their preferred performing schools in Gauteng</td>
<td>xxii) Email to industry liaison</td>
</tr>
<tr>
<td>4. HEI administrator / WIL coordinator sends out information via faxe, as well as electronic information to the schools</td>
<td>xxii) Email to industry liaison (informing them of students coming to their school with their subject matter, telephone numbers and details as required by the school)</td>
</tr>
<tr>
<td>5. Student leader will hand over the school experience guide to the mentor teacher</td>
<td>xvii) Learning guide</td>
</tr>
<tr>
<td>6. Students assessed by mentor teachers</td>
<td>xi) Assessment form</td>
</tr>
<tr>
<td>7. Site visit from HEI Lecturer</td>
<td>xii) Site visit reports</td>
</tr>
<tr>
<td>8. Students hand in final portfolio of evidence with all relevant reports</td>
<td>xi) Final portfolio of evidence</td>
</tr>
</tbody>
</table>

This arrow represents one way flow of information and information sources from one triad partner to another.

This arrow represents a two way flow of information and information sources between triad partners.

In Figure 4.9, next page, the IM for WIL processes between the triad partners are illustrated, showing complexity of all information exchanged between the triad partners.
The Faculty of Education has a well-developed WIL placement process however there are areas of concern pertaining to the effectiveness of the IM for WIL process. The triad partnership's multiple layered relationship with multiple departments is challenging and requires good planning and communication. Managing the process in an environment comprising of so many industry mentors – playing their individual roles based on geographically dispersed locations – makes the supervision and liaison challenging.

HEI lecturers are of the opinion that students are well trained and capacitated when deployed to industry mentors, saying "the different subject methodology lecturers will make sure that the students have the necessary content in terms of them being trained as teachers". Several evaluations are undertaken to ensure students are prepared to engage with industry. Industry mentors are engaged and they maintain a good relationship with HEI lecturers, even training annually to prepare future student placements at industry. Students are managed by one of the student representatives, who manage their documents at industry level. This representative also supports the students with advice and guidance when required. If challenges develop at industry level the student representative can facilitate possible solutions for the student. From an industry perspective the students are well advised and provided with all the necessary information needed to complete their projects at industry level.
HEI lecturers also mentioned there is a need to monitor industry mentors in terms of their workload and not to overburden one mentor with too many students. Students are debriefed in two annual sessions on their progress at industry level and any processes found challenging. According to the students they are effectively managed on multiple levels at industry. An example of this dyadic relationship is confirmed in Table 2.1, Example group C, as calculated by the dyadic relationship formula by Hargie (2011:452) and explained in the section following on Table 2.1

Although the triad partnership between all partners and feedback are strong in the Faculty of Education's WIL process, there is still room for improvement and the following suggestions from the triad partners are highlighted.

**Recommendations for improvement:**

- HEI lecturers stated that the use of Blackboard and several processes are in place to record and document the performance of students at industry level. This is being performed by dedicated and appointed individuals who independently report on the performance of students at industry level. These independent reports are provided to HEI lecturers for feedback on performance of students at industry level. The industry questions the confidential nature of feedback reports, as it was found that some students opened the documents. Industry suggests that these reports remain confidential and that the HEI lecturers discuss challenges with students.

- Students commented on their preparation – being taught at university differs to what industry requires and students say, "the one from the school lesson plan is totally different [to the one] from the university" (sic).

- Industry commented that more interaction between HEI lecturers and industry mentors is needed especially with regard to what is expected and to openly share feedback with the HEI. In terms of outcome expectancy, these recommendations concur with the statements made by Guerrero *et al* (2011:84) as discussed in Section 2.4.2.1 and therefore the outcome expectancy of the partners must be addressed.

According to HEI lecturers WIL is effectively working due to industry receiving new students with new ideas and creative thinking, which benefits the industry. Students
feel WIL is critical to enrich, empower, prepare and expose them to real life situations at industry level. Students get to experience and realise what is expected of them and determine if they can cope. The exposure periods to industry need to be increased or extended. All triad partners feel very strongly that the practice of having student leaders or student representatives for the WIL process is the best approach. The industry feels that the fact that they have a student leader is beneficial to the industry as well as the students.

4.3.2.5 Faculty of Humanities

In the Faculty of Humanities it is only the Department of Public Relations and Communication that is involved in the WIL process. The students from this department are doing WIL in their third year for six months. The flow of information sources that are exchanged in the triad partnership during the WIL process is detailed in Table 4.7. Further on, in Figure 4.10, the IM for WIL process between the triad partners is illustrated, noting several relationships in the triad partnership to be considered in the WIL process (cf Figure 2.2 and Figure 2.4, Janus principle, pyramid with Janus doors). The multi-layered and multi-faceted lines of communication and sharing make it challenging to share and implement. The required process effectively allows all inputs and sharing to be made part of the process.

Table 4.7: Information flow and sources of the WIL process for the Faculty of Humanities

<table>
<thead>
<tr>
<th>Public Relations and Communication</th>
<th>Information Source</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Training during 2\textsuperscript{rd} year if students find placement (\textrightarrow)</td>
<td>iii) Workshop on CV writing, interviewing skills and job hunting</td>
</tr>
<tr>
<td>2. Two day workshop with industry (depending on availability of industry) – to prepare students for the WIL placement prior to application (\leftrightarrow)</td>
<td>ix) Outcomes or assessment criteria discussed by industry mentor, explaining to students what would be expected of them</td>
</tr>
<tr>
<td>3. Students register for WIL in their 3\textsuperscript{rd} year (\textrightarrow)</td>
<td>i) Registration document for WIL</td>
</tr>
<tr>
<td>4. Provide support letters (including guidance to the industry mentor, proof of registration) (\leftrightarrow)</td>
<td>xvii) Guidance to industry mentor, proof of registration, check list of what must be in their portfolio</td>
</tr>
<tr>
<td>5. Students have to attend classes on Wednesdays for reflection on learning (\leftrightarrow)</td>
<td>xxii) Class notes, students noting how to do reflective learning and to write reflectively and how to keep a reflective diary – students are given formative assessments to assist reflection on learning</td>
</tr>
<tr>
<td>6. Industry provides students with a contract (\textrightarrow)</td>
<td>viii) Agreement letter</td>
</tr>
<tr>
<td>7. Progress report or ad hoc discussions from industry mentor (\leftrightarrow)</td>
<td>xi) Progress report by email</td>
</tr>
</tbody>
</table>
Chapter 4: Research findings

In the Faculty of Humanities the triad partners involved in WIL are committed to making the process work. The HEI lecturer from this faculty commented that challenges are experienced with industry to secure progress and feedback reports. It seems that due to operational obligations the industry cannot attend to these reports, nor have the time to assess students. These issues affect the efficiency of the WIL process. What complicates the process even further is that students are failing to provide weekly report entries as tasked.

From the students point of view the communication pertaining to the application for industry placements and forwarding of CVs is poor. Students are not briefed on the process and criteria for WIL placement and become victim of non-placement, for not following protocol of which students were unaware of. These findings of uncertainty
concur with the statements made by Afifi and Morse (2009:88) and also Afifi (2010:97) as discussed in Section 2.4.1 and therefore the uncertainty of the partners must be addressed. The department has to invest in communication on WIL with students. According to industry there is minimal communication between them and the HEI lecturers. In their experience, the HEI lecturers simply forward requests for placements with needs to industry, which have to be committed to by industry.

The HEI lecturers receive progress reports from students after two or three months. This report is discussed with the mentor in the presence of the student on about 17 categories. The students' reports provide feedback by way of a portfolio of evidence, consisting seven or eight subjects on reports generated at industry, such as a Public Relations plan. The HEI lecturer agrees that the portfolio of evidence forms the main assessment of the WIL process of the students. According to industry, students are monitored by appointed industry mentors and are debriefed by both the industry mentor and industry trainer responsible for the student. The triad partners in this faculty suggest the following improvements to address the challenges in the IM for WIL process.

**Recommendations for improvement:**

- The HEI lecturer requires a good communication channel between the triad partners.

- From the students perspective they experience the IM for WIL process challenging; they forward their CVs but they cannot prepare or plan where they will be placed. The process is not transparent and makes use of senior students to prepare junior students for placement and what to expect.

- Students suggest shadowing of other students before they are placed for their WIL opportunity.

- Industry suggests that students have to rotate within different facets of public relations and communication in industry in order to expose them to these departments for the purpose of acquiring the necessary skills.

The industry feels that WIL is necessary because "new bright minds" are needed in an organisation. However the students feel they are just used by industry to do the extra
work. This finding reinforces what some students of other faculties experienced, namely "you are just there as someone that they can just pass extra work onto".

4.3.2.6 Faculty of Health Science

The WIL process in the Faculty of Health Science in the three departments (viz Radiography, Emergency Medical Care, and Environmental Health) studied, take place in their first, second and third year. In the Department of Environmental Health it is not a very intensive process. The students only have to work 10 days a year. However in the Department of Radiography the students must be placed at an accredited training center before they can register for their qualification. In the Department of Emergency Medical Care (EMC) the students are placed at an accredited medical institution; this only takes place after a service level agreement is completed by the HEI administrator / WIL coordinator. Placements of the EMC students take place after registration and completion of their first term of classes. Students receive their rosters and start working in April on Fridays and Saturdays.

In the Department of Radiography students alter work and university work every second week, meaning that the students are working two weeks in industry and the two weeks thereafter they attend class at the UJ. The EMC students work every Friday and Saturday at the accredited medical institutions. The HEI administrator / WIL coordinator provides a roster to the accredited medical institutions during the first term. This roster for the students notes who will work with them for the year during Fridays and Saturdays. The students also receive a copy of their roster, when they will be on duty and at which accredited medical institution. In Table 4.8 the IM for WIL process reflects the corresponding information flow and information sources that exchange hands in the triad partnership.

Table 4.8: Information flow and sources of the WIL process for the Faculty of Health Science

<table>
<thead>
<tr>
<th>Radiography (1st to 3rd year)</th>
<th>Emergency Medical Care (1st year to 4th year)</th>
<th>Environmental Health (1st year to 3rd year for 10 days a year)</th>
<th>Information Source</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>B</td>
<td>C</td>
<td></td>
</tr>
<tr>
<td>1. Students must be placed at a training centre accredited by the Health Professions Council of South Africa (HPCSA)</td>
<td>Service level agreements with each of the institutions used (→)</td>
<td>Students register for the WIL subject</td>
<td>viii) Students proof of placement (agreement letter)</td>
</tr>
<tr>
<td>Radiography (1st to 3rd year)</td>
<td>Emergency Medical Care (1st year to 4th year)</td>
<td>Environmental Health (1st year to 3rd year for 10 days a year)</td>
<td>Information Source</td>
</tr>
<tr>
<td>-------------------------------</td>
<td>---------------------------------------------</td>
<td>---------------------------------------------------------------</td>
<td>--------------------</td>
</tr>
<tr>
<td>A</td>
<td>B</td>
<td>C</td>
<td>xxiii Service level agreement</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>i) Registration document</td>
</tr>
<tr>
<td>2. Students register for WIL in first year to third year, or in the case of EMC, first year to fourth year (→)</td>
<td>HEI administrator / WIL coordinator places students in industry (after students tell HEI administrator where they would like to work) (→)</td>
<td>i) Registration document xxiv List from students where they would like to work</td>
<td></td>
</tr>
<tr>
<td>3. Students at UJ for 2 weeks and then at training centre for 2 weeks (→)</td>
<td>HEI administrator sends learning guide to industry mentor (→)</td>
<td>HEI administrator drafts letter to industry and places student (→)</td>
<td>xvii Learning guide xxii Email letter to industry</td>
</tr>
<tr>
<td>4. HEI lecturer do a clinical assessment in the students' training centre (→)</td>
<td>Students complete a number of skills which HEI lecturers assess them on at UJ in a simulation laboratory before they actually go onto the road (→)</td>
<td>Students receive logbook from HEI administrator (→)</td>
<td>xii Clinical assessment at site xxv Simulation with HEI lecturer xvii Logbook</td>
</tr>
<tr>
<td>5. HEI lecturers train students on site and give tutorials in their training centres to the students to ensure there is continuity in teaching (→)</td>
<td>Students complete patient care records for each of their patient interactions and are assessed by their supervising practitioner (→)</td>
<td>Students hand in logbook as final assessment that they have done WIL (→)</td>
<td>xxi Tutorial classes at training centers xxvi Patient care records xi Hand in final assessment</td>
</tr>
<tr>
<td>6. Two assessments with a HEI lecturer (→)</td>
<td>Students and industry liaison receive shift rosters from HEI administrator / WIL coordinator (→)</td>
<td></td>
<td>xxvii Two HEI lecturer assessments xxviii Shift rosters</td>
</tr>
<tr>
<td>7. In addition to the above, two assessments with clinical tutor (→)</td>
<td>Industry liaison receives learning guides from HEI administrators (→)</td>
<td></td>
<td>xxvii Two clinical tutor assessments xvii Learning guides</td>
</tr>
<tr>
<td>8. Keep a logbook of what students are doing, what work is being done signed by industry and students to record how many hours students worked, types of examinations done, and where (→)</td>
<td>Students hand in their patient report forms and rosters every two weeks and they load their data and their patient care data onto the commercial EM data system (→)</td>
<td></td>
<td>xvii Logbook xxvi Patient reports form xxviii Rosters</td>
</tr>
<tr>
<td>9. Site visit from HEI lecturer (→)</td>
<td></td>
<td></td>
<td>xxix Records of hours and types of examinations xii Site visit assessment forms</td>
</tr>
</tbody>
</table>
In Figure 4.11 the IM for WIL process between the triad partners is displayed graphically and identify the complexity of all information exchange between the triad partners.

The Faculty of Health Sciences has multiple challenges because of multi-faceted environments in which students are deployed. The actual extreme conditions which students are exposed to, necessitates careful and continuous evaluation by all the WIL triad partners. Each department within the faculty has their unique skill set and student
profile which has to be managed. Managing the students requires good processes and communication models in place, to liaise and monitor student placement at industry. The diverse nature of deployment and the different requirements of industry make this faculty one of the most challenging in terms of WIL. During WIL placements the students work with real patients and in real life situations that can affect not only the patient (in the first place), but also the HEI lecturer, student and industry as well as the HEI's reputation. The multi-faceted deployment of students according to industry requirements places significant pressure on HEI lecturers to make the process work and ensure students are correctly placed and receive proper appointment and contracts accordingly.

In the Department of Environmental Health the HEI lecturer does not evaluate students on site but rely on written communications as contained in logbooks completed by students when on site. The industry agrees with the HEI lecturer that industry signs the logbook based on work done by the student on industry level and forward the logbook to be evaluated by HEI lecturers. In this faculty HEI lecturers also feel that there is not a strong enough relationship between them and the industry mentors, saying, “there is no interaction beyond our communiqué, our written communication or verbal telephonically – not that we have met or exchanged any other information”. Both the industry mentor and HEI lecturer feel that more information exchange and communication between the triad partners has to take place. The industry mentor proposes a short report on student conduct and any challenges experienced during the placement period. The HEI lecturers also want a document from industry which comments on work done with the student.

It should be noted at this point in the discussion of the research findings that the students from the Department of Environmental Health did not attend the group discussion and therefore the inputs were only from the HEI lecturer and industry perspective. It is clear from the semi-structured individual interviews with the HEI lecturer and industry mentor that the information exchange and the relationship between the partners are not strong and need urgent improvements. The departments of Radiography and EMC have a very good relationship and information exchange process.

The EMC department does laboratory simulations with students to verify their preparedness to be deployed to industry level. The students are evaluated in these
laboratory simulations before they are allowed to work in the field or road. The term 'road' refers to students providing emergency care during accidents on the public road system and other medical emergencies. The industry mentor acknowledges the assimilation accreditation of students; the HEI lecturers are doing the assimilation accreditation of students as accredited by industry. Industry is allowed to evaluate students through simulations, allowing students to register at training practices. Although the HEI lecturers run their own field vehicle, they are not supporting students deployed in same field vehicle's geographical location.

The HEI lecturers are not always satisfied with the standard of feedback on student performance received from industry. The feedback and assessment in the EMC department are done by way of logbooks and simulations. The students however feel that the logbooks are not marked and can be completed by their co-students or 'buddy'. Students work in a "buddy system" and are requested to have the buddy complete and verify the entries which make the process unreliable and open to dishonesty. The industry perceives logbooks as a good tool because it guides industry regarding which processes to be attended to.

Students are assessed by their supervisor practitioner at industry level. The Emergency Medical (EM) data system allows creation and validation of records of students' activities. This can be used to interpret and monitor student performance. The students further commented on informal assessments, which allow students on site to secure clarity on processes which they were not aware of at the time, which in turn develop their overall skills and knowledge.

Industry mentors commented on the creation of the joint academic liaison committee. The communication at the hospitals is with the students, but the HEI lecturers visit industry to evaluate standards, policies and procedures. The industry mentor feels the more exposure students have on industry level the better skilled they become.

From the Department of Radiography a student coordinator is referred to as a 'clinical facilitator', whose function is to communicate and verify students' deployment in the field, addressing issues as they arise. This clinical facilitator can roll up any issue to the relevant head of department (HOD) at the HEI for intervention. Further the HEI lecturer can provide inputs at training centers where grading is done. The communication process is clear, "Regular meetings are scheduled by HEI lecturers where department
representatives (or) department mentors attend once a term on student progress. Students have their own forums to present their concerns at the term session”.

HEI lecturers also make use of 'clinical tutors' (viz industry mentors for the Department of Radiography), at workshops to determine what industry wants, saying, "we have workshops with the clinical tutors, as well to make sure they know what we expect from our students and what the criteria is" (sic). Industry agrees with this statement from the HEI lecturer that they have quarterly workshops on the progress of students with UJ, including clinical tutors. This allows industry to engage lecturers and discuss any challenges.

The students do not think communication channels are working well, specifically related to clinical tutors. Students feel the clinical tutors are not doing what they are supposed to and do not guide students as they should, nor do they engage into tutorial sessions. The students feel that the HEI has to monitor the clinical tutors better, saying, "there is no monitoring from UJ with regards to what the clinical tutor is [doing] and our clinical tutors are supposed to do tutorials". This observation by students concern those times when the HEI lecturers attend practice sessions and then there is an overnight improvement in standards and students “notice that suddenly the atmosphere, everything is different – no! – definitely everybody, working on this false pretense, everything is so nice here, we treat our students so nice” (sic).

The students in this department, EMC, are assessed by keeping logbooks for a period of two weeks out of office, as they know they will be assessed on these notes supported by signatures of professionals on site. The students from this department feel very strongly concerned that qualified personnel do personal stuff while they, the students, are expected to do the work, "the qualified expect you to do all the patients while [they] sit and Facebook and do all that kind of stuff" (sic). However, in spite of all these challenges experienced by the triad partners, the HEI lecturers state that WIL is working well. This statement is based on the students’ invaluable exposure to industry and the opportunity to experience real work scenarios which will capacitate them in learning well. WIL is also favoured by students, as they are exposed to more information in the field than in class, which enhances learning and their overall personal development. Therefore in the Faculty of Health Science the triad partners suggest the following improvements in the IM for WIL process.
Recommendations for improvement:

- The major challenge for HEI lecturers is the supervising practitioners used to assist with assessments, which are already overburdened with work expected to be done from industry, "supervising practitioners are already overwhelmed in terms of the amount of patients they are seeing".

- HEI lecturers propose more regular and routine feedback and progress sessions allowing more interaction with students and industry and also suggest that the triad partners need another forum to get together.

- Students feel they want to be part of student life on campus in their first year and do not want to engage in field work, to such an extent so early in their training. They propose scheduling field work to commence in the last quarter of the first year.

- Students want to work with one mentor and build a relationship with the mentor because such a process allows student information on their current standard and areas to improve on.

- Students also propose the development of a student assessors meeting schedule and they want more interest from HEI lecturers interacting and communicating with appointed mentors, working with students, not just focusing on the assessment forms. The students want feedback from the HEI lecturers on their progress. Students also want HEI lecturers to phone clinical coordinators appointed to students and find out how students are coping.

- From an industry perspective industry representatives are required to sign the workbook of the student which is then evaluated by the HEI lecturer. However no communication or feedback is provided to industry. Industry would appreciate feedback on whether students were tested and found competent, or were there students having difficulty with a specific process. This is needed from HEI level because students do not report if they experience any difficulties, and thus industry cannot address those areas lacking.

In summary, the students feel that WIL works well, but it places an immense pressure on students to perform and grow personally. Being exposed to these industry processes and realities forces them to adapt and cope. The students reflected on the process as it even resulted in them changing their personalities, similar to growing up very fast to become adults to cope in this filed. One such reflection articulates, "/
noticed my classmates how quickly they have changed, how quickly they have grown up and became responsible young adults”.

4.3.2.7 Faculty of Management

In this Faculty the WIL process in the researched departments namely Marketing, Hospitality Management and Tourism have the following unique characteristics in terms of the WIL process:

In the Department of Marketing, WIL forms part of two modules (viz Personal Selling and Sales Management). Students register for these two modules during their first and second year. These modules are so-called ‘life performing’ modules, meaning that the students will meet with the industry, receive their products, sell their products and immediately record their sales on the Direct Selling Association (DSA) data system. This is done to evaluate students’ performance and constantly monitor their activities using the DSA database by the HEI lecturers and industry mentors. All partners involved in this programme can see what the selling or performance levels are of the students. The students meet with the industry mentor once a week to put in their orders and to give them the money for the sales done. If the students reach a target of R5000 it equals 50% in terms of marks. This means the student passes the module and does not have to carry on selling any more products for the year.

In the Department of Tourism the HEI administrator / WIL coordinator gives the students a letter to approach the industry with, seeking a WIL placement appointment. The HEI administrator / WIL coordinator typically approaches the industry liaison and schedules a meeting. The students are then interviewed for a WIL placement. Both the departments of Tourism and Hospitality Management incorporate WIL within the last six months in students’ third year of study.

In Table 4.9 the IM for WIL process reflects the corresponding information flow. Included in the display are the information sources that exchange hands in the triad partnership during the WIL process.
### Table 4.9: Information flow and sources of the WIL process for the Faculty of Management

<table>
<thead>
<tr>
<th>Tourism (last 6 months of 3rd year)</th>
<th>Hospitality Management (last 6 months of 3rd year)</th>
<th>Marketing (1st year and 2nd year)</th>
<th>Information Source</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>1.</strong> HEI lecturer gives students three workshops, upon which they do CV writing, job interview skills and job hunting skills (→)</td>
<td>During the 4th quarter of the year the DSA and the industry and HEI administrator meet in the year prior to the enrolment year, to tie down the contracts and finalise everybody's roles and responsibilities (←)</td>
<td>iii) Workshop on CV writing, interviewing skills and job hunting viii) Agreement letters</td>
<td></td>
</tr>
<tr>
<td><strong>2.</strong> Students register for the WIL module in 3rd year and receive learning guide of expected outcomes for the WIL module and logbook for WIL (→)</td>
<td>Two day workshop with students (←)</td>
<td>i) Registration document xvii) Logbook xvii) Learning guide xxiii) Workshop notes</td>
<td></td>
</tr>
<tr>
<td><strong>3.</strong> HEI lecturer gives students a letter to approach industry for a job (→)</td>
<td>HEI administrator / WIL coordinator sets up meetings with industry liaison for students (→)</td>
<td>Expo held for the students where the students will go and select a company from the ones that the DSA has chosen (←)</td>
<td>xxii) Letter for industry xxii) Email to industry xxxiv) Expo letter and info</td>
</tr>
<tr>
<td><strong>4.</strong> Students send CVs to HEI administrator / WIL coordinator (→)</td>
<td>Industry interviews students (→)</td>
<td>Students register for Personal Selling or Sales Management – 1st year: Students register for Personal Selling Module B and they have to reach a sales target. 2nd year: Students register for Sales Management, Module B where they set up a network by getting three people working for them (they become the student's employees) (←)</td>
<td>vi) Email with attached CV xxxv) Interview documents i) Registration documents</td>
</tr>
<tr>
<td><strong>5.</strong> Industry conducts interviews at UJ (→)</td>
<td>Industry informs students if they were successful (→)</td>
<td>Students are evaluated on the sales target, students key in their sales target on the DSA interactive database R5000 = 50% (←)</td>
<td>xxxv) Interview documents vii) Email or telephone call xi) Electonic</td>
</tr>
<tr>
<td></td>
<td>Tourism (last 6 months of 3rd year) A</td>
<td>Hospitality Management (last 6 months of 3rd year) B</td>
<td>Marketing (1st year and 2nd year) C</td>
</tr>
<tr>
<td>---</td>
<td>-----------------------------------</td>
<td>-------------------------------------------------</td>
<td>--------------------------------</td>
</tr>
</tbody>
</table>
| 6. | Industry informs students if they were successful (←→) | One day WIL workshop with students (work through learning guide and students receive confirmation letter which states that students are accepted at a specific Hotel) (←→) | Students meet industry members once a week during DSA period to receive their orders and place new orders (←→) | vi) Email or telephone call  
vii) Workshop  
viii) Agreement letter  
xxvi) Order forms |
| 7. | HEI lecturer sends out mentors guide to industry (←→) | HEI administrator / WIL coordinator sends email to industry to confirm students working at their Hotel for the following six months (←→) | xxii) Email with attached mentor guide  
Email to confirm placement with industry |
| 8. | Site visit from HEI lecturer once a semester (←→) | | xii) Site visit report |
| 9. | Students present their experience to HEI lecturer and fellow students (←→) | Five assessments are done during the WIL period as well as five monthly reports (←→) | xiii) Presentation document from students  
xv) Assessments from students |
| 10. | Students hand in logbook as final assessment (←→) | | xi) Logbook with assessments |

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This arrow represents one way flow of information and information sources from one triad partner to another.  
←→ This arrow represents a two way flow of information and information sources between triad partners.

In Figure 4.12 the IM for WIL process between the triad partners is illustrated. The departments which make up this faculty are unique and diverse. In order to make the WIL process effective in this faculty would require thorough planning. Strategies have to be developed which will complement the unique employment sector and the wide spectrum of industry mentors' requirements. Though the need is diverse and complex (cf Figure 2.2 and Figure 2.4, Janus principle, pyramid with Janus doors), opportunity for the triad partners exists to communicate and collaborate. This is the basis of structuring such a WIL model which will accommodate the needs of all partners involved.
Illustrated above, the Faculty of Management's information flows between the triad partners of the WIL process paint a complex picture (cf Figure 4.12). Nonetheless, the Department of Marketing find the WIL process is working well. The HEI lecturer meets with the DSA, the umbrella body for the direct selling industry, at the end of the fourth quarter every year. The industry mentor supports weekly communication with students – DSA member companies interact on a weekly basis with students. In this DSA programme "the student is evaluated by his sales target; the students must sell for R5000 in order to get a 50% pass".

In the Department of Hospitality Management student performance is evaluated by HEI lecturers during placement. The department promotes any opportunity to secure placement of students for employment. Students are mostly placed in industry based on their good performance at industry. In this department the industry mentor has the emergency cell phone number of the HEI lecturer, should an emergency situation arise at work. The industry mentor however feels that the communication and contact between HEI lecturers and industry is minimal.

In the Department of Tourism the HEI lecturer said that the students are matched with the industry that they prefer to engage in. After students have been placed they are
closely monitored and visited once a semester. Attempts are made to communicate regularly within the triad partnership according to the HEI lecturer. The industry mentor disagrees in this regard, saying "there's no communication between me and UJ". As mentioned above, the Faculty of Management is involved in a wide spectrum of industry whose requirements are diverse and HEI lecturers have to strategise accordingly.

According to HEI lecturers the assessment and feedback process in the departments Hospitality Management and Tourism is done by industry to the student and after the assessment session, a logbook is signed by both. HEI lecturers share feedback information with students to guide and advise students of any shortages in their performance identified during placement. Opportunity is given to students to present their experience to HEI lecturers and fellow students. Because the students from the departments Hospitality Management and Tourism did not attend the group discussion interviews, a void exists in the place of the student voice. In a sense, this void voices the complexities of IM for WIL. The improvement suggestions from the student's perspective below are only from the Department of Marketing students' perspective.

The industry, students and HEI lecturers from the three researched departments suggest the following improvements.

**Recommendations for improvement:**

- HEI lecturers find the feedback process works well, however more visits to students and more skilling of students are required.
- One of the HEI lecturers suggested that there has to be a more formal structured setup for the IM for WIL process.
- Industry proposes an evaluation sheet to be provided to students and monthly meetings for feedback and progress.
- Electronic communication should be employed more efficiently; industry feels that if they had an electronic feedback sheet monthly, the feedback process would be greatly enhanced as will the overall communication between triad partners.
- Students suggested that the DSA programme has to include business to business distribution.
The above recommendations for improvements bring the discussion of the information flows between the triad partners of the WIL process of the UJ faculties of Engineering and the Built Environment, Health Science, Education, Humanities, Arts, Design and Architecture, and Management to an end. The next section draws on the above analyses of the findings in order to identify commonalities in the various faculties' processes.

4.3.3 Identified WIL process commonalities in the UJ faculties

By studying the findings of each of the investigated UJ faculties above, the commonalities in their processes materialised. These commonalities may be of value in developing a conceptual IM for WIL framework for the University of Johannesburg.

4.3.3.1 Information

WIL is an information intensive process. For example, all students have to attend soft skills training such as in CV writing and interviewing skills, all students require feedback, et cetera. All parties in the triad partnership require information (information seekers) and they generate and provide or supply information (information providers). Through the semi-structured individual interviews and group discussions it became clear that HEIs have to supply more regular and factual information to the industries and students related to the WIL process. This information has to clarify the roles and responsibilities of each partner involved in the IM for WIL process. The extent to which templates and automated responses can be combined with individual personal feedback has to be investigated.

4.3.3.2 Registration

In this study it became clear that students register for the WIL process as part of their responsibility for WIL placement. Being registered, will allow more interaction from industry that has to evaluate students' CVs and identify their unique needs in terms of preferred candidates. Also industry registration criteria should be considered. Criteria will allow the verification and evaluation for registration and accreditation as a registered industry partner of UJ. This registration will allow uncomplicated industry selection of students for WIL placements. Proposed accreditation evaluation will provide industry with clear criteria of student placement and what is required from
industry and what is allowed for students to engage in. This will formalise interaction and communications between the triad partners. A system for the registration of industry partners and a database with students CVs would facilitate the placement process and offer a single platform for this kind of information exchange.

4.3.3.3 Placement preparation

Workshops are provided aimed at preparing students for placement. Students receive preparatory information in connection with what is expected of them during their WIL placement. For example the students receive their logbooks and the HEI lecturer explains to them their assignments and prepares them on what is expected of them. Consideration can be given to appointing senior students as an industry coordinator or representative to assist in preparing students for placement. This could be a student who has previously been placed at industry and are conversant with the process at industry to explain to students what to expect at industry level. Typically students compile their CVs and submit these CVs to the HEI lecturer. Alternatively students send out their CVs to the identified industries. HEI lecturers do the interviewing role plays with students to help prepare them for their interviews for WIL placement. In a centralised process the CV writing and interview preparation could become a centralised function which would free up the time for HEI lecturers who are duplicating this commonality in up to 16 departments.

4.3.3.4 Interviewing for placement

After industry has had the opportunity to study students CVs, they will arrange with the students directly for an interview or with the HEI administrator for an interview day with students on campus. After the interview, industry will inform students if they were successful. If the students were successful with the interview, the industry will provide the students with a letter of agreement. This process can be facilitated using a centralised platform such as a WIL portal. This WIL portal can be set up in a way which will allow specific permissions to the triad partners. One such permission may be, for example, access to the HEI's online WIL year planner and access to the venue booking system for interviewing for placement.
4.3.3.5 WIL experience

WIL is an experience to be captured and reflected upon for a variety of reasons. HEI lecturers hand over a logbook and discuss with students the outcomes expected for their work period and what they should be experiencing. The logbook acts as a reflecting journal recording the WIL experience on the one part, and on the other part, the logbook informs students of how they will be assessed. This logbook also guides industry on what has to be done and what and when students are required to do the tasks. This WIL experience logbook could be implemented as an electronic logbook with student, HEI lecturer and industry access and permissions for updating different fields. A typical timeline function, for example, will give a chronological representation of the experience.

4.3.3.6 Submission and site visit

Industry and students have to complete and submit assessment forms in the logbook during the student's work placement on all duties performed including processes exposed to. HEI lecturers have to do site visits to students during their WIL placement and assess students in the working environment. The HEI lecturers also have to interview the industry mentors before, during or after site visits to determine if students' performances are on standard and determine whether industries have any matter which may require intervention. Industry can also be advised on what is expected to be completed with the student and submitted. If there are any areas which need to be addressed, these may be raised, as students generally do not share content of their industry discussions with HEI lecturers. A centralised WIL office could facilitate the training of dedicated site visit assessors to assess multiple disciplines.

4.3.3.7 Assessment

Students have to hand in logbooks which the industry representative and the student have to sign. The parties on signing agree that the students have completed all assignments as required during placement at industry. Verification by assessment, oral exams and feedback presentations can strengthen feedback sessions and standards corroborating student exposure. Site visit evaluation forms form part of students' assessment during the facilitation of interaction of the HEI lecturer with the students. With a centralised WIL function assessments such as oral exams could take
on the nature of a WIL colloquium with group presentations per faculty instead of individual oral exams.

4.3.3.8 Feedback

Feedback is crucial. Students need feedback from the HEI lecturer – feedback on whether their logbooks are complete and if they are competent in the WIL module. Industries also want some feedback on areas which were found good or lacking during student placement. Some faculties are using oral feedback to students. These feedback sessions are used to guide students where they can improve on for the next WIL placement. For example, the EMC students receive feedback from industry mentors, while they are on the site attending to a medical emergency. On return the HEI lecturer feedback sessions have to provide students with feedback and insight on their performance at ‘road' level (mentioned above) and facilitate training for the next WIL placement. With the potential relief on capacity that a centralised WIL function and WIL portal could facilitate, HEI lecturers could be in a position to cope better with giving feedback. In addition a faculty wide colloquium would offer wider reflection including peer feedback and intra-disciplinary learning opportunities.

The above eight commonalities have been highlighted on purpose. In the discipline of information management, Sun and Han (2012:11-135), explain how the relative distance between keywords in documents (proximity), where in a document the terms occur (distribution), the co-citation frequency between terms (co-occurrence), and the main theme, topic, and sub-topics (on-topic issues) of the documents give real-world heterogeneous information networks, such as the triad partnership’s information flow for the WIL process –

An in-depth understanding of the relationships among different types of data and their regularities, models, patterns and anomalies, hence a deep insight of the networks (Sun & Han, 2012:135).

The findings of this study not only paint a complex picture of the WIL process and its information flows (cf Janus doors within the pyramid) but aims to overcome the complexities by proposing a conceptual framework for IM for WIL by building on the commonalities identified above.
4.4 Summary

In this chapter the history of the UC, NWU and UJ and the findings relating to the WIL process of these research sites were presented. From interviews and questionnaires it became clear that all partners involved in the IM for WIL process appreciate the importance of the WIL programme. However it is also clear there are major issues that need to be addressed in terms of the managing information, managing placements and students evaluation. The triad partners support the principles of the WIL process. This acceptance of the impact of the WIL process in facilitating growth of student learning makes it an attractive and highly sought after process. The value of WIL and the need for an IM framework to manage the process have to be put in place to guide and facilitate this process. The research has shown this process to be highly valued internationally and have had highly positive results in the employment of students in their respective industries.

Based on these international success frameworks for industry placements of students which in turn are compared with local processes on WIL, it is clear that good practices can be applied to the South African HEI environment. The current status of WIL at UJ in South Africa has provided good insight and understanding of the dynamics and circumstances impacting on the process. By actually engaging the triad partners which are directly involved in the process, practical feedback and insight was secured to identify gaps and shortages as well as effective processes that are in place to engage students in WIL. It is clear – WIL is a process which is based on well-structured and researched IM principles. When effectively managing the information flows and sources pertaining to the WIL process a management framework will allow WIL to work for all affected partners. A well developed and structured framework for IM for WIL will facilitate student employment and placement in industry. Industry needs educated students; this is critical to the growth of the industry and the future of organisations.

The next chapter will present the proposed IM framework for WIL for an HEI perspective. The feedback from the departments investigated in this study is supplied and through the use of a nominal group technique the findings for the altered framework are further discussed.
CHAPTER 5

CONCEPTUAL FRAMEWORK FOR INFORMATION MANAGEMENT FOR WORK-INTEGRATED LEARNING

"The distance is nothing; it's only the first step that is difficult."
Marie de Vichy-Chamrond, Marquise du Deffand, 1697-1780,
French noblewoman and literary figure
(Reilly, 2006:127)

5.1 Introduction

In this chapter the proposed conceptual framework for information management (IM) of work-integrated learning (WIL) is discussed. The framework was first presented to lecturers of the University of Johannesburg (UJ) which is a comprehensive university in the South African cadre of higher education institutions (HEIs). The HEI lecturers represented the various faculties and departments involved in this study. A nominal group technique was used to present the findings of the current IM for WIL process within UJ to the HEI lecturers and the proposed conceptual framework for IM for WIL for UJ. The purpose for having the nominal group technique was to ensure that the framework could be adjusted according to their suggestions. However, from the discussions it would be noted on page 137 that the nominal group participants did not want the framework adjusted.

5.2 Proposed conceptual framework for information management for work-integrated learning

The envisaged conceptual framework for IM for WIL at UJ will focus on only those faculties that are actually including WIL as part of their curriculum. Based on the good practices in use by the two international HEIs and the commonalities discussed in Chapter 4, it is clear that the development of a centralised unit has to be perused. This framework allows for a single repository that can be centrally managed. Therefore a centralised WIL unit for UJ is structured based on the centralised IM for WIL portal controlling and facilitating all aspects of WIL as recommended in the previous chapter. The framework is graphically displayed in Figure 5.1.
Figure 5.1: Proposed conceptual framework for IM for WIL at UJ

- **1a** Workshops for all soft skills training required by departments
- **2a** Upload CVs and register for WIL
- **3a** Send CVs to industry
- **4a** Arrange interviews - students
- **5a** Informs students if they were successful
- **6a** Send agreement letter
- **7a** Industry input on student outcomes
- **8a** Do assignment and upload completed assignment and complete electronic assessment
- **9a** Site visits by trained WIL assessors
- **10a** Oral feedback with WIL advisor
- **11a** Feedback to industries and SETAs
- **1b** Visits to and approval of industry as a WIL placement
- **2b** Register at SETAs and UJ as a WIL placement industry partner
- **3b** Information sessions to brief WIL industry partners. SETAs will attend these information sessions
In this proposed centralised solution the appointment of a WIL advisor will support the administration functions and fulfil the roles and responsibilities of the HEI administrator / WIL coordinator. Most of the roles and responsibilities of the HEI lecturers as discussed in Chapter 4 will be facilitated by such WIL advisors. The proposed WIL advisor will also liaise with the HEI lecturers and involve the HEI lecturers in site visits, approval of industry partners, assessment of students and feedback to students, industry and the Sector Education and Training Authorities (SETAs). A faculty advisor for WIL from each faculty and the SETAs representative from each discipline will form part of the relationship.

At the bottom of the proposed conceptual framework for IM for WIL at UJ as shown in Figure 5.1 point [1b] to [3b] are depicted as a three year cycle which takes place every third year. The faculty advisor of the centralised WIL unit arranges a meeting with the appropriate HEI lecturer and SETAs. At these meetings mentioned attendees will discuss what the criteria should be to which industry need to conform to, to be selected as a WIL placement industry member for UJ. Hereafter the faculty advisor arranges a meeting with the HEI lecturer and industry representative to plan and schedule an industry site visit. This site visit is conducted after receiving an application from industry to be interviewed and approved as a WIL placement industry partner for UJ. Thereafter the industry will register at the SETAs and UJ as a WIL placement industry partner. After registration as a WIL placement industry partner the faculty advisor will arrange information sessions with the approved industry partners. At these scheduled information sessions the HEI lecturer and SETAs will brief the industry partners on what is expected of them as approved WIL placement industries.

On the left side of Figure 5.1 the WIL process is numbered [1a] to [11a] which when analysed displays the flow of information and documentation. This process is subsequently discussed. Firstly the faculty advisor will arrange workshops for all soft skills training in collaboration with the HEI lecturers from each department in the different faculties. This is done in a manner suitable to the different departments which have specific and unique soft skills training requirements. After these workshops with the students, the students will have to register for WIL and only after they have been registered as WIL students, they will be able to upload their CVs onto the WIL portal.

The faculty advisor will distribute the CVs with a guiding letter to the responsible registered WIL industry partners relevant to the student's qualification. The industry partner will then inform the faculty advisor using the WIL portal as a communication
platform to report feedback on the outcome of placement and if the student was successful. The faculty advisor will then inform the students if their applications for placement were successful. The industry partner is responsible to send an agreement letter to the faculty advisor who in turn will send a copy of letter to the student again using the WIL portal. The industry mentor and student will have a meeting on the first day of the WIL placement and discuss the outcomes that the student has to achieve at the end of the placement term. Thereafter the outcomes as achieved by the students during their WIL placement will be uploaded onto the WIL portal by the student. The student will then complete all their assignments and upload these assignments and complete the required electronic assessments on the WIL portal.

During the students' WIL placement term the faculty advisor will arrange site visits for the HEI lecturers to visit the students and industry mentors on site, where the students (and industry mentors) will be assessed. The HEI lecturer has to upload the site visit evaluation forms onto the WIL portal after the site visit was conducted. After the completion of the WIL placement term the students will receive oral feedback from the HEI lecturer by way of a form of colloquium per faculty. The faculty advisor will arrange this colloquium with the HEI lecturer and students. After this feedback session with the students the faculty advisor will arrange a day session per faculty where HEI lecturers will give feedback to the industry partners and the relevant SETAs. This platform can be used where all three parties are able to receive feedback on performance of student during the WIL placement term. The session will allow for discussion of problem areas which developed during the student WIL placement with the industry mentor. This flow of information and documentation through a centralised WIL unit is channeled in turn to the relevant partners in the relationship. This process as displayed on the left side of Figure 5.1 is completed annually.

As seen in Figure 5.1 the centralised WIL unit will engage in the direct information exchange with the SETAs, industry, students as well as the HEI lecturers from each department in the affected faculty. An advisory board will be establish by the faculty advisor per faculty who is responsible for arranging an advisory board meeting with the student representatives, SETA representative and HEI lecturer from each department in the faculty. These advisory board meetings have to take place once every three months to facilitate proper information exchange between all partners involved in this conceptual framework.
A forum for WIL at UJ must be structured by the centralised WIL unit that will include the director of this UJ centralised WIL unit, WIL advisors of each faculty, industry representatives of all industries involved in WIL, student representatives, faculty advisors and head of the unit for quality promotion. This UJ WIL forum will meet twice annually to exchange information on status and progress on WIL within their faculties. The director responsible for the proposed centralised WIL unit for UJ, will brief the Senate Teaching and Learning Committee (STLC) on progress on WIL within UJ. The WIL portal will facilitate a collaboration platform and act as a repository for proper record keeping by providing an audit trail for information exchanges between the various WIL partners. This framework (Figure 5.1) was presented in a nominal group technique as reported next.

5.2.2 The nominal group technique discussion

The nominal group technique discussion was held to secure inputs from HEI lecturers to determine if the proposed conceptual framework for IM for WIL as shown in Figure 5.1 can work in the UJ environment. The overall feeling and experience of the nominal group participants were that the proposed process can work as all parties can benefit. Certain areas however need to be addressed as discussed in Section 5.2.4. The following procedure was followed during the nominal group technique discussion with the 16 HEI lecturers from UJ who were involved in the semi-structured individual interviews in this study:

- The participants for the nominal group technique discussion were welcomed and the purpose and procedures of the nominal group technique explained to attendees. Of the 16 participants (HEI lecturers from UJ) that were invited, nine arrived for the nominal group technique discussion.

- The outcomes of the study of which they were part were explained and the group was briefed on the findings and commonalities of the various faculty processes so far (cf Figure 4.6 up to Figure 4.12). The proposed conceptual framework for IM for WIL at UJ (cf Figure 5.1) was explained in detail. After this briefing the participants had the opportunity to pose questions regarding any areas which needed clarification or elaboration.

- The participants each received the same two questions on two separate sheets of paper (hereafter referred to as 'response cards' in the nominal group
The first question: **What about this framework can work well for your department’s purposes?** And the second question: **What is the main issue that would have to change for the framework to be effective in your department?**

- The response cards from each participant were collected and placed on the venue's wall. Hereafter every response as recorded on the individual response cards was discussed. The discussion per response card was guided by the participant who compiled the response. A discussion was held with participants and duplicate responses contained in the response cards were removed. The researcher, supervisor and participants were engaged in this process to ensure all participants were afforded an equal opportunity to share ideas and contribute to developing the most effective solution for a centralised solution for WIL. All participants’ inputs were then acknowledged as unique contributions. The researcher facilitated the process and the supervisor observed.

- After this process the participants were involved in prioritising the recorded unique contributions in relation to the original questions. The participants were requested to prioritise each question from one to five. One being the most important response and five the least important response.

The following section will discuss the top five responses from each question.

### 5.2.3 Outcomes of nominal group technique discussion

The participants in the nominal group technique discussion concurred with the framework – in their opinion it can be successfully implemented at UJ. Although the participants said that the proposed framework can work, they indicated that there were areas of concern which needed to be discussed and adapted to the unique environment of UJ. Should these changes be adapted then this framework would be successful in providing a solution to the current WIL process at UJ.

#### 5.2.3.1 Responses to Question 1

The responses to the question, "What about this framework can work well for your department's purposes?" posed and the results analysed are reflected in Table 5.1.
Fourteen unique responses where received and responses by the participants were prioritised and ranked according to response of nominal group technique participants. Each ranking order received a score; first ranking [1] received a score of (5), second ranking [2] a score of (4), third ranking [3] a score of (3), fourth ranking [4] a score of (2), and fifth ranking [5] a score of (1). All responses were calculated which determined the ranking order for each answer. The feedback from the top five rated responses secured is discussed below. The discussion stretches from first to seventh positions because of the shared fourth position (cf 4th positioned priority item A, B and C further below).

Table 5.1: Ranking order for Question 1

<table>
<thead>
<tr>
<th>Nominal group technique discussion Responses to Question 1:</th>
<th>[1]</th>
<th>[2]</th>
<th>[3]</th>
<th>[4]</th>
<th>[5]</th>
<th>Total score</th>
<th>Priority item</th>
</tr>
</thead>
<tbody>
<tr>
<td>What about this framework can work well for your department's purposes?</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1 Tracking facility</td>
<td>0</td>
<td>5</td>
<td>0</td>
<td>0</td>
<td>2</td>
<td>22</td>
<td>1st</td>
</tr>
<tr>
<td>2 Centralised Training workshop</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>3</td>
<td>0</td>
<td>18</td>
<td>2nd</td>
</tr>
<tr>
<td>3 Already use similar process on Blackboard so WIL portal with access by industry will be helpful</td>
<td>3</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>15</td>
<td>3rd</td>
</tr>
<tr>
<td>4 Labour law issues compliance done by Unit</td>
<td>2</td>
<td>0</td>
<td>1</td>
<td>0</td>
<td>0</td>
<td>13</td>
<td>4th</td>
</tr>
<tr>
<td>5 Student orientation (CV/interviews)</td>
<td>0</td>
<td>1</td>
<td>3</td>
<td>0</td>
<td>0</td>
<td>13</td>
<td></td>
</tr>
<tr>
<td>6 Building relationship with UJ/Industry/SETA</td>
<td>2</td>
<td>0</td>
<td>1</td>
<td>0</td>
<td>0</td>
<td>13</td>
<td></td>
</tr>
<tr>
<td>7 A centralised office that deals with placement</td>
<td>0</td>
<td>0</td>
<td>2</td>
<td>1</td>
<td>3</td>
<td>11</td>
<td>7th</td>
</tr>
<tr>
<td>8 Assistance with administration process</td>
<td>1</td>
<td>0</td>
<td>0</td>
<td>3</td>
<td>0</td>
<td>11</td>
<td></td>
</tr>
<tr>
<td>9 Industry's contact</td>
<td>0</td>
<td>1</td>
<td>1</td>
<td>0</td>
<td>0</td>
<td>7</td>
<td>9th</td>
</tr>
<tr>
<td>10 Increased department WIL staff for assessment assessors</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>1</td>
<td>3</td>
<td>5</td>
<td>10th</td>
</tr>
<tr>
<td>11 Job placement/industry &amp; SETA liaison</td>
<td>0</td>
<td>1</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>4</td>
<td>11th</td>
</tr>
<tr>
<td>12 Feedback to industry with recognition from bigger UJ/organisation</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>1</td>
<td>1</td>
<td>3</td>
<td>12th</td>
</tr>
<tr>
<td>13 Assessment from central unit to assist support site visits</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>13th</td>
</tr>
<tr>
<td>14 Centralisation of a suitable database</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td></td>
</tr>
</tbody>
</table>
1st positioned priority item: Tracking facility

Curriculum Vitae (CVs) are one of the crucial documents in the IM for WIL arsenal. As seen in Table 4.3 to Table 4.9, CV writing and sending out of CVs are a step in all IM for WIL processes in all faculties within UJ. Therefore an IM process requires information which can be used to select or share data that is critical to specific processes. The unavailability of such sources of information has a detrimental effect on the capacity of the system to provide the required results if the information generated is not available when such information has not been loaded on the system. These sources of information have to populate the system and need to be managed. These sources will provide critical data in the central database, which will allow searches against this data source.

CVs are part of the source information which WIL is based on and is needed by the triad partners to determine suitability of candidates for placement and also distinguish between the different candidates in terms of the area of study. The CVs being so critical within the WIL process need to be managed as a critical resource on network. It should be ensured that the information is searchable and allow for targeted searches and multiple search criteria. This will ensure candidates are identified and provided with much needed placement. The provision of CVs and the management thereof in the IM for WIL network is facilitated by the WIL portal and allows for increased visibility of CVs to industry partners searching the system.

Tracking by way of audit trails will provide insight on where CVs were uploaded onto the system and credentials of the persons engaging with this information on the WIL network. Information for example which needs to be continuously updated and tracked is for example who loaded the CV, who viewed the CV and if any interest was recorded on the candidate. It can be compared to long/short listing of potential candidates. If a student is tagged as a potential candidate such information has to be recorded on the system. This will allow other industry partners to be aware that a candidate has been shortlisted and they have to pursue other candidates. All these activities have to be auditable to ensure full accountability and transparency should any queries develop and would need to be resolved using the system auditing functionality. An example is the industry partner who shows interest in the CV of a student and invites the student for an interview. This information has to be available on the system to avoid duplicate interviews. Should the interview be successful the system should generate test and flag system to record placement and inform other potential industry partners.
Having this information available has multiple benefits. It can provide an immediate overview of status of WIL placements per faculty and how successful WIL is in providing students with opportunities with industry partners. The system may even be designed to secure feedback and load progress reports as required in terms of placement criteria. Students and industry would be able to log queries and request assistance. These actions would then be monitored with a ticket system, as managed by the system administrator.

A tracking facility would also enhance the transparency of system and allow students clear insight and understanding of the system. This will facilitate equal appointment based on selection criteria as posed by industry. Multiple documents and guides should be available on the portal which allows students to complete online documents and download documents which they require in order to provide industry partners with the correct information when needed. If a student for example do engages in an interview with an industry partner the system logs the interview. However if a student is invited for ten interviews and is not placed then the system should generate an early warning flag which allows HEI lecturers to intervene and determine which factors are keeping the student from being successfully placed.

Due to the fact that personal information is being hosted on the system, secure platforms would have to be in place to ensure student confidentiality is maintained in accordance with the Protection of Personal Information (POPI) Act (GG, 2013:37067). The portal will also keep record of students who have not been performing and have been sent back to the HEI for non-performance or poor performance at industry level. It is critical to have this information readily available. The HEI lecturers have to be aware and have access to such information when non-placement issues are being addressed. It is critical for students to realise the successful completion of WIL placement as prerequisite for completing their qualification. If the WIL programme is not completed as required in terms of study rules such non-compliance can affect the finalising of their studies. The ultimate objective is to monitor progress of student placement and status of student deployment at industry as well as the progress of placement in achieving the learning associated with WIL placements. The tracking facility of a centralised unit with a WIL portal therefore is the most important part of this framework.

Issues such as daily administration on student activities, for instance, if student is not reporting at industry partner, this can immediately be followed up with the appropriate faculty. The WIL portal may also provide standards of minimum medical criteria which
students have to conform to as per departmental prescripts. One such example is the mining industry which requires students to have a specific weight. If a student does not meet the criterion then the student's placement will be affected. Students have to conform to the mining industry's stringent standards before being placed because they have to work in extreme conditions underground which requires a clean bill of health. Students’ failure to meet criteria can also be recorded on the system to monitor progress of the student. If the student has improved to meet set criteria then it can be recorded on the system and they can be presented to industry for placement. The system audit trail will support reasons for non-placement.

2\textsuperscript{nd} positioned priority item: Centralised training workshop

Soft skills training for the students are in some cases generic but also department specific. The generic soft skills training such as CV writing and interviewing skills is very important for student WIL placement. In order to develop a practical WIL programme each department has to identify their unique needs for department specific workshops. This planning is very important because sometimes the non-facilitation of workshops (that is, workshops are not being held, or workshops that are poorly presented) is one of the main contributing factors keeping students from placement positions. The lack of soft skills is a critical part of the employability of students. In Section 4.3.2.3 the findings show that a 30 minute workshop is not sufficient in order to provide the required soft skills. Proposed workshops which are department specific but which include generic soft skills associated with the industry in which the student is placed is critical. Examples of these placement criteria are medical fitness to work in the mines under extreme physical conditions or be deployed at high risk medical institutions which require stringent medical fitness.

3\textsuperscript{rd} positioned priority item: Already use similar process on Blackboard so WIL portal with access by industry will be helpful

The Blackboard system is functioning within UJ and is used to host student learning guides, storing student assignments and CVs. The industry is however not part of this platform and is excluded as the guidelines and protocol design was focused on creating a storage capacity archive for students' online projects and allow backup information which students can at times misplace or lose due to computer failures or even virus infections on their equipment. However the Blackboard system does not allow for industry access to student information or specifically CVs. The Faculty of Education is using Blackboard as shown in Section 4.3.2.4 of the recommendations of
the findings but in the Department of Marketing a specialised system called the DSA database is used that is developed for their specific purposes as discussed in Section 4.3.2.7 of the findings. Further investigations will be required to see which will be more relevant for which faculties. The proposed WIL portal will provide this functionality and allow industry to access the system and identify potential students for interviews based on their CVs hosted on the WIL portal. The tracking of all transactions on the WIL portal will allow monitoring of process and success of selection and placement which will be beneficial to the WIL triad partners. The inclusion of the existing Blackboard system would require significant system development which will allow incorporation of multiple systems for WIL as being used by the various departments.

4th positioned priority item A: Labour law issues compliance done by Unit

The fourth position is shared with two other priority items, beginning with labour law issues. In developing the WIL portal sensitive information which includes personal information such as students' medical condition which specifically relates to the prerequisites of placement by the mining sector has to be secure and confidential on the system. Strict rules apply and compliance issues have to be adhered to (for example, the POPI Act). A process has to be put in place to address these information sources and compliance issues. Critical guidance and policy statements have to be formulated which will structure and formalise processes related to storage of personal information. Measures also have to be applied when the system administrator registers and issues privileges on the system. Such privileges may be allocated to specific industry partners who will be allowed access to specific student information with the intent of selection for an interview. This will be one of the developmental areas which will have to be looked at when developing the WIL portal model. Policies need to be developed and may also include rules and criteria when, for instance, an injury while on duty takes place where students are injured and have to receive medical treatment. Policy should be formulated clarifying responsibilities of students and industry partners during the placement term of students. Guidelines and policies are required on insurance and contracts during placement which have to be revisited and updated regularly. Legal advisors will have to be consulted when developing these policies.

4th positioned priority item B: Student orientation (CV/interviews)

Student orientation has to be done in collaboration with each department's HEI lecturers responsible for the WIL process. Student orientation will have to be synchronised with centralised workshops planned by the WIL advisors for each faculty.
The HEI lecturers promote the approach whereby industry are afforded the opportunity to interview potential students for placement on campus during a career fair planned and arranged by the centralised WIL unit. The centralised WIL unit should have the functionality to inform registered industry partners of career fairs and interview days at the university. This centralised WIL unit will operate as a body to inform all triad partners involved of workshops, programmes and initiatives which are planned and scheduled per quarter.

4th positioned priority item C: Building relationship with UJ, industry and the SETAs

The participants in the nominal group technique discussion had the same strong feeling that the centralised WIL unit can strengthen and facilitate the relationship between UJ, industry partners and the SETAs. This strengthen relationship between the partners will be the result of improved information exchange resulting in a more effective IM for WIL at UJ.

(5th and 6th places void due to shared 4th place)

7th positioned priority item A: Assistance with administration process

The nominal group technique is applied in order to filter and rank responses to determine first to fifth priority items, thereby ensuring that all participants' responses are accurately recorded as priority items, or as lesser priority items, or as non-priority items. Because the fourth positioned priority item was shared by more than one item in the same ranking position, the seventh positioned priority item – and in this case there were two items sharing the seventh position – take the status of priority item.

A WIL portal which can assist with reducing the administrative burden on HEI lecturers will be beneficial. If the system can be developed in a way which allows for enhanced administrative oversight it will promote WIL effectively and optimise WIL capacity rolling out the WIL portal. This will allow HEI lecturers more time to conduct site visits since this was identified as one of the most pressing aspects of the current WIL process. From the feedback in the interviews (cf Section 4.3.2.1), students and industry expressed the need for HEI lecturers to conduct more site visits. These site visits are undertaken to monitor progress of students and provide industry with feedback on their progress to capacitate students. This will improve the WIL experience and allow improved learning at industry level. The centralised WIL unit will provide collaboration platforms for faculties and departments to facilitate an improved relationship between
HEI lecturers and industry partners. Improved relationships between these partners should have the effect that the HEI lecturers can undertake more site visits as their administrative burden has been minimised by the centralised WIL unit.

7th positioned priority item B: A centralised office that deals with placement

Although this response is similar to the tracking facility response, it specifically refers to the administration of placements. This response is also linked to the previous response, but as mentioned, specifically deals with placements. The placement of students at industry is an administrative function which has to be facilitated using the centralised WIL portal. The participants in the nominal group technique discussion were all in support of the solution provided by a WIL portal which would be able to track and report placements of students and to see if students are placed correctly (cf Section 4.3.2.3, discussion of findings). The system will also monitor progress of students during the placement to ensure there are no serious challenges which will affect student capacity to complete a qualification due to non-performance during placement. These challenges during placement can keep students from completing their qualifications on time (cf Section 4.3.2.5, recommendations). The current WIL model cannot provide such information and it is the responsibility of HEI lecturers to be aware of the status of a student's placement progress at industry. There is no central point to monitor these activities and this gap underlines the need for such a solution. The centralised WIL portal will allow more effective oversight and monitoring which would report on non-placement of students at industry. The core focus is to facilitate placement and target non-placement of students, identify measures which can be put in place to address non-placement of students, and also what interventions were put in place to ensure students are provided with the opportunities they so critically need.

As explained, the nominal group technique is applied in order to filter and rank responses to determine first to fifth priority items; these were listed above. The nominal group technique also assists in determining lesser priority items and non-priority items. In response to Question 1 (viz What about this framework can work well for your department's purposes?) the lesser priority items are; industry's contact, increased department WIL staff for assessment assessors, job placement/industry & SETA liaison, feedback to industry with recognition from bigger UJ/organisation, assessment from central unit to assist support site visits, and centralisation of a suitable database. There is no non-priority items listed for Question 1. A discussion of the responses to Question 2 follows next.
5.2.3.2 Responses to Question 2

Twelve unique responses were received on the question, "What is the main issue that would have to change for the framework to be effective in your department?" The responses to this question are contained in the calculation below in Table 5.2. The ranking for each answer to this question is calculated by applying the same method as per Question 1 (cf Section 5.2.3.1). The feedback from the top five rated answers follows after Table 5.2.

Table 5.2: Ranking order for Question 2

<table>
<thead>
<tr>
<th>Nominal group technique discussion</th>
<th>[1]</th>
<th>[2]</th>
<th>[3]</th>
<th>[4]</th>
<th>[5]</th>
<th>Total score</th>
<th>Priority item</th>
</tr>
</thead>
<tbody>
<tr>
<td>Responses to Question 2:</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>What is the main issue that would change for the framework to be effective in your department?</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1 UJ commitment to WIL</td>
<td>6</td>
<td>1</td>
<td>0</td>
<td>3</td>
<td>0</td>
<td>40</td>
<td>1st</td>
</tr>
<tr>
<td>2 Site visits by trained WIL assessor especially honours and masters students</td>
<td>2</td>
<td>1</td>
<td>0</td>
<td>1</td>
<td>1</td>
<td>17</td>
<td>2nd</td>
</tr>
<tr>
<td>3 There must be a recommended and registered listing of suitable companies</td>
<td>0</td>
<td>2</td>
<td>2</td>
<td>1</td>
<td>0</td>
<td>16</td>
<td>3rd</td>
</tr>
<tr>
<td>4 Additional lecturers, increased human capacity</td>
<td>0</td>
<td>2</td>
<td>1</td>
<td>1</td>
<td>0</td>
<td>13</td>
<td>4th</td>
</tr>
<tr>
<td>5 Aspects of assessment have to be in consultation with department</td>
<td>1</td>
<td>1</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>12</td>
<td>5th</td>
</tr>
<tr>
<td>6 Direct contact between lecturer and industry</td>
<td>0</td>
<td>2</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>12</td>
<td></td>
</tr>
<tr>
<td>(Void 6th position)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>7 SETA support and input to increase</td>
<td>0</td>
<td>0</td>
<td>2</td>
<td>0</td>
<td>5</td>
<td>11</td>
<td>7th</td>
</tr>
<tr>
<td>8 Specific, unique requirements for specific Work experience on soft skills workshops</td>
<td>0</td>
<td>0</td>
<td>2</td>
<td>1</td>
<td>0</td>
<td>8</td>
<td>8th</td>
</tr>
<tr>
<td>9 Database switch over</td>
<td>0</td>
<td>0</td>
<td>1</td>
<td>0</td>
<td>0</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>10 Interview process must be department specific based on industry sphere</td>
<td>0</td>
<td>0</td>
<td>1</td>
<td>0</td>
<td>0</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>11 There must be close liaison between WIL coordinator students</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>12 Generic logbook system</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td></td>
</tr>
</tbody>
</table>

1st positioned priority item: UJ commitment to WIL

It became clear during the nominal group technique that the most prominent issue affecting the WIL process is the perception of non-commitment of UJ to WIL. In many meetings and planning sessions on WIL at UJ, much is being said about commitment
to making WIL work. However, there is no support for this stated commitment as the nominal group technique discussion participants are not experiencing any serious change taking place. If there were change it would have indicated increased commitment to the WIL process. Change or progress is not experienced and HEI lecturers responsible for WIL want to stop talking about the process and rather engage and implement a process which will result in an improved WIL process benefitting the triad partners. The nominal group technique participants are of the opinion that the UJ has to realise the importance of being a comprehensive university and that WIL forms an integral part thereof. UJ as an institution therefore has to implement measures accordingly to show commitment and realisation of a working WIL process.

2nd positioned priority item: Site visits by trained WIL assessor especially of Honours and Master’s students

Industry has expressed to HEI lecturers at the UJ the need to conduct site visits more frequently and that they would prefer the HEI lecturers, and not senior students, conduct site visits as is often the case (cf Section 4.3.2.1, recommendations). HEI lecturers feel strongly that all HEI lecturers in the department must be trained as WIL assessors and do site visits at the various industry sites. Honours and Master’s students cannot be used to do site visits; site visits are required for assessments. Industry prefers HEI lecturers to conduct the site visits although this decision has to be made on departmental level. To allow for these visits and conforming to industry expectations staff capacity needs to increase due to volume of sites and the geographic locations which necessitate extensive travel times. Staff responsible for WIL has to be formally trained as WIL assessors. It was also proposed that all HEI lecturers at departments are trained as accredited WIL assessors. With the proposed portal it will provide administrative relieve to the HEI lecturers. This will in turn allow HEI lecturers with greater capacity to conduct the required site visits adding discipline specific knowledge value to the visit instead of HEI administrators adding administrative value to the visit.

3rd positioned priority item: There must be a recommended and registered listing of suitable companies

The HEI lecturers identified the need for a registered listing on the centralised WIL unit of all industry partners which would place students for WIL periods. This system function would assist in identification of students who have not been placed yet. It would further assist in finding SETA registered industry partners to secure placement. It
is critical for students to complete their WIL placement in order to complete their qualifications. The centralised WIL unit in cooperation with HEI lecturers and SETAs has to identify, visit and verify registration of industry partners who are available as WIL partners. The centralised WIL unit will keep records of registered listing of suitable companies which can assist UJ to address placement challenges experienced. SETAs and HEI lecturers will identify criteria for industry partners to comply with in order to be recognised as a WIL placement facility.

**4th positioned priority item: Additional lecturers, increased human capacity**

The number of students and industry site placements require the availability of more HEI lecturers. The current number of HEI lecturers available is not enough to conduct site visits. To visit sites of students at industry placement requires increased human capacity for this purpose (cf Section 4.3.2.1, discussion of findings). The expectation for the implementation of the WIL portal will alleviate administration and allow more focus on the importance of the educational component of WIL for HEI lecturers. This will allow site visit optimisation which is currently lacking due to the overburden of administration. The centralised WIL unit, by means of the WIL portal, will assist in releasing some of the workload of the HEI lecturers involved in the WIL process. Still more HEI lecturers are needed to become involved in WIL process.

**5th positioned priority item A: Aspects of assessment have to be in consultation with department**

In the previous section the nominal group technique was described as a tool to assist in filtering and ranking participants' responses to be included in the first to fifth priority items ranked list. All responses were calculated which determined the ranking order for each answer. Two items scored the same and thus there are two fifth positioned priority items A and B. In terms of item A, the centralised WIL unit has to work in close collaboration with departments on aspects of assessment and consult HEI lecturers on assessments requirements. In general the HEI lecturers feel that the centralised WIL unit based on the WIL portal will work, but that the HEI lecturers must be involved in assessments of the students. The portal will assist mainly in providing a repository for lecturer specific assessments with an audit trail and an archive possibility.

**5th positioned priority item B: Direct contact between lecturer and industry**

Contact between the HEI lecturer and industry is very important and has to be cultivated and enhanced as it is a critical part of the triad partnership and a critical cog
in the WIL wheel. It is clear that HEI lecturers feel that they should be more actively and directly involved with WIL functions at industry level (cf Section 4.3.2.1 to Section 4.3.2.7, discussion of findings from which it is clear that the communication between HEI lecturers and industry needs to be improved). The HEI lecturers speak in one voice that the administrative part of WIL has to be facilitated by the centralised WIL unit through a WIL portal. However functions such as assessment, feedback and site visits for approval of WIL placement companies have to be done by the HEI lecturer in corporation with the centralised WIL unit.

In applying the nominal group technique, lesser priority items as well as non-priority items are identified. With reference to Question 2 (viz What is the main issue that would have to change for the framework to be effective in your department?) the lesser priority items are; SETA support and input to increase, specific, unique requirements for specific work experience on soft skills workshops, database switch over, and the interview process must be department specific based on industry sphere. The non-priority items identified in this study are; there must be close liaison between WIL coordinator students, and a generic logbook system.

The value of the nominal group technique discussion lies in prioritising aspects to be considered in testing the view of HEI lecturers on the proposed IM for WIL framework. The framework in itself was not adjusted by the nominal group participants’ responses since the responses affirmed the need for such proposal and further established which contribution can be made by a centralised WIL unit. Such unit will be open for each faculty’s various departments serving their unique IM for WIL needs.

5.5 Summary

In this chapter the proposed conceptual framework for IM for WIL was presented to HEI lecturers who were involved in this research. The HEI lecturers were of the opinion that the proposed centralised WIL unit for IM for WIL using an online WIL portal would best address the IM for WIL process needs. The portal should be accessible at all hours as and when information is needed. This will make the proposed WIL portal more attractive. Audit trails on the WIL portal will allow for monitoring of student progress and status in terms of placement position and percentage of WIL placements completed. This progress facility will allow timeous interventions to identify students who are not progressing well during various stages of the WIL process and measures will be put in
place to monitor progress and allow student support when needed. It became very prominent during the nominal group technique that the feeling of participants on the commitment of UJ to making WIL work was not a priority and needed to be looked at as a matter of priority.

The nominal group technique participants were of the opinion that SETA involvement is a good idea and closer relationships have to be fostered with the benefit of securing SETA inputs on course content. Current challenges experienced by personnel responsible for WIL found that the centralised WIL framework will create the opportunity for these administrative tasks to relieve HEI lecturers to focus more on students and industry site visits and guiding WIL engagement with triad partners on an educational level allowing for boundary-spanning to take place more effectively.

The next chapter provides a synthesis, recommendations for further studies and a final conclusion on this research.
CHAPTER 6
SYNTHESIS, RECOMMENDATIONS AND CONCLUSION

"I was taught that the way of progress is neither swift nor easy."

Marie Curie, 1867-1934, Chemist and pioneering investigator of radioactivity
(Reilly, 2006:41)

6.1 Introduction

This research had the objective to develop and present a conceptual framework to manage the information of the work-integrated learning (WIL) process at a higher education institution (HEI). The first and second phases of this study focused on the current information management (IM) for the WIL process at two international HEIs, namely, the University of Cincinnati (UC) and the McCormick Office of Career Development at the Robert R. McCormick School of Engineering and Applied Science Northwestern University (NWU) in Illinois. The last phase of this study focused on the current processes in place at the identified faculties and departments within the University of Johannesburg (UJ). The complex IM for WIL process used by UJ based on various faculty and department models—each varying according to departments’ unique needs—have necessitated the development of a cross-cutting process which will streamline the diverse WIL processes of the UJ. Streamlining these processes will offer support and capacitate the HEI lecturers who are responsible for the WIL process as part of their programmes. In this final chapter an overview will be provided regarding this study, synthesising the most important findings of the research, providing recommendations, also for further research and concluding the study.

6.2 Synthesis

In Chapter 1, the importance of IM for WIL is introduced to the reader. From a South African perspective the low employment rate and competitive labour market forms the background to which young work seekers compete in the employment environment. The competitive labour environment forces young professionals to seek opportunities to enhance their academic studies by engaging industry for opportunities for gaining
work or field experience. In order to secure this exposure and placement at industry, the WIL process comes into play, facilitating a complex set of processes and procedures necessary to enable students' engagement with industry. The WIL process relies on the well-structured management of information between the triad partners. The purpose of this chapter is to introduce and orientate the reader to note the study as a whole and to provide the rationale for undertaking this study. The main research question that this study set out to address was:

*How can information be managed to facilitate the work-integrated learning process for various faculties at a higher education institution?*

Chapter 2 focuses on the theory from the body of knowledge, which comments on the importance of IM for WIL. Further it discusses personal information management (PIM) and organisational information management (OIM) as part of the IM for WIL process. The complexity of the triad partnership can be addressed using the concept of boundary-spanning, and the Theory of Motivated Information Management (TMIM) forms the foundation of this study. This sets the appropriate background for the research and focuses the approach to addressing the research questions.

Chapter 3 describes the research design and methodology which forms the foundation of this study. The qualitative method research design is applied, including semi-structured interviews, group discussions and open-ended questionnaires. In retrospection: The study was undertaken based on identified good practices of IM for WIL at the UC and NWU. The current IM for WIL process in UJ was studied and researched to develop the good practice for WIL at UJ. Semi-structured individual interviews and open-ended questionnaires were undertaken at the UC, NWU with HEI lecturers, industry mentors, students and faculty advisors. The semi-structured individual interviews and group discussions at UJ were done to identify the diverse processes in place at the UJ. The semi-structured individual interviews conducted in the UC, NWU and UJ, consisted of HEI lecturers, industry mentors and faculty advisors groups who are involved in the IM for WIL process. The group discussions conducted consisted of students within UJ. These group discussions were conducted to explore the student's experiences with the current IM for WIL process at UJ.

From the described research methods, findings were gathered to address the sub-questions posed for this study. These findings are discussed in Chapter 4.
Chapter 4 begins with an overview of the history of the research sites and the findings to the four sub-questions of this study. The first sub-question is: **What information categories or sources need to be managed in the WIL process?** This question was addressed by studying the current IM for WIL process and flow of the information sources of the UC, NWU as well as the UJ. These HEIs' IM for WIL information flows were analysed in order to determine the category of information sources which needed to be managed. The second sub-question of this study is: **How do the processes regarding WIL of various faculties and departments in the same HEI differ from each other?** The different processes for IM for WIL at the various departments within the UJ was researched and identified by way of semi-structured interviews and group discussions with various representatives within the participating departments. The third sub-question is: **What are the information management requirements for different applications of the WIL process?** The IM for WIL process at the UC and NWU requirements for the different applications for their WIL process were identified. These requirements were extracted and formed the basis from which the various departments at UJ could potentially apply their IM for WIL process. The fourth sub-question is: **What are the current good practices internationally for the management of WIL information at HEI?** The good practice as researched at the international HEIs which had a world standard IM for WIL solution was investigated and interpreted based on the WIL model at UJ. A centralised WIL unit could be conceptualised from which the framework for the implementation of a structured and cross-cutting process that would best suit the needs of UJ WIL partners could be developed.

Chapter 5 presents the report of the proposed conceptual IM for WIL framework and a discussion which addresses the fifth sub-question of the study, namely: **What IM framework would resonate with UJ WIL practitioners?** The proposed conceptual framework for IM for WIL were presented to the HEI lecturers at UJ during a nominal group technique discussion and aspects were highlighted that have to be addressed in order for the framework to be practical. The participants accepted the framework without change to the framework itself, but highlighted aspects that have to receive specific attention for the framework to be successfully implemented.

The main recommendations from the framework presentation are thus highlighted.
6.3 Recommendation to UJ WIL framework

The process of interviews and questionnaires has secured significant information on factors which impact negatively on the current UJ WIL model process. The triad partners namely the HEI lecturers, administrators, industry mentors and students are all part of the WIL process being managed at the HEI. The following matters were identified as major factors which need attention:

- **Site visits by HEI lecturers:** Both students and industry partners expressed the need to have more site visits from HEI lecturers.

- **System access by all WIL partners:** With the current HEI Blackboard system applied, the industry partners do not have authorised access to contributing to the WIL process, for example, WIL assessments or access to students' online submitted CVs.

- **Communication feedback and guidance during placement:** Students and industry mentors communicated the need for continued feedback and guidance throughout the WIL process, and specific HEI guidance is required on both mentioned partners' performance.

- **The logbook process is not reliable and needs to be revisited:** Industry mentors and students commented on the reliability of the logbook process and the request goes to HEI lecturers to develop and implement a more reliable measurement tool to evaluate student progress at industry level.

- **Enrichment of student at industry level during WIL placement:** HEI lecturers are requested to provide more guidance and advice on what has to be achieved by student at industry level and how these goals can be met by industry mentors.

It is clear from Chapter 4 that the two international HEIs as well as the various departments in UJ which were investigated have cross-cutting commonalities in the way they apply their IM for WIL process. The cross-cutting commonalities are as follows:

- All three the investigated HEIs conduct workshops on soft skills with their students. This is done to help the students to prepare their CVs and to prepare the students for their work placement which included interview skills.

- At the two international HEIs the interested industries apply to be registered as WIL placement industries interested in having students placed at their
companies. These companies are then evaluated and registered after being approved by the centralised WIL office. At the UJ some of the departments do approve their industry partners as WIL placement registered companies.

- All three mentioned investigated HEIs do engage in arrangements of career fairs for their students. At these career fairs industry is a major partner as companies will attend fairs at the HEIs where students can approach the companies to discuss if any placement positions are available and what opportunities are possible to engage companies. Discussion with industry also focuses on future needs specifically with the objective to adapt course planning and equip students with what is required by industry. For example, students may be focusing on studies in design of clothing while there is a critical shortage of interior design skills in the industry.

- At all three mentioned HEIs, students have to register for the WIL component. Registration is a requirement in order to take part in the programme (degree) offering and students register specifically for WIL as a module which has to be successfully completed in order to obtain the qualification.

- At the two mentioned international HEIs an interview day is schedule by the centralised WIL office where the industry interviews the students on campus. At the UJ some of the departments do arrange interviews for the students but not on campus.

- All three mentioned HEIs do assessments with their students. The two international HEIs do online assessments where the industry and students complete their assessments online using a centralised online portal. At the UJ all investigated departments provide logbooks to the students. Students then have to complete the assignments and record their progress in logbooks which is verified and signed off by responsible industry representatives.

- All three mentioned investigated HEIs have personnel responsible who are required to do site visits. All of these individuals experience difficulties in this process due to the administrative burdens which they have to attend to and are most often not able to conduct the site visits.

- At the two mentioned international HEIs the students make an appointment with their faculty advisors to discuss their assessment feedback after they return
from their WIL placement. At the UJ only some of the departments conduct oral feedback sessions or presentations with the students after their return from their WIL placement at industry.

Due to the cross-cutting commonalities of the mentioned two international HEIs and UJ as well as the recommendations made in Chapter 4 by each of the triad partners in each department, the proposed conceptual framework for IM for WIL at UJ features a centralised WIL unit operating on a WIL portal as collaboration platform (cf Figure 5.1). The framework will address the needs of the triad partners and strengthen the relationship by applying the concept of boundary-spanning.

### 6.4 Recommendation for further research in this field

This research being case study based has pertinent relevance to the targeted HEI. Any other HEI would have to investigate the IM for WIL process from their perspective in terms of the unique processes in place at their organisation.

The findings of this study can provide research based guidelines for the alignment of the online portal for IM for WIL process for comprehensive universities in South Africa. This framework can be tested and applied at other South African HEIs to allow for improved IM for WIL practices but would have to be adapted to the unique circumstances at the specific HEIs.

In order to track progress and locate any system glitches that may have developed which have appeared with use of system, a feasibility study should be conducted after implementation of the online WIL portal. On deployment of the online WIL portal by monitoring user activity any gaps or challenges can be picked up and exposed when users are actively working on the online WIL portal. By further using a quantitative approach, the portal performance can in future be effectively analysed with more representatives involved. This will allow more information to be generated by larger groups of participants or users.

A further study has to be done to investigate the voluntary option of WIL as part of other qualifications within HEIs. Further research can be done on the conceptual IM for WIL framework – investigating if it could be expanded to other HEIs in South Africa. This will determine the viability of establishing a South African HEI WIL portal. A final
IM for WIL framework which have been fully tested and functional can eventually be certified as a benchmark which would facilitate hosting of the centralised portal at other HEIs using the prototype WIL portal. This proposed framework could facilitate the buy-in from other sectors such as industry and SETAs which are major contributors to the WIL framework and enrich the higher educational sector’s commitment and capacity in South Africa.

6.5 Conclusion

The value of this study to HEI is the identification of an area which is located within the HEI domain which can be developed and improved to create an additional pocket of excellence. This will potentially facilitate the capacity of HEI to provide sufficiently prepared students to industry. The HEI facilities should have this capacity to effectively provide students with the opportunity to be deployed at industry level to enhance their learning experience. It should also provide to industry students who have the background of practical experience. HEI lecturers are to the point on the benefits of structuring a centralised IM for WIL unit with an online portal. The good practice models in place at the two international HEIs studied in this research should guide HEIs in providing better equipped and capacitated students for industry placement.

The lectures at HEI also benefit as their administrative burdens are removed when the centralised WIL unit with an online WIL portal is put in place, allowing lecturers to focus on their students and industry partners, undertaking site visits and interviewing students and industry. This will result in students being better prepared for WIL placement and allow HEI lecturers more time to research the latest processes and techniques they wish students to be exposed to at industry level. They will then be able to adapt the curriculum accordingly.

Improving and increasing site visits, liaison and communication between the triad partners will result in more trust and sharing of information. This will lead to less mistrust and miscommunications which negatively affects student morale. Another benefit is the streamlining of assignments at industry level which can be better coordinated and aligned with other projects at industry level to improve the administrative burden and possible duplication. Students may feel there is too much duplication at industry level in terms of tasks however with improved relationships this can be addressed and streamlined accordingly.
Industry at the international HEIs visited have genuinely realised the benefits of WIL and have invested heavily, realising how critical it is to expose students to industry for learning. Industry also realised the benefits of having the best young minds available for their companies and having the opportunity to identify the best performers. Furthermore, industry have improved their relationship and interaction with HEI which allows their focus on input in curriculum design and having better prepared students with more appropriate skills graduating towards being effective employees.

In an effective WIL process, students have the best of both worlds in the sense of having the opportunity of working at industry level and being exposed to the latest techniques and processes on the market. The students are rewarded with specialised skills and experience, allowing them better opportunities for employment. Students also have the benefit of meeting and networking with industry and having that relationship which could evolve into a working arrangement and eventual employment. It is clear that with a well-developed and effective WIL process everyone benefits and all partners involved want this partnership to work. Therefore, to support an effective WIL process this conceptualised framework contributes a practical approach to managing the information exchanges and collaboration platform functionality as a service to the WIL triad partners.

After engaging this study it has been realised that the IM for WIL process can only be successful using boundary-spanning with all partners involved in this process. If the information exchange between the partners is not transparent and the partners in this relationship do not know what to do, this process is doomed to fail. The students and industry mentors agree that the WIL process is beneficial to everyone but this process can only be successful and be enjoyed by all partners if their unique individual needs are met, they all know what to do and if they are fully informed on how their expectations can be matched.

The IM for WIL framework offers synergy between the best possible practical learning opportunity for the student and the most effective administrative and support function possible in a comprehensive HEI for the lecturers and industry partners.

Marie Curie’s quote from Reilly (2006:41) cannot be more relevant to this study. To achieve progress in IM for WIL, the process will neither be swift, not easy…but most definitely worthwhile.
LIST OF REFERENCES


Afifi, W. A. (2013, March 3). Personal Communication: E-mail received from Author.


CDE see Centre for Development and Enterprise


CHE see Council for Higher Education


DHET see Department of Higher Education and Training


GG see Government Gazette


POPI see
Government Gazette: Protection of Personal Information Act


Sun, Y. & Han, J. (2012). *Mining Heterogeneous Information Networks: Principles and Methodologies*. North Carolina: Morgan and Claypool


Appendix A: Semi-structured interview questions

**HEI lecturer/Co-op advisor**

**Main Question**

Please explain the WIL process between your department, students and industry?

**Sub-Questions**

1. What documentation do you have that support your student’s placement?
2. What form of assessment would take place to evaluate the student during their WIL placement?
3. What are the challenges that you have experienced concerning the WIL process?
4. What have you found that work well in the WIL process in your department?
5. Elaborate on the communication procedures in terms of feedback between you, the student and industry, while the student is in the working environment?
6. In your understanding with the industry, what are you expect the industry to do during the WIL process with the student?
7. What are your expectations of the student during the WIL process?
8. Do you have any suggestions that may improve the feedback channels or system between your department, students and industry?
9. Describe the process that the student goes through when he returns from the work environment?

**Industry Mentor**

**Main Question**

Please explain the WIL process between you, the university and the student?

**Sub-Questions**

1. What documentation do you have that support your involvement with the WIL process?
2. What are you expected to do with the WIL student for purposes of assessment?
3. What are the challenges that you have experienced concerning the WIL process?
4. What have you found that work well in the WIL process?
5. Elaborate on the communication procedures in terms of feedback between you, the university and the student, while the student is in the working environment and after the student has left?
6. In your understanding with the industry, what are you expected to do during the WIL process with the student?
7. What are your expectations of the student during the WIL process?
8. Do you have any suggestions that may improve the feedback between you, the university and the student?
Appendix B: Group discussion questions

Main Question

How do you understand/ perceive the process involve in the WIL process?

Sub-Questions

1. What documentation do you have that support your WIL placement?
2. What form of assessment would take place to evaluate your WIL placement?
3. What are the challenges that you have experienced with regard to the WIL process?
4. What have you found that work well during your WIL placement?
5. Elaborate on the communication procedures in terms of feedback between you the university and industry, during your WIL placement?
6. In your understanding with the university and the industry, what are you expected to do during your WIL placement?
7. What are your expectations of the university and industry during the WIL process?
8. Do you have any suggestions that may improve the feedback channels or system between your department, students and industry?
Appendix C: Questionnaire industry mentors

Managing Information for the Co-op Process at the University of Cincinnati

This research is part of a study conducted by Mrs Roelien Brink, a doctoral student in the Department of Information and Knowledge Management (Faculty of Management) at the University of Johannesburg in South Africa. The study focuses upon "Managing information for the work-integrated learning process at a higher education institution".

We would like to invite you to become part of this study. By answering the following questions you are providing your consent to use your answers for data analysis purposes only. You are at liberty to withdraw from the study at any time, without any pressure to provide reasons by simply discontinuing participation in the survey instrument. The researcher has taken great care to ensure that you as participants are not caused any harm by partaking in this study. All responses will be anonymous to protect identities and guarantee that any information revealed, either personal or professional, will be regarded as confidential. In addition, it is the researcher’s belief that there are a number of possible benefits for you as participant in this study. . Being part of this study will allow you access to the outcomes of the research and you will be given the opportunity to comment on your responses and thus enrich the content of the study should you choose to provide contact information for follow up.

The premise of the research is that "Effective co-op is largely reliant on the managing of new information gained by the three parties involved. Without flow of information the WIL/Co-op component will be less useful and of minimal value for the three parties". The researcher therefore would like to understand the employers experience with the Co-Op assessment process at the University of Cincinnati. When answering the questions please report on your own experience, opinion and perspective.

Thank you for taking the time to complete this questionnaire.

If you have any questions relating to this questionnaire, please contact Mrs Roelien Brink on 347323816 or email rbrink@uj.ac.za.

Please answer these questions as complete as possible so that your valuable contribution in the WIL/Co-op process is clearly reflected

1. What are your expectations regarding with respect to assessment/feedback of the UC co-op student at the end of the term?
2. What are the challenges that you have experienced with the UC assessment/feedback system?
3. What works well with the UC assessment system?
4. Do you have any evidence that the assessment/feedback process leads to the university adapting their programs to meet your needs?
5. Knowing that the UC assessment system does not capture all feedback between you, the university and the student, please elaborate on the communication process that takes place outside of this system.
6. Do you have any suggestions that may improve the feedback between you, the university and the student?

By providing your contact details you enable the researcher to contact you to clarify issues and to do member-checking so that a clear understanding of the WIL/Co-Op process is ensured.

Optional

Name and Surname: ____________________________

Email address: ____________________________

Appendices 157
Appendix D: Questionnaire students

Managing Information for the Co-op Process at the University of Cincinnati

This research is part of a study conducted by Mrs Roelien Brink, a doctoral student in the Department of Information and Knowledge Management (Faculty of Management) at the University of Johannesburg in South Africa. The study focuses upon “Managing information for the work-integrated learning process at a higher education institution”.

We would like to invite you to become part of this study. By answering the following questions you are providing your consent to use your answers for data analysis purposes only. You are at liberty to withdraw from the study at any time, without any pressure to provide reasons by simply discontinuing participation in the survey instrument. The researcher has taken great care to ensure that you as participants are not caused any harm by partaking in this study. All responses will be anonymous to protect identities and guarantee that any information revealed, either personal or professional, will be regarded as confidential. In addition, it is the researcher’s belief that there are a number of possible benefits for you as participant in this study. Being part of this study will allow you access to the outcomes of the research and you will be given the opportunity to comment on your responses and thus enrich the content of the study should you choose to provide contact information for follow up.

The premise of the research is that "Effective co-op is largely reliant on the managing of new information gained by the three parties involved. Without flow of information the WIL/Co-Op component will be less useful and of minimal value for the three parties". The researcher therefore would like to understand the employers experience with the Co-Op assessment process at the University of Cincinnati. When answering the questions please report on your own experience, opinion and perspective.

Thank you for taking the time to complete this questionnaire.

If you have any questions relating to this questionnaire, please contact Mrs Roelien Brink on 347323816 or email rbrink@uj.ac.za.

Please answer these questions as complete as possible so that your valuable contribution in the WIL/Co-op process is clearly reflected

1. What are your expectations regarding with respect to assessment/feedback of the UC co-op employer at the end of the term?
2. What are the challenges that you have experienced with the UC assessment/feedback system?
3. What works well with the UC assessment system?
4. Do you have any evidence that the assessment/feedback process leads to the university adapting their programs to meet your needs?
5. Knowing that the UC assessment system does not capture all feedback between you, the university and the employer, please elaborate on the communication process that takes place outside of this system.
6. Do you have any suggestions that may improve the feedback between you, the university and the employer?

By providing your contact details you enable the researcher to contact you to clarify issues and to do member-checking so that a clear understanding of the WIL/Co-Op process is ensured.

Optional

Name and Surname: ____________________________

Email address: ____________________________
Appendix E: Invitation letter from the University of Cincinnati

February 7, 2011

Re: Riehen Brink
Deputy Head of Department
Department: Business Information Technology (BIT)
Faculty of Management
University of Johannesburg
Auckland Park Houghton Road Campus
Johannesburg

Dear Mr. Brink,

The University of Cincinnati is looking forward to your visit. We are available to host you per your convenience from November 1, 2011 through December 10, 2011 and again from January 9, 2012 through March 2, 2012. We understand that you will be able to visit for purposes of research at our University in order to interview the WI.I. liaisons and industry representatives involved with WI.I process for the following disciplines:

- Civil and Environmental Engineering
- Architecture
- Construction Management
- Accounting
- Information Systems

This will involve as many as 6 individual interviews with the following faculty members in the Division of Professional Practice: Thomas Newbold, Alexander Christoforidis, Liam Reem, Jill Flood, Ann Keeling and Damasc Langford. Furthermore, we will be happy to arrange focus group interviews with employers who hire WI.I. students in these discipline areas.

While we are happy to offer our intellectual capital and assistance in your research endeavors, we must reiterate that this trip is not being sponsored on a financial level by the University of Cincinnati or any of its industrial partners.

Warm regards,

Cheryl Cates, Ph.D.
Director, Center for Cooperative Education Research and Innovation
Professor, Professional Practice
University of Cincinnati

An affirmative action/equal opportunity institution
Hello Roelien,

No problem. I assumed it was her in the US because I couldn't find a Northwestern University anywhere in Australia. Do you know yet when you would be able to make the trip? Our spring break is at the end of March, so we would want to avoid the week of March 21st.

Best,
Helen

On 2/7/2011 2:41 PM, Brink, Roelien wrote:
Hello Helen,

It is a mistake from my side. I did meant your university in Illinois, USAM

Thanks for the feedback.

Kind regards
Roelien
Sent via my BlackBerry from Vodacom - let your email find you!

Hello Roelien,

I can easily set up meetings for you with faculty in the appropriate departments but I realize upon rereading your message that you refer to Northwestern University of Australia. Had you meant Australia, because if you had, you might have the wrong university. My university is located just north of Chicago, in Illinois, USA.

Also, do you have firm dates for your travel or is that flexible? Our university is divided into colleges or schools and the departments you specified are found mostly in the McCormick School of Engineering and Applied Science. Economics is in the Weinberg College of Arts and Science. I am not sure where to refer you for the programs I've highlighted in red below (Analytical & Bio Analytic Chemistry), but these might also be in the Weinberg School. We do have courses in analytical chemistry, but we also have the department of Chemical and Biological Engineering in the McCormick School. I am happy to arrange meetings for you in either of these departments.

One thing that should be clarified, however, is that work integrated learning is a phrase that is not easily understood here at the university. Students who experience work outside of the classroom would be in one of four different categories:
1. Cooperative Education (Engineering only): four to six quarters of work in industry, alternating with quarters of school;
2. Internships (all schools): single quarter of work in industry, usually during the summer months;
Appendix G: Approval email for research

**From:** Fourie, Neels  
**Sent:** 21 February 2011 09:03 AM  
**To:** Brink, Roelien  
**Cc:** Van Der Merwe, Derek; Muller, Marie  
**Subject:** RE: Permission UJ

**Beste Roelien**

Op die oog af lyk dit aanvaarbaar en voorsien ek nie enige probleme dat jy die navorsing sal kan doen nie. Ek benodig egter meer volledige inligting, wat jy later sal moet stuur, alvorens formeel toestemming verleen kan word.

**Groete**

Neels Fourie

[www.uj.ac.za](http://www.uj.ac.za)

**Prof Neels Fourie**  
Head: Unit for Institutional Research and Decision Support  
Division for Institutional Planning and Quality Promotion  
Tel +27 11 559 2093  
Fax +27 11 559 3671
Dear Prof van der Merwe

RE: PERMISSION TO UNDERTAKE RESEARCH IN THE UNIVERSITY

This letter seeks permission to undertake research in the University for my proposed doctoral studies titled: "Information management framework for the work-integrated learning process at a higher education institution". I am conducting this research under the supervision of Dr M Mearns and co-supervisor Dr T du Plessis from the Department of Information and Knowledge Management.

The research design that I have developed to collect data for this research involves interviewing Work-integrated learning (WIL) liaisons from relevant departments as well as industry partners. I am also planning to conduct focus groups discussions with a number of students that have completed the WIL component of their qualifications. This data collection is planned for April – September of 2011. After analysis, member checking with the relevant departments has also been planned.

Ethical considerations of voluntary participation, informed consent and confidentiality will be maintained throughout. My research proposal is available for clarification purposes.

I am confident this study will yield some interesting and useful information about the academic and students experience with the WIL component within the university.

Thank you for your consideration.

Kind regards

Mrs R Brink
Deputy Head of Department
Department of Business Information Technology
Appendix H: Letter of consent

LETTER OF CONSENT

I am currently engaged in studies at the Department of Information and Knowledge Management (Faculty of Management) at the University of Johannesburg in South Africa. My study focuses on “Managing information for the work-integrated learning process at a higher education institution”.

Higher education institutions (HEIs) within specific learning offerings require teaching and learning to include Work-integrated learning (WIL). Often a lack of structure regarding the WIL process across departmental silos, result in different processes followed for the WIL component at HEIs. The different learning options provided by various faculties have unique and diverse processes which justify the different WIL processes in this HEI. A lack of structure for Information Management (IM) can impact negatively on the optimal utilisation of the WIL process. Hence, the focus of this study will be to design an IM framework for the WIL process. According to Cates and Cedercreutz (2008:28) a feedback process will allow the three parties involved an efficient allocation of educational resources. In order to establish an effective feedback process the information that currently is, and that potentially could be exchanged between the HEI, the industry partner and the student needs to be managed. The research therefore aims to develop and test a conceptual framework to manage the information of the WIL process at a HEI in South Africa.

I would like to invite you, with your consent, to form part of this study. Your participation will be in the form of an individual interview. With your consent, these interviews will be recorded for data analysis purposes only. These tape-recorded interviews will be analysed and stored in a secure environment. Please note that even if you do agree to be part of this study you are at liberty to withdraw from the study at any time, without any pressure to provide reasons. I undertake to ensure that you as participants are not caused any harm by partaking in this study. I will accordingly allocate a pseudonym to all participants to protect identities and guarantee that any information revealed, either personal or professional, will be regarded as confidential. In addition, it is my belief that there are a number of possible benefits for you as participant in this study. Being part of this study will allow you access to the outcomes of the research. You will be given the opportunity to comment on your interview and thus enrich the content of the study.

I hereby request you to sign the attached document, in order to indicate that you are familiar with the conditions stated above, and that you have consequently given your permission to take part in this inquiry, and to be interviewed by me. This letter must be signed and dated by you, the participant, as it forms part of the requirements for ethical research as mandated by the Ethics Committee of the Faculty of Management at the University of Johannesburg.

Thanking you in anticipation,

_________________________  _________________________
Student: Mrs R Brink    Supervisor: Dr M Mearns
Appendix I: Consent form for participants

CONSENT FORM FOR PARTICIPANTS PARTAKING IN RESEARCH TO MANAGING INFORMATION FOR THE WORK-INTEGRATED LEARNING PROCESS AT A HIGHER EDUCATION INSTITUTION

I, the undersigned, (Prof/Dr/Mr/Mrs/Ms) ……………………………………………, hereby indicate that I have read and understood the conditions for participation in the above-mentioned research as contained in this letter. I hereby give my written consent that I may be interviewed by Roelien Brink, noting the conditions below that:

- the interview will be recorded on an audio recording device and that the researcher undertakes to store the recordings of the interview in a locked environment
- participants will be afforded the opportunity to comment on the findings from the interview
- participants will at all times be fully informed about the research process and purpose
- consent to participate in the research will be obtained on this letter signed by the participant
- participants will be at liberty to withdraw from the study at any time, without any pressure to provide reasons (voluntary participation)
- all possible means will be undertaken to ensure that participants are not caused any detriment by partaking in this study and a pseudonym will be allocated to all participants to protect identities and to guarantee that any information revealed, either personal or professional, will be regarded as absolutely confidential
- participants will not be exposed to any acts of deception or betrayal in the research process or its published outcomes
- faithfulness, keeping of agreements and loyalty in interpersonal relationships are central to the reputation of the researcher and individual participants

___________________
Signature of Participant    Date

___________________
Signature of Researcher     Date

___________________
Signature of Supervisor     Date