User Requirements Elicitation: Evaluating the Effectiveness of a Prompting Technique for a Human Resource Information System

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Abstract

Eliciting user requirements is a vital part of the requirements determination phase of software development. The requirements determination process gathers, organises and documents the complete set of end user requirements. This process has been described as the most difficult activity of information systems development. This difficulty is further compounded by the problems encountered in communicating complex human resource information needs to systems analysts. There have been problems in the past where the implementation of a human resource information system (HRIS) has failed to meet an organisation's needs. The literature suggests that a lack of understanding between the information systems and human resource disciplines is one of the major impediments to HRIS reaching their full potential. Attempts to improve the communication between the human resource user and the system analyst will not only help to increase the effectiveness of the information system solution, but will ensure that the organisation's strategic objectives are matched with the human resource systems and applications that support them.

The purpose of this research was to compare the effectiveness of two prompting techniques when used in an interview setting to elicit user requirements for a HRIS. The task characteristics prompting technique used substantive and procedural prompts to overcome cognitive problems experienced by users. The syntactic prompting technique used the interrogatories questioning method which involved asking 'who', 'what', 'when', 'where', 'how', and 'why' questions. Prior to analysis, a set of generic requirements categories was used to code the user requirements elicited from each technique. The categories consisted of goal, process, task and information level requirements. The results showed that the task characteristics prompting technique was effective in eliciting a greater number of requirements than the syntactic technique, and particularly that the differences in requirements evoked were significant for the information level requirements. This research represents an effort to build on the empirical work completed by previous researchers and provides a basis for further research in prompting techniques for the elicitation of user requirements for information systems. Implications for practitioners are discussed and future research directions are recommended.

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CHAPTER 1: INTRODUCTION

1.1 Background

The development of human resource information systems (HRIS) poses special challenges in the requirements determination phase. This is due to the difficulty of communicating complex human resource information needs to specialist system designers (Nankervis, Compton & McCarthy, 1992). Eliciting user requirements has been identified as one of the most critical stages of system development, as the likelihood of a successful organisational system is dependent upon a complete and accurate collection of user requirements (Browne & Rogich, 2001). User requirements have been described as the representation of a need that is identified by any individual or group at any level in the organisation. This need is a gap between the existing conditions and desired conditions (Kaufmann & English, 1979).

There have been problems in the past with the implementation of a HRIS failing to meet the needs of an organisation. This has, in extreme cases, led to some systems being abandoned altogether (Martinsons & Chong, 1999). Browne and Rogich (2001) assert that one of the principle reasons why information systems fail to meet end user expectations is because the development process has not produced a true reflection of requirements. Browne and Rogich have recently conducted an empirical investigation of user requirements elicitation, where they compared the effectiveness of prompting techniques used within a structured interview. Their study was concerned with the elicitation portion of information gathering, and looked at ways of improving such elicitation. They identified that despite the importance of eliciting requirements from end-users, there was a paucity of research that measured the effectiveness of the different requirements elicitation techniques.

In their study, Browne and Rogich (2001) developed a model of the requirements elicitation task (Appendix A), and used this model to construct a new requirements elicitation prompting technique, called the task characteristics technique. The task characteristics technique was designed to be context-independent which meant that it should be effective in eliciting user requirements, regardless of the system being

developed. Browne and Rogich's study applied the task characteristics technique to the development of an on-line grocery shopping system. They used two other prompting techniques to provide a context for testing the relative effectiveness of the new technique. The first of these was the syntactic technique which involved asking "who", 'what', 'when', 'where', 'how', and 'why' questions; and the second was a semantic questioning scheme, which involved asking questions based on a theoretical model of knowledge structures (Browne & Rogich, 2001). Their data showed that the task characteristics technique was generally very effective in eliciting information from subjects, when compared with the other questioning methodologies.

Browne and Rogich (2001) also developed a generic requirements category, adapted from Byrd, Cossick and Zmud (1992), as a way of measuring the usefulness of the prompting techniques in eliciting requirements. One of the difficulties facing the analyst once the requirements have been elicited is how they should be captured. The generic requirements category was constructed to be context-independent and provided a way of organising and coding the requirements evoked. "A context-independent categorization is of great potential value, since it eliminates the need to create different categories to evaluate the requirements for each new information system application" (Browne & Rogich, 2001, p.235).

1.2 Research Design

The current research involved a business scenario describing an educational institution interested in developing a HRIS. For the purpose of the study, two groups were utilised. One group was labeled the treatment group and was subjected to the task characteristics prompting technique. The other group was labeled the control group and was subjected to the syntactic prompting technique. The requirements elicited from the two different techniques were coded using the generic requirements categories.

1.3 Research Objectives

- To apply the task characteristics prompting technique, developed by Browne and Rogich (2001), to the development of a HRIS for an educational institution.

- To evaluate the effectiveness of the task characteristics prompting technique when used in this business setting.
- To evaluate the usefulness of the generic requirements categories when organising and coding the requirements elicited.

1.4 Hypotheses

Based on the results of Browne and Rogich's (2001) study the following hypotheses were formed for the current research:

Hypothesis 1:

That the total number of requirements elicited by the treatment group will be greater than from the number elicited by the control group.

Hypothesis 2:

That the total number of goal level requirements elicited by the treatment group will not differ from the number elicited by the control group.

Hypothesis 3:

That the total number of process level requirements elicited by the treatment group will differ from the number elicited by the control group.

Hypothesis 4:

That the total number of task level requirements elicited by the treatment group will differ from the number elicited by the control group.

Hypothesis 5:

That the total number of information level requirements elicited by the treatment group will differ from the number elicited by the control group.

Hypothesis 6:

That the breadth of requirements (ie. number of different requirements categories) elicited by the treatment group will not differ from the breadth elicited by the control group.

Hypothesis 7:

That there will be no significant qualitative differences in the types of requirements elicited by each group.

1.5 Research Plan

The thesis commenced in March 2001 and ceased on 30 November 2002. Ethical approval was provided by the Massey University Human Ethics Committee via the Massey supervisor for this research. The research was carried out in two parts. First, a search of relevant literature was conducted. Secondly, an experimental case study was examined to evaluate the usefulness of Browne and Rogich's (2001) prompting technique and generic requirements categories. Subjects were recruited during March 2002 and interviewing was conducted between April and May 2002. Approval to recruit and interview subjects was given by the UCOL Research Committee (Appendix B) and UCOL's Chief Executive Officer via the Human Resource Manager (Appendix C).

1.6 Structure of the Research Report

The thesis is divided into six chapters. This chapter has introduced the concept and importance of eliciting correct and accurate information. It has outlined the research design, clarified the research objectives, provided the hypotheses for the study, presented the research plan and the structure of the report. The literature review follows in Chapter 2. It presents an historical perspective of human resource information systems and considers the difficulties encountered in the development of information systems. The user requirements determination phase of system development and models for the requirements elicitation task have been discussed. Difficulties surrounding the elicitation task led to a review of methods used to elicit user requirements, and to prompting techniques used in a structured interview.

Chapter 3 discusses the methodology. The methodology details the background to the case study and describes the sampling method and experimental groups used in the research. The chapter provides the methods of analysis chosen for the study, including the coding procedure and measures used. The chapter also describes ethical considerations and the procedures followed for the information, consent, confidentiality and use of the results.

Chapter 4 presents the quantitative and qualitative findings, using tables to aid interpretation and analysis. The discussion about the findings follows in Chapter 5 and provides an explanation of the results, some limitations of the study, and suggests

several implications for researchers and practitioners. Conclusions follow in Chapter 6, where a summary of the research and recommendations for future research directions are provided.

CHAPTER 2: LITERATURE REVIEW

2.1 Introduction

The literature review describes the historical background to human resource information systems, the development of human resource information systems, difficulties encountered in the developmental process and the significance of user requirements determination. The models and methods used for the requirements elicitation task are examined, including the difficulties encountered in practice. The summary draws the review together and provides a focus for the research question.

2.2 Background

Computer-based HRIS have evolved dramatically over the last 50 years. The systems that were first developed were mainly used for administrative and operational purposes. These early systems were the forerunners of today's systems, which are now expected to provide comprehensive and integrated information that is not only used in the day to day management of an organisation, but also serves to support strategic management. As the development and installation of a HRIS puts an organisation on a change management path, it is essential that a comprehensive user requirements determination is conducted to ensure that the system will meet the organisation's current and future needs. The requirement determination process of an information system consists of gathering and modeling information. This has been described as the most difficult activity of information systems development (Browne & Rogich, 2001; Byrd et al., 1992; Dalal & Yadav, 1992; Watson & Frolick, 1993). Improvements in this phase can have a dramatic impact on the effectiveness of systems and the development process.

2.3 Definition of a Human Resource Information System

An information system has been described by Olekalns (2000) as a set of resources that work together to process data into meaningful material that an organisation can use in its business. Kovach and Cathcart (1999) describe a HRIS as either a simple collection of personnel records, or an extensive and computerised database used to provide a wide

array of information to human resource stakeholders and which supports human resource decisions.

2.4 Historical Perspective - HRIS

HRIS had their origin in two primary sources; skills inventory systems and payroll systems. Walker (1993) identifies skills inventory systems, developed in the late 1950s, as the basis of what today is known as HRIS. These systems provided management with access to information about work and employees. Payroll systems were automated in most organisations in the mid to late 1950s. As they were part of the finance and accounting domain, payroll applications were usually automated when punched cards and electronic accounting machinery were introduced. With the introduction of transistorised computers in 1959 and the significant reduction in cost and size, computer technology became more affordable for businesses. With the advancement of computer software, commercial business applications could be cost-effectively handled by computers. One of the first products to be developed in 1965 was the Personnel Information Communication System (PICS), which used the concepts of skills systems. Following on from this in 1970, came a mainframe-based system designed for banks and the first packaged personnel information system (Walker, 1993).

During the 1970s and early 1980s the nature of the personnel function in organisations began to change. Traditionally, the personnel function, titled personnel management, was the administrative force behind employee issues (Laabs, 1998). It was during this time that the role and responsibilities began to increase to include services and functions such as management development, organisational analysis, employee testing and job evaluation (Walker, 1993). This new role involved the integration of human resource policies with strategic business planning and became known as Human Resource Management (HRM) (Nankervis et al., 1992). However, Storey (1995, p.3) states that "there has been, and continues to be, a heated debate about the take-up and significance of HRM". Guest (1987) observes that HRM is used widely but loosely defined. He believes that if the concept is to have any social scientific value, it should be defined in such a way that it differentiates from traditional personnel management.

Torrington (1988) offers the following comparison:

> Personnel management is directed primarily at employees, placing a high priority on their attitude, interest, and response both for the sake of the employees and the organisation that is dependent on employee cooperation and commitment. In contrast, the human resources manager focuses on the organisation's need for human resources and acts to ensure that supply meets demand (p. 3).

Kane (1998) notes that the differences between HRM and the older concept of personnel management have been a subject of interest. He notes that authors of USA literature routinely produce lists of such differences whereas in the UK, there is more debate about the differences, if any, between the two concepts. Legge (1989) has analysed the definitions provided by both British and American personnel management and HRM texts, and found few substantial differences. Wright (as cited in Kane, 1998) took Legge's analysis further by analysing the contexts of 50 textbooks covering HRM or personnel management. Few differences were found, although she found that HRM texts tended to include larger amounts of material on business and HRM strategy, whereas personnel management texts included more on industrial relations. Legge did however detect some general differences which point to HRM, in theory, being a more central strategic management task than personnel management. Guest (1989) describes this strategic approach to HRM as being the way "human resources fit into and are used in the organization, how human resources are to be managed, and how the subcomponents, such as selection, training and remuneration, fit into a coherent whole" (p. 4). Kane comments that the growth of alternative perspectives on HRM can be seen as part of its development, although this development will probably not be in the direction of a single agreed paradigm. The literature provides no agreement on whether HRM is an essentially different process to personnel management or whether it is just the next step in the development of personnel management. For the purpose of this research, an assumption is made that they are fundamentally different processes.

The more competitive business environment of the late 1980s and 1990s required a more proactive approach, in which information would be collected throughout the company, be more accessible to more people in the organisation and be put to more use (*Focus on Human Resources,* 2000). Nankervis et al. (1992) describe economic and

political pressures, such as legislative requirements, during this time as being a strong influence on the development of more sophisticated information systems.

These changes and the increased responsibilities of the human resource (HR) function led to a desire to have an integrated HRIS. It was during this time that users began to feel the limitations of computer systems and the system development process, particularly their inability to automate the number of complexities in a given area. Systems analysts also found the various processes and activities larger and more complex than was foreseen or budgeted for. As a result, the scope of systems expanded for many organisations and development projects took years to complete or were terminated before completion (Walker, 1993).

2.5 Development of Human Resource Information Systems

Developers of these earlier systems faced the same management issues that developers are facing now – how to get the right data to the right people at the right time, in a cost-effective, useful form. Greengard (2000) comments that while the idea of automating cumbersome and time-consuming processes seemed to revolutionalise the HR department, it is no longer enough in meeting the needs of the digital economy. He claims that HR is now becoming a hub for corporate systems and data, which requires HR departments to understand the business side of information technology (IT), including the analysis and planning process. Greengard terms this new era as "e-HR" and believes that detailed analysis or user requirements and a thorough understanding of IT and strategic business issues are critical in redefining processes and elevating performance of the HR function.

Broderick and Boudreau (1992) observed that although IT can be used to develop competitive products or services in HR, they found from interviews with HRIS groups in ten 'Fortune 500' firms that the majority had invested in computer applications to manage employee records, payroll, and compensation and benefits administration. They argue that HR systems must go beyond simply improving the management of routine tasks, such as record keeping. They must connect to strategic objectives of the organisation.

One of the reasons why HRM has always been one of the most difficult areas to quantify and computerise, is that the development and implementation of an HRIS is more than just converting existing records and processes into a computerised system. When a proposal is made to develop and implement a HRIS, it is in reality a major organisational change initiative (Kossek & Block, 2000). Alexander (2001) asserts that in the development of a HRIS, technology itself is often not the issue; rather, it is culture and change. Much HR related information has in the past only been available to senior management and human resource functional managers. A HRIS provides a means of allowing line managers and employees to access information and services that were unavailable previously.

Manual processes cannot be transferred directly to an information system, they must first be reengineered, ie. streamlined and examined for work elimination. Although the automation of existing data and processes has been beneficial to the management of human resources, often crucial questions were not asked initially, eg. is this process necessary and how can the process be improved rather than just automated? In HRIS development the central issue should be to raise the quality and improve the direction of HR services, rather than only provide data faster, less expensively or more efficiently (Walker, 1993).

Boudreau (1995) observes that investments in HRIS are often small and tend to address tactics and administration rather than strategy. Boudreau believes that one of the reasons why HR has not exploited the available technology is because HR and HRIS are typically thought of from an administrative perspective. Although administrative applications are a good starting point in establishing the information needed to support strategic work, too much focus can lead to the "worst kind of re-engineering, decimating the core competencies of the HR function. Re-engineering strives to break away from the old rules about how we organize and conduct business. It involves recognizing and rejecting some of them and finding imaginative new ways to accomplish work" (Boudreau, 1995, p3). Therefore, not only must HRIS work effectively and efficiently, they must make changes that benefit the way information is received and decisions are made. Subramaniam (2000) supports Boudreau's view when he states that the critical priority for a successful HRIS is to ensure that it is aligned with the organisation's strategic business and HRM objectives.

2.6 Difficulties Encountered in Developing Information Systems

The difficulties encountered in the development and implementation of HRIS are common to all computer-based information systems. Martinsons and Chong (1999) believe that:

> Computer-based information systems have both a vast potential and undeniable limitations for improving business performance. However, inadequate consideration of non-technical issues can hinder the realization of these benefits and the recognition of limitations. The lack of attention to, and understanding of the social and organizational issues related to IT application is a serious concern. With the growing scope and sophistication of the technology, poor IS planning and design choices made today are likely to adversely affect the work design and communication patterns of tomorrow (p. 147).

Kossek and Block (2000) assert that system design interacts with organisational design and that basic decisions of what to automate and how to adapt the technology to the organisation are clearly strategic.

Keen (1993) has observed problems in the meshing together of business processes, people and technology. In his role as catalyst between business and information systems, he found it difficult to transfer understanding across the business/technology divide. He believes that the real failure is communication – in the sense of hearing and understanding as well as talking. Wallsten (1998) states that once communication is established, it is then necessary to find a meeting of the minds between human resource desires and information systems limitations. Initially the two parties have different, but very high expectations for the completion of the system. For example, human resource practitioners see a computerised system as a tool with limitless potential to both improve the productivity of the workforce and increase the overall success of the business. In contrast, the systems analyst views the project as an opportunity to employ the latest technologies and to create a system that is better than all of its predecessors.

Previous research has highlighted a major issue for the designers and users of HRIS as being the difficulty of communicating complex HR information needs to specialist system designers (Nankervis et al., 1992). The two disciplines of HR and IS are a contradiction in themselves. Roberts (1999) states that "HR is concerned with whether the organisational process is effective in the first place; IS, a data-processing function, is aimed at making an organisational process more efficient" (p. 111). This has led to problems in the past with the implementation of a HRIS that has fallen short of an organisation's needs. In extreme cases, when the new system is incompatible with the organisation, the entire project may be abandoned (Martinsons & Chong, 1999). Kovach and Cathcart (1999) believe that the lack of understanding between the two disciplines (HR users and system designers) is one of the major impediments to HRIS reaching its full potential. Scharer (1981) comments that users and analysts often "harbor grave doubts about each other" (p. 30). Users can become disenchanted when a new system is not effectively developed, and analysts are disenchanted when they are blamed for the failures. It is important therefore, that an orderly and methodical approach is applied to determine user requirements.

2.7 User Requirements Determination

One of the first steps of a HRIS project, after the overall scope has been established, is to determine user requirements. As implementing a HRIS is both a long-term commitment and a large and complicated investment, it is imperative that a comprehensive analysis is conducted of user requirements. Browne and Rogich (2001) describe user requirements determination as the process of gathering and modeling information about the required functionality of a proposed system by a systems analyst. They describe this process as consisting of three parts: information gathering, representation, and verification. The literature indicates that user requirements determination is one of the most difficult activities in the systems development process. Browne and Rogich assert that one of the principle reasons why information systems fail to meet end user expectations is because the development process has not produced a true reflection of requirements. Dalal and Yadav (1992) acknowledge that it is well accepted by researchers that a high percentage of design errors in contemporary information systems can be attributed to inadequacies in the process of determining requirements. Shemer (1987) agrees that the requirements analysis stage is recognised

as the most crucial stage of the systems development life cycle. According to Watson and Frolick (1993), systems analysts and researchers have a long-standing interest in how to best identify user requirements.

Davis (1982) describes two levels of requirements that must be considered by analysts: (1) organisational-level requirements and (2) application-level requirements. The first level looks at the broad information systems structure for an organisation and specifies a range of applications and databases. The second level defines and documents the information needs for specific applications.

Davis (1993) distinguishes between system requirements and software requirements. In the system case, systems design usually precedes the software requirements phase. During the systems design, agreement is reached on the major system components and their purposes. Software and hardware requirements are then elaborated on for each of these components separately. In the pure software case, the requirements phase begins when there is recognition that a problem exists and requires a solution, or a new software idea arises. Therefore, the system requirements identify what will satisfy user needs without specifying how these will be accomplished. Dorfman (1997) makes the observation that "system and software requirements are often treated together because the tools and methods used to derive them, and the techniques of documenting them, are very similar" (p. 12). Dorfman believes that it is important to distinguish between the two because, like any communications vehicle, a requirements document should be written with its intended audience in mind and in a form that non-technical users can read and understand.

Another important distinction is the difference between the task of determining requirements and the task of specifying requirements (Dalal & Yadav, 1992). Requirements determination is concerned with the process of determining the nature of the requirements while the requirement specification is concerned with formally stating the requirements after they are determined.

2.8 Models for the Requirements Elicitation Task

Although there has been substantial research in user requirements determination, there are few actual models for the task of eliciting requirements (Browne & Rogich, 2001). Modeling requires analysts to follow a process and works on the premise that communication is possible only when everyone uses a consistent terminology and precise concepts. The requirements model describes what users need in terms of the subject world (Hawryszkiewzcz, 2001). Hawryszkiewzcz stresses that one of the most important aspects of modeling is its role as a communication tool in eliciting requirements.

Browne and Rogich (2001) have developed a model that is designed to allow the analyst to understand what requirements are and how best to capture them. They state that many aspects of the model require testing and validation. Their model was constructed using theories from human problem solving, cognitive psychology and information systems development. The model separates the conceptualisations of the user and the analyst into two problem spaces. Based on what the analyst elicits from the user, an initial conceptualisation of current and future states of the organisation is formed. To improve the analyst's understanding and to collect missing information, the analyst uses several types of prompts to stimulate thought processes further. Browne and Rogich's study focused on developing these prompts. The prompting technique they developed was motivated by the difficulties that arise in the requirements elicitation process.

2.9 Difficulties in Requirements Elicitation

Byrd et al. (1992) contend that the problems associated with human limitations and communication difficulties make the process of eliciting information very difficult. Watson and Frolick (1993) perceive a major developmental problem is determining what information to include in the system, especially when the user often does not know what he or she wants and is unable to accurately articulate it to the analyst. Furthermore, end users and systems analysts come from different backgrounds and have different mindsets, and this can lead to communication breakdown. Dalal and Yadav (1992) categorise several distinct but related categories that complicate the task of the information analyst. They broadly categorised these factors as integration, perception, articulation and communication issues. Integration issues arise from the differing

perspectives, ie. each user has a different perspective of the problem situation and usually, each perspective potentially differs from that of the analyst. Inconsistencies can appear in the user requirements if the differing views are not reconciled effectively. Perception issues arise when users perceive requirements that are actually not true requirements, eg. a user may understand their true requirements only after working with the system over a period of time. Articulation problems can lead to unclear and incomplete requirements. For example, a manager's decision process is intuitive and cannot be stated explicitly or because the system itself is too complex and beyond the cognitive domain of any one user. Communication issues arise due to differences in background, vocabularies and mindsets between the user and the analyst.

Browne and Rogich (2001) identify three major difficulties in the requirements elicitation task as being: problem structuring issues, cognitive issues and communication issues. Problem structuring issues result from the variety and complexity of requirements. Cognitive problems are represented by the factors that affect the user's thinking, eg. recall problems. Stacy and MacMillian (1995) state that information about the world is stored and manipulated using some form of mental representation. They claim that many cognitive scientists believe that common cognitive biases arise from the way that humans develop and use mental representations of a problem or a situation, and representations of their prior experience. Byrd et al. (1992) say that both end users and experts, as humans, are subject to cognitive shortcomings. These cognitive limitations contribute to the communication difficulties.

2.10 Methods of Eliciting User Requirements

Eliciting user requirements has been described as fact-finding, which is the formal process of using research, interviews, questionnaires, sampling, and observation to collect information about problems, requirements and preferences. Byrd et al. (1992) listed commonly used elicitation techniques based on a search of the literature and their own experience and knowledge. They divided these into five elicitation types according to the elicitation mode: observation techniques, unstructured elicitation techniques, mapping techniques, formal analysis techniques, and structured elicitation techniques. Byrd et al. commented that "it is distressing, perhaps even shocking, that so little evaluation research has been undertaken on requirements analysis and knowledge

acquisition techniques" (p. 134). Browne and Rogich (2001) agree that despite the importance of eliciting user requirements to the development of information systems, very little research has been conducted to measure the effectiveness of the different techniques.

Of the different techniques, Moody, Blanton and Cheney (1998) state that the interview is a frequently cited elicitation technique and has "long been a part of the system professional's repertoire of elicitation techniques" (p.79). However, they note that the literature offers little in the way of theoretically grounded support or advice on how the interview should be conducted and what type should be used. Hawryszkiewzcz (2001) comments that interviewing is one of the most commonly used techniques in user requirements determination.

The interview process usually precedes any other methods used for gathering requirements and asks all existing and potential users of an information system what they need from the system (Hawryszkiewzcz, 2001). Whitten, Bentley and Dittman (2001) describe interviews as a fact-finding technique whereby the systems analysts collect information from individuals through face-to-face interaction. They regard the personal interview as the most important and most often used fact-finding technique. Keil and Carmel (1995) also identify the one-to-one interview as a common activity in the development of software.

Byrd et al. (1992) purport that structured interviews are the most general elicitation approach and that strategic use of closed, open, probing and leading questions can help overcome some of the difficulties inherent in the elicitation task. Moody et al. (1998) agree that structured interviews are often recommended, however they observe that there is very little guidance as to the content of such interviews. They state that confirmatory evidence obtained by discussions with practicing systems analysts revealed that analysts receive little or no formal training in interviewing techniques, often learning by observing others. Wetherbe (1991) states that because there is a lack of tools for conducting structured interviews, analysts often ask the wrong questions or omit important questions completely.

Marakas and Elam's (1998) study suggests that disciplined questioning strategies are not necessarily learned from practice and they can be improved via structured training. Moody et al. (1998) report that although the literature suggests that management information systems researchers have recognized the need for "systematic probing interviews to pursue the relevant areas to a greater depth" (p. 80), little has been done empirically to evaluate and validate the interview as an elicitation technique. They note that there is a noticeable lack of empirical evidence of any micro-level focus on the process of questioning or question construction and subsequent answer interpretation during information gathering.

2.11 Prompting Techniques for the Elicitation of User Requirements

Browne and Rogich (2001) have recently conducted an empirical investigation of user requirements elicitation, where they compared the effectiveness of prompting techniques in a structured interview. Their study was concerned with the elicitation portion of information gathering, and looked at ways of improving such elicitation. They identified that despite the importance of eliciting requirements from end-users, there was a paucity of research that measured the effectiveness of the different requirements elicitation techniques. They claim that their study is the first empirical test of the effectiveness of prompting methods in eliciting information from users in the information systems domain.

Browne and Rogich (2001) developed a context-independent prompting technique called the 'task characteristics technique', which included substantive and procedural prompts. While the purpose of substantive prompts is to elicit specific types of requirements, procedural prompts aim to elicit information that users might not otherwise provide due to cognitive obstacles.

Browne, Curley and Benson (1997) distinguish between context-independent and context-dependent techniques. Context-dependent techniques are directed questioning schemes designed for specific contexts. In contrast, the context-independent prompting technique is able to be exportable from task to task, as it is entirely independent of context. Browne and Rogich (2001) believe that context-independent questions can provide an excellent basis for interviewing users. They do, however, acknowledge that

it is unlikely that these questions will be the only method to gather the requirements, any more than interviewing on its own would be sufficient.

2.12 Summary

Computerised human resource information systems were initially designed to provide administrative and operational information to management. Today they are expected to integrate human resource policies with an organisation's strategic objectives and provide comprehensive information to a wide range of users.

The literature suggests that the development and implementation of a HRIS is both a complex task and expensive investment. Much of the effort to date has focused on the automation of administrative and routine tasks, while the competitive potential of many investments in HR information technology have not been fully exploited. A major issue for the designers and users of HRIS is the difficulty of communicating complex information needs to systems analysts. It is critical that systems analysts clearly define user requirements before the choice and installation of a HRIS is made.

A review of the systems analysis literature confirms that the requirements determination phase is of significant importance to the success of any information systems project, and is one of the most difficult tasks. An important part of the requirements determination phase is the task of gathering information and eliciting the information. The information systems literature reveals a lack of empirical evidence for the evaluation of the different techniques used to effectively elicit user requirements. Browne and Rogich's (2001) research on the evaluation of prompting techniques for eliciting user requirements is the first in the information systems domain. There is no evidence in the literature that research has been conducted to evaluate different techniques for eliciting user requirements specifically in the human resource domain. This limitation revealed from the literature search shaped and focused my main research question. My research will use Browne and Rogich's prompting technique and evaluate its effectiveness when applied to the task of determining user requirements for a human resource information system.

Research undertaken to improve the requirements determination phase in the development of a HRIS could help to increase the effectiveness of the information system solution, as well as to ensure that the organisation's strategic objectives are matched with HR systems and applications that support them.

CHAPTER 3: METHODOLOGY

3.1 Introduction

This chapter follows on from the literature review and outlines how the study was carried out. This was an experimental study, which utilised a hypothetical case of a tertiary education provider interested in developing an on-line HRIS. In the study, two prompting techniques were operationalised to elicit user requirements. The results were then compared to measure the relative effectiveness of each technique. A description is provided of the experimental design, the sampling method, procedure, data collection and analysis, and the measures applied.

3.2 Background to Case Study:

UCOL is tertiary education provider with approximately 500 employees, which includes casual and part time staff. It has four regional locations where courses are offered: Palmerston North, Levin, Wairarapa and, Wanganui.

UCOL's organisational structure includes an Executive Management Team, with three faculties reporting to it. Two faculties offer a range of courses with Programme Leaders responsible for their management. The remaining faculty is responsible for the support and administration of student learning and services. The Human Resource Manager reports directly to the Chief Executive Officer.

This study is based on the premise that UCOL is considering the development of an on-line HRIS to enable employees to access human resource information electronically. As the first step in this process, UCOL must develop a set of requirements to guide the design and development of the HRIS. As part of the requirements determination process, an elicitation of user requirements must be undertaken.

3.3 Sampling Method:

Participants in the study consisted of 16 UCOL staff. The criterion for selection was that participants must have managerial/executive responsibility and be employees of

UCOL. While several categories of stakeholders exist at UCOL, a managerial perspective for requirements determination has been sought for this study. This is consistent with Browne and Rogich's (2001) study. Hawryszkiewycz (2001) supports this approach by stating that the objective of first interviewing management is to clearly identify the major components within the system and tasks within these components. Because management personnel are aware of what goes on in the organisation, they can provide leads as to how to get information and who to get it from. Starting with management also ensures that management is supportive of the system and will encourage cooperation from their section (Hawryszkiewycz, 2001).

The sample of 16 participants was chosen due to the verbal protocol method of data analysis. Todd and Benbasat (1987) state that due to the high density of data that can be found in a single verbalisation, samples are usually very small, commonly between 2 and 20. Browne and Rogich's (2001) study consisted of 45 subjects, which exceeded the number used in typical studies using the verbal protocol method of data analysis. Generally, sample sizes are small as this method of analysis is time consuming and labour intensive (Bolton, 1991).

Systematic sampling was used to select the subjects. The total population of managerial/executive staff at UCOL consisted of 48. This was divided by 16. A number was chosen at random between one and three and every 3rd name on the list was chosen after that.

3.4 Experimental Groups:

The experiment was designed with two groups. One group was labeled the treatment group and received the task characteristics prompts developed by Browne and Rogich (2001). The second group was the control group for the study. This group received a set of questions based on the syntactic technique of questioning. Each group consisted of eight subjects.

The task characteristics prompting technique developed by Browne and Rogich (2001) was adapted for this study appears in Table 1. It includes substantive prompts and procedural prompts. Substantive prompts are designed to elicit specific types of

requirements, whereas procedural prompts are aimed at eliciting information that subjects might otherwise not evoke due to cognitive obstacles (Davis, 1982; Stacy & Macmillan, 1995).

Table 1

Treatment Group Questions

1.	What would your employees want the system to do? (Substantive prompt)
2.	Why would your employees not want to use the system? (Procedural prompt)
3.	What can be done to overcome these negatives? (Procedural prompt)
4.	Summarise everything you want the system to do. (Procedural prompt)
5.	What must the employee do to use the system? (Substantive prompt)
6.	Tell me about situations where the employees would have a problem using the system? (Procedural prompt)
7.	What can be done to overcome these problems? (Procedural prompt)
8.	Summarise the steps for using the system. (Procedural prompt)
9.	What people or departments must be involved to support the employee's use of the system? (Substantive prompt)
10.	Describe in detail the tasks that these people or departments must do. (Substantive prompt)
11.	What feedback must the system provide to assist in performing these tasks? (Substantive prompt)
12.	What kinds of things can people do now that they might not be able to do when using the system? (Procedural prompt)
13.	What information must the employee supply to the system to be able to use it? (Substantive prompt)
14.	What information must the system supply to the employees? (Substantive prompt)

Note. Adapted from "An empirical investigation of user requirements elicitation: Comparing the effectiveness of prompting techniques" by G. J. Browne and M. B. Rogich, 2001, Journal of Management Information Systems, 17, p. 232.

The current study utilised 14 prompts from the 18 provided by Browne and Rogich (2001). Browne and Rogich's study involved asking questions about the user requirements of both employees and customers. In the current study, employees' requirements were of interest, because the system being developed was a HRIS rather than an on-line grocery shopping system. Therefore, prompts that were repeated for customers were rejected.

The syntactic prompting technique relies on questions starting with 'who', 'where', 'when', 'why', and 'how'. The analyst uses these interrogatories as syntactic building blocks for constructing questions. Couger (1996) recommended three rounds of these questions with this technique, and this was applied to both Browne and Rogich's (2001) study and the current research. As this technique is commonly used in practice in system development, it is used as the control group for this research. Table 2 provides the 18 syntactic prompting technique questions adapted from Browne and Rogich's for this study.

Both the task characteristics prompting technique and the syntactic prompting technique are context-independent techniques. They differ from context-dependent techniques in that they can be used for different tasks. Context-dependent techniques are directed questioning schemes designed for specific contexts and attempt to use context to help users focus on specific goals for the system and to keep their reasoning confined to narrow issues (Browne & Rogich, 2001). The disadvantages of context-dependent techniques are that different sets of questions need to be developed for each type of system development project, and substantial expertise and familiarity in the user's domain must be used by the analyst to construct questions. As analysts will often be required to analyse business processes for which they have limited substantive knowledge, context-independent questions can provide a basis for knowing what to ask (Browne & Rogich, 2001).

Table 2

Control Group Questions

1.	Who would use the system?
2.	Why would they use the system?
3.	What tasks would they want the system to do?
4.	Where would they use the system?
5.	When would they use the system?
6.	How will they know how to use the system?
7.	Who will the new system have an impact on?
8.	What would this impact be?
9.	Why is the system going to have an impact on the employee?
10.	How could the impact be minimised?
11.	When could we implement the system to lessen the impact?
12.	Where could the training of the new system take place to minimise the impact?
13.	Who needs to provide information to the system?
14.	What information needs to be provided?
15.	Why is it important that this information is provided?
16.	When would they provide information?
17.	How do they provide the information?
18.	Where would the monitoring of the information take place?

Note. Adapted from "An empirical investigation of user requirements elicitation: Comparing the effectiveness of prompting techniques" by G. J. Browne and M. B. Rogich, 2001, Journal of Management Information Systems, 17, p. 234

3.5 Procedure

Once subjects had been selected, they were contacted via email and were invited to participate in the study (Appendix D). An information sheet was provided in the email, including a consent form (Appendix E). All subjects contacted gave their consent to participate. An interview time was then made that was convenient to the subject.

Each subject was interviewed one-on-one. All interviews were tape recorded for later transcription. The interviewer functioned as the systems analyst in the interview and the subjects functioned as users. Interviews were held over eight weeks, with the interviewer conducting approximately two interviews per week. Each interview was timed to determine whether the differences in user requirements elicited between the groups were not a result of the time spent considering the problem. The mean time spent per interview for both groups was 35 minutes.

Subjects listened as the interviewer read the instructions and explained what the subjects and interviewer were expected to do during the interview. The instructions were based on guidelines developed by Carroll, Bazerman and Maury (1988) for verbal protocol studies (Appendix F). In verbal protocol studies, subjects are encouraged to speak all their thoughts out loud. If a subject has difficulty verbalising or forgets to speak aloud, the interviewer will give a neutral prompt such as "tell me what you are thinking" (Carroll et al., 1988). After the instructions were given, subjects were given the scenario for the case study and asked to read it (Appendix G). The interviewer then conducted the questioning process by asking the questions from the appropriate prompting technique.

3.6 Methods of Analysis:

Verbal protocol analysis was utilised in this study. Carroll et al. (1988) provide an explanation of this type of analysis:

> Verbal protocols are collected by instructing subjects to "think aloud" during their deliberations, to report any thoughts that come to mind without self-censorship. Unlike introspections, subjects are not asked to speculate on what they are doing

but are asked to verbalise as much of the content of their thoughts as possible (p. 358).

Todd and Benbasat (1987) believe that verbal protocol analysis portrays the use of information external to the task, such as that retrieved from long-term memory during problem solving. Verbal protocol analysis has been used for the extraction of expert knowledge to provide a basis for the development of decision support systems and expert systems. Todd and Benbasat (1987) observe that the use of protocol analysis in interface design is an effective means of capturing both a user's approach to a task and why problems occur when users interact with computer systems.

There are various methods by which protocols can be analysed: scanning, scoring, global modeling, and computer simulations (Todd & Benbasat, 1987). This study used the scoring method, which involved using a coding scheme developed by Browne and Rogich (2001). With the scoring method, the protocols are broken down and the frequency of specific occurrences is tabulated. Statistical testing is then performed on the results (Carroll et al., 1988).

3.6.1 Coding Procedure:

All tape-recorded interviews were transcribed by the researcher for analysis and coding. The transcribed protocols were the only source of data used in the analyses. Before coding was possible, protocols were first parsed into meaningful units. The 'context space' parsing scheme used by Browne and Rogich (2001) was utilised in the current study (Table 3). A context space is a block of utterances in which the subject is discussing the same issue or topic (Browne et al., 1997). After the protocols were parsed, they were coded into the generic requirements categories as adapted by Browne and Rogich. The generic requirements used in the current research are displayed in Table 4.

Table 3

Sample Parsed and Coded Protocol

Prompt: What would your customers want the system to do?			
Parsed response	Requirement level	Generic requirement	Explanation
It needs to have all the personal information quickly at your fingertips – name,	Information	Stored Information (name)	Example of information that must be stored.
Address.	Information	Stored Information (name)	Another example of information that must be stored by the system
Whatever information you need for their billing.	Process	Process Description (Billing)	Identifies the need for a billing process
For instance, when their last payment was,	Information	Stored Information (last payment)	Identifies an information requirement associated with billing
Whatever balance is on their account.	Information	Stored Information (balance)	Another information requirement associated with billing.
I would imagine in this particular system that you would want to keep track of whatever you know this person orders every week.	Information	Stored Information (items ordered weekly/regularly)	Another example of information that must be stored by the system.
You want their database set so their staples are in there, so they can constantly go into the database and enter as little as possible.	Task	Performance Criteria (order entry)	Identifies the customer task of order entry and states task performance criteria, specifying that the customer must be able to enter an order as easily as easily as possible.
Of course, that won't happen until they become your customer; you have to interview them to see what are the standard things they order every week.	Process	Process Description (customer set-up)	Identifies the process of setting up the customer on the system.

Note. From "An empirical investigation of user requirements elicitation: Comparing the effectiveness of prompting techniques" by G. J. Browne and M. B. Rogich, 2001, Journal of Management Information Systems, 17, p. 241.

Table 4

Generic Requirements Categories

Generic Requirement	Description
Goal Level Requirements	
Goal State Specification:	Identifying the particular goal state to be achieved.
Gap Specification:	Comparing existing and desired states.
Difficulties and Constraints:	Identifying factors inhibiting goal achievement.
Ultimate Values and Preferences:	Stating the final ends served by a solution.
Means and Strategies:	Specifying how a solution might be achieved
Causal Diagnosis:	Identifying the causes of the problematic state.
Knowledge Specification:	Stating facts and beliefs pertinent to the problem.
Perspective:	Adopting an appropriate point of view on the situation.
Existing Support Environment:	Description of the existing technological environment that can be applied to support the system to be developed.
Stakeholders:	Organisational units, customers, suppliers, competitors.
Process Level Requirements	
Process Description:	A series of steps or tasks designed to produce a product or service.
Process Knowledge Specification:	Facts, rules, beliefs, algorithms, and decisions required to perform a process.
Difficulties, Constraints:	Factors that may prohibit process completion.
Task Level Requirements	
Task Description:	Identification of the sequence of actions required to complete a task.
Task Knowledge Specification:	Facts, rules, beliefs, assumptions, algorithms, and decisions required to perform a task.
Performance Criteria:	Statement that associates an outcome with specific conditions, actions, and constraints.
Roles and Responsibilities:	Individuals or departments who are charged with performing tasks or steps within tasks.
Justification:	Explanations of why specific actions are or are not to be taken.
Information Level Requirements	
Displayed information:	Data to be presented to end-users in paper or electronic format.
Interface design:	Language and formats used in presenting "Displayed Information".
Inputs:	Data that must be entered into the system.
Stored Information:	Data saved by the system.
Objects and Events:	Physical entities and occurrences in the world that are relevant to the system.
Relationships Between Objects and Events:	Descriptions of how one object or event is associated with another object or event.
Data attributes:	Characteristics of objects and events.
Validation Criteria:	Rules that govern the validity of data.
Computations:	Information created by the system.

Note. From "An empirical investigation of user requirements elicitation: Comparing the effectiveness of prompting techniques" by G. J. Browne and M. B. Rogich, 2001, Journal of Management Information Systems, 17, p. 236.

To test the reliability of the coding, a second person (who was unaware of the research hypotheses) coded a random sample of 20% of the protocols. Interrater reliability between the two coders was assessed using reliability analysis in SPSS Version 9.0. This test found that reliability was 85%.

The parsed responses and coding were entered into an Excel 2000 spreadsheet (Appendix H). The total number of both the general and specific requirements elicited was counted for each subject and for the treatment and control group overall. The quantitative data was transferred to SPSS Version 9.0 for statistical testing. All data was backed up on floppy disk and in paper form.

3.6.2 Measures

Both quantity and differences in category usage across groups were of interest in the study. An analysis of the requirements elicited for each set of prompts within the treatment group and control group was also conducted.

Quantity of information was measured by:

a) The total number of requirements evoked by subjects – both each major requirement category and as a grand total. An analysis of variance (ANOVA) was performed to test for differences between the groups.

b) Breadth of requirements was measured by counting the number of different generic requirements into which subjects utterances were coded. ANOVA was performed to determine whether there were differences between the groups.

Qualitative differences in information elicited were measured by:

a) Category usage was determined by counting how many times a category was used by each subject within the treatment group and the control group, to give a total score for each category general level category, eg. goal, process, task, information. The Mann-Whitney U test was performed to test for differences in the rankings of the two groups. This was used to provide an indication of whether subjects in the two groups were emphasising different information.

3.7 Ethical Considerations

3.7.1 Research Approval

In accordance with the ethical standards required by the Massey University Human Ethics Committee, the researcher followed the full process of obtaining approval for a research procedure involving human subjects via the research supervisor at Massey University.

The UCOL Research Committee gave approval for the research to proceed (Appendix B). Consent to use UCOL as a hypothetical case study and for employees to be participants was given by UCOL's Chief Executive Office via the Human Resources Manager (Appendix C).

3.7.2 Informed Consent

All potential participants were provided with a written information sheet (Appendix E) about the study prior to consenting to be interviewed. Written consent was obtained from all participants prior to the interview.

3.7.3 Anonymity and Confidentiality

The identity of the participants was protected by assigning a code to each participant's set of responses. All details of the interviews, tapes and transcriptions were kept in a secure location and only available to the researcher and the academic supervisor.

3.8 Summary

This chapter has clarified the background to the case study, and discussed the sampling method and the experimental groups. It has detailed the procedures for interviewing, the methods of analysis and has provided the guidelines followed to adhere to ethical principles. The next chapter presents the quantitative and qualitative research findings.

CHAPTER 4: RESULTS AND ANALYSIS

4.1 Introduction

In this chapter, an analysis of the requirements elicited for each set of prompts within the treatment group and control group was conducted. The second part of the analysis involved determining the quantity of requirements elicited across the two groups. As part of the measure of quantity, the breadth of requirements elicited were also considered. Finally, qualitative differences in the information elicited were determined by analysing the differing category usage across the two groups.

4.2 Analysis of Prompts by Groups

The mean requirements elicited from the substantive, procedural and syntactic prompts and requirements elicited overall for each group are displayed in Table 5.

Table 5

Requirements Elicited from Prompts within the Treatment and Control Groups

Group	No. of prompts	Mean requirements per prompt	Total Requirements per prompt
Treatment group		**47**	**662**
Substantive prompts	384	54	
(7 questions)			
Procedural prompts	278	40	
(7 questions)			
Control group		**24**	**441**
Syntactic prompts	441	24	
(18 questions)			

Table 5 shows that the mean requirements elicited per question for the treatment group was considerably higher (47) than that found in the control group (24). In the treatment group, the mean requirements elicited from the substantive prompts and procedural prompts were 54 and 40 respectively, compared with only 24 from the syntactic prompts administered in the control group.

4.3 Analysis of Quantity of Requirements Elicited

Table 6 shows that on average, 70 requirements were elicited per person in the treatment group. This compares with an average of 55 requirements elicited per person in the control group. The greatest difference between the groups was in the information category, with the treatment group eliciting an average of 32 requirements per person, compared to only 14 requirements per person in the control group.

Table 6

Quantity of Requirements Elicited

Prompting Technique		Overall	Goal	Process	Task	Info
Treatment	Mean	70.25	29.37	2.62	18.37	32.37
	Std Dev	24.25	18.31	2.61	8.45	14.75
Control	Mean	55.12	24.75	2.62	13.25	14.5
	Std Dev	19.74	13.54	2.39	4.5	8.63
Total	Mean	62.69	27.06	2.62	15.81	23.44
	Std Dev	22.74	15.74	2.42	7.05	14.89

ANOVA's were performed to test for significant differences between the means. The first variable of interest was the total number of requirements elicited by the two prompting techniques. Although there were absolute differences in the total number of requirements elicited (Treatment = 70.2; Control = 55.1), these means were not significantly different.

An ANOVA was used to test for differences in the number of requirements elicited from each of the generic requirement categories: Goal, Process, Task, Information. The results are displayed in Table 7.

Table 7

Differences in the Number of Requirements Elicited from each of the Categories

	F	Sig
Total Requirements	1.872	.193
Goal	.330	.575
Process	.000	1.000
Task	2.293	.152
Information	8.746*	.010

* $p < .05$

Table 7 shows that there were no significant differences between the groups for the goal, process and task requirements categories. However the difference between the groups for the information requirements category was strongly significant ($p = 0.010$), with the treatment group eliciting a significantly higher mean number of requirements than the control group.

4.3.1 Breadth of Requirements Elicited

A second measure of the quantity of information elicited by the two prompting techniques concerns the breadth of requirements. Breadth of requirements was calculated by counting the number of different generic requirement categories into which subjects' utterances were coded (27 categories in total). The treatment group elicited requirements for 26 out of the 27 categories compared to the control group, which elicited 24 out of the 27 categories. Table 8 presents the means and standard deviations for both groups' category usage. Although the treatment group elicited on average a greater number of different categories per subject, an ANOVA showed that there was no statistical difference between the two groups ($p = 0.297$).

Table 8

Mean Number of Different Categories Utilised by Each Group

Group	Mean	Standard deviation
Treatment	16.38	4.50
Control	14.50	1.93

4.4 Analysis of Differing Category Usage

Qualitative differences elicited by the two prompting techniques were also analysed. The category usage was firstly determined by counting how many times a category was used by each subject, to give a total score for each category: goal, process, task, information. The category with the highest score was assigned No. 1, while the category with the lowest score received No. 4. Therefore, each subject's categories were ranked from one to four. Mann-Whitney U Tests were performed to test for differences in the rankings between the treatment and control groups (Table 9).

Table 9

Mann-Whitney U Test for Ranking Differences

Generic requirement	Prompting technique	Mean rank	Sum of ranks	Significance
Goal	Treatment	10.31	82.50	.078
	Control	6.69	53.50	
Process	Treatment	9.50	76.00	.143
	Control	7.50	60.00	
Task	Treatment	10.25	82.00	.105
	Control	6.75	54.00	
Information	Treatment	5.50	44.00	.006**
	Control	11.50	92.00	

** $p < .01$

Table 9 shows that there were no significant differences in the rankings for the goal, process and task categories. However, the rankings for the information category were

highly significant ($p < 0.01$), providing evidence that the treatment group evoked more information category requirements than the control group.

4.5 Summary

The results showed that there were absolute differences between the groups with the treatment group eliciting a higher number of requirements overall. However, these differences were not statistically different, with the exception of the information category. The breadth of requirements elicited from the two groups was not found to be statistically different, and with the exception of the information category, there were no significant qualitative differences in the types of requirements elicited by each group. The following chapter provides an explanation of these results and discusses them in light of the previous research findings.

CHAPTER 5: DISCUSSION

5.1 Introduction

This chapter provides a discussion of the research findings and suggests a future research agenda, as well as implications for practitioners. The prompting techniques that were compared in the study are discussed and an explanation of the results is provided. The generic requirements categories were used to code subjects' responses to questions from the prompting techniques being tested. As this coding scheme provided the basis for analysis, it is discussed first.

5.2 Organisation and Coding of Requirements

In order to organise and code the requirements gathered, the generic requirements categories were used. The generic requirements categories (Table 4) provided by Browne and Rogich (2001) were based on the 'Taxonomy of Generic Requirements' scheme developed by Byrd et al. (1992). The generic requirements consisted of general level categories and subcategories, which were constructed to enable the analyst to evaluate the results of any requirements determination effort. The general level requirements categories reflect the general types of knowledge that analysts need to understand the business environment, as shown in the requirements task model depicted in Appendix A: goals, processes, tasks and information. These categories provided a template for the evaluation of the research results. Without this template, the researcher would have found it difficult to know how best to capture the elicited requirements. Whitten et al. (2001) assert that it is vital that the systems analyst assembles or documents the information they have gathered in an understandable and meaningful way. Another advantage of having a coding scheme to organise information is that it can be used to give the analyst guidance as to when sufficient requirements have been gathered. For example, when an analyst has coded responses evoked into most or all of the requirements categories, this will indicate whether there is sufficient information to provide a starting point for analysis and design. In the current research, requirements elicited were coded into 26 out of the 27 categories for the treatment group and 24 out of 27 categories for the control group, which provided a good indication that the

majority of areas had been captured. In the present research, as in the Browne and Rogich (2001) study, the categories were used solely to code subjects' responses to questions from the elicitation techniques being tested.

5.3 Prompting Technique – Treatment Group

Browne and Rogich (2001) developed the theory-based prompting technique for eliciting requirements, called the task characteristics prompting technique. The technique was so named because it was based on their new model of the requirements elicitation task (Appendix A) and theoretical knowledge from human problem solving, cognitive psychology, and information systems development domains. Their test of this technique was the first empirical test to be conducted on the effectiveness of a prompting technique in the elicitation of user requirements. Moody et al. (1998) did test two types of interviewing techniques, but their focus was not on prompting strategies, which meant their study was at a higher level of abstraction than Browne and Rogich's study. As noted in the literature review, Byrd et al. (1992) assert that there has been a serious lack of research undertaken on requirements analysis and knowledge acquisition techniques. Marakas and Elam (1998) note that:

> It appears that the general assumption is that the questioning process is a natural, instinctive one and that the ability to generate a series of questions intended to supply the information necessary to model a problem environment is acquired simply through repetitive domain experience and not through any specific processual design (p. 41).

Marakas and Elam (1998) found that the IS literature provides little empirical evidence to either validate or refute this assumption.

The task characteristics prompting technique developed by Browne and Rogich (2001) was adapted to suit the business scenario in the current research and was used as the treatment group. Browne and Rogich state that they did not set out to create 'the' set of elicitation prompts for all systems development projects, but rather to "demonstrate a methodology for creating prompts based on a model of the requirements elicitation task and theories from various disciplines" (p. 245). Their aim was for the technique not to

be dependent on the context of the system being developed, although it is dependent on the context of requirements elicitation generally. For example the Browne and Rogich study utilised a case describing a grocery company interested in developing an Internet-based food shopping system, as compared to a HRIS to be developed for an educational institution in the current research. The task characteristics prompting technique provided an excellent framework to begin the task of designing questions. The only changes that were implemented were to reject questions that were repeated to both the 'customer' and 'employee', eg. "What must the customer do to use the system?" and "What must the employees do to use the system?" This was because the HRIS being developed was for the use of employees rather than customers. As a result, 14 questions were utilised in the current research for the treatment group instead of 20 questions in the Browne and Rogich study. The control group consisted of 18 questions, which was the same amount as the Browne and Rogich study.

The task characteristics technique questions include two types of prompts: substantive and procedural prompts. The use of both types of prompts had the intention of assisting users and analysts to overcome cognitive problems associated with the requirements elicitation task.

The substantive prompts are based on a theoretical account of the requirements elicitation task, and are intended to stimulate user's memory structures in ways that improve recall of knowledge relevant to system requirements (Davis, 1982; Stacy & Macmillan, 1995). The procedural prompts are based on theory and empirically demonstrated reasoning strategies people use (Browne et al., 1997), and are therefore intended to produce a more complete set of requirements than would otherwise be elicited. The procedural prompts were designed to help users overcome a variety of cognitive biases (Browne & Rogich, 2001). There are different ways that procedural prompts have been used in the technique. For example, the question (Q. 12) "What kinds of things can people do now that they might not be able to do when using the system?" was intended to cause respondents to re-examine pre-conceived ideas about the system and to play the "devil's advocate" (Browne & Rogich, 2001, p. 231). This question evoked responses such as:

- "What sort of history is going to be there? Some people have been here for years".
- "I wont be able to go to HR for example, as a representative of an employer and say can I have so and so's file and look through to see what is there".
- "When you look at the original piece of paper with no twink, obviously factual, you feel more confident than with an electronic one".
- "Sometimes it's easier to explain something in detail through a conversation than through a box on a computer screen".

The procedural prompts were also used to ask the respondent to summarise their thoughts, eg. (Q. 4) "Summarise everything you want the system to do" – this type of question helped the user to overcome the limitations of short-term memory. Another way procedural prompts were used was to create a scenario or tell a story eg. (Q. 6) "Tell me about situations where the employee would have a problem using the system?" Scenarios described as a result of this question in the current research included the following:

- "If they were able to access information not directly related to themselves and any sensitive information".
- "If they didn't have computer access, could be off site, in the hills doing forestry".
- "Reliability seems to be a major issue for any computer system".
- "People with disabilities – visual problems".
- "I can imagine things like some of the systems going too far with disciplinary procedures".
- "... the other thing is with bereavement leave if you end up with a system where you request bereavement leave or sick leave on line and you are not there to do it, or it's not accessible from home, people might not be coming in and it depends whether there are still options to let their managers know".

It was evident in the research that this type of scenario-building procedural prompt enabled respondents to articulate information that they may not otherwise have

provided. This supports the proposition by Browne and Rogich (2001) that these prompts can cause respondents to evoke information that may improve the completeness of the design and anticipate problems with the system that may not have been considered.

5.4 Prompting Technique – Control Group

The ease of determining the questions using the task characteristics technique contrasted with the difficulty the researcher found in formulating the most suitable questions to ask using the syntactic technique. The syntactic technique, known also as the interrogatories technique, relies on questions beginning with 'who', 'what', 'where', 'when', 'why', and 'how' (Brody, 1982). Brody believes that to obtain precision the problem must be broken into its component elements by asking a series of basic questions. The objective is to ensure that all related aspects have been considered (Couger, 1996). The technique dates back to a poem by Rudyard Kipling:

> I had six honest serving-men,
> They taught me all I knew.
> Their names were What and How and Why
> And When and Where and Who
> (Kipling, 1903, p. 86).

Browne and Rogich (2001) utilised three rounds of questions in their study adapted from Couger (1996). Couger states that his experience of the three rounds provides a framework for analysing the typical problem or issue and that the forced questions set caused the analyst to take a more complete and comprehensive approach to both problem identification and resolution. Because this technique is commonly used in practice, it was used as the control group. Browne and Rogich comment that the formulation of each specific question relies on the expertise and creativity of the analyst and the only guidance given is the interrogatories themselves. This challenge was experienced in the current research, although care was taken to represent the spirit of the questions of Browne and Rogich's study as closely as possible in the prompts constructed.

The findings showed that from the treatment group, the substantive prompts elicited a mean of 54 requirements per question and the procedural prompts a mean of 40 per question. When compared with a mean of only 24 requirements elicited per question for the syntactic prompts used in the control group, the results suggest that by combining substantive and procedural prompts as was done in the treatment group, the analyst is more likely to elicit a higher number of requirements without the necessity to ask a greater number of questions, as in the control group. The results give support to the intention of Browne and Rogich's task characteristics technique, which was constructed in an attempt to overcome the cognitive problems of users when eliciting information. Previous researchers have identified the cognitive limitations of humans as information processors and problem solvers (Davis, 1982; Valusek & Fryback, 1985) to include such things as limited memory and recall, selective perception, as well as communication difficulties between system analysts and end users. Because overcoming cognitive obstacles is an important aspect of the requirements elicitation task, it would seem pertinent to encourage research developments in the future that synthesise the viewpoints of cognitive scientists, software scientists and practitioners (Robilliard, 1999).

5.5 Quantity of Requirements Elicited

Quantity of information elicited was of most importance in the research because the techniques being tested were elicitation techniques. The quantity of information elicited could also be considered one measure of quality of a requirements elicitation technique. This is because the availability of evoked information is more important in requirements determination for systems development than in any other domains. For example, in the decision-making domain, a greater quantity of information does not lead to better decision making per se, as large amounts of information must ultimately be reduced to a limited number of judgements (von Winterfeldt & Edwards, 1986). This contrasts with requirements determination, where each element of information can conceivably become a requirement for the proposed system (Browne & Rogich, 2001).

To determine the quantity of information elicited from the two groups, analysis of the group's means for each general level category and in the coding scheme, and overall was conducted. The absolute differences between the two groups' means showed that

the treatment group elicited a higher quantity of requirements than the control group (Treatment = 70.2; Control = 55.1). This was despite the treatment group consisting of 14 questions compared to 18 questions in the control group. This finding provides some support to Hypothesis 1 which posited that the total number of requirements elicited by the treatment group will be greater than the number elicited by the control group. These differences were not, however, statistically significant. This was most likely due to the small sample size (16 subjects as compared to 45 subjects in the Browne and Rogich study). The main reason for the smaller sample size in the current research is that the verbal protocol method of analysis is very time consuming and that to have completed a study with 45 subjects would have required collaboration with other researchers. The number of subjects interviewed in this research is consistent with previous verbal protocol studies, where sample sizes commonly ranged between 2 and 20 (Curley, Browne, Smith & Benson, 1995; Todd & Benbasat, 1987). Browne and Rogich (2001) state that their study with 45 subjects exceeded the number typically used in this kind of research.

Further tests were performed to determine whether the treatment group and the control group differed in the number of requirements elicited from each of the general level categories in the coding scheme. The first test found that the treatment group evoked more goal level requirements than the control group (Treatment = 29.4; Control = 24.7), however, the results were not significantly different ($p = 0.57$). This is consistent with the Browne and Rogich (2001) study where they found no statistical differences between the two groups ($p = 0.53$). The results of the current study support Hypothesis 2 that the total number of goal level requirements elicited by the treatment group will not differ from the number elicited by the control group.

The treatment group evoked exactly the same amount of process level requirements as the control group (Treatment = 2.6; Control = 2.6). This result does not support Hypothesis 3 which states that the total number of process level requirements elicited by the treatment group will differ from the number elicited by the control group. It is also inconsistent with Browne and Rogich's (2001) study which found there was a significant difference between the groups for the process level. A possible explanation for the difference in the process category from the Browne and Rogich study could be attributed to the subjectivity of the coding by the researcher in the current research,

however all parsed and coded responses were checked for consistency between the two groups. In the Browne and Rogich study, the person who performed the coding was blind to the hypotheses of the study and unfamiliar with systems development. A second person was used to code a random sample of 20% of the subjects' protocols as a check for reliability. In the present study, the researcher was the person who formulated the hypotheses, but did not however, have specialist knowledge in systems development. As in the Browne and Rogich research, a second person, also blind to the hypotheses of the study and unfamiliar with systems development, was used to code a random sample of 20 percent of the subject's protocols as a check for reliability. Interrater reliability between the two coders was 85 percent and the researcher's codes were deemed reliable.

For the task level requirements, there were more requirements elicited by the treatment group than by the control group (Treatment = 18.4; Control = 13.2). However, when tested, the differences were not significant ($p = 0.15$). This compares with Browne and Rogich (2001) who found the differences to be marginally significant ($p = 0.049$). This finding cannot totally support Hypothesis 4 which states that the total number of task level requirements elicited by the treatment group will differ from the number elicited by the control group. As explained previously, the smaller sample size in this study reduces the ability to compare the statistical differences between the current research and the Browne and Rogich study.

The treatment group elicited more information level requirements than the control group (Treatment = 32.4; Control = 14.5). Statistical testing found that the difference was strongly significant ($p = 0.010$). This finding is consistent with Browne and Rogich's (2001) results, which found that there were significant differences between the groups for the information level requirements. This result also supports Hypothesis 5 that the total number of information level requirements elicited by the treatment group will differ from the number elicited by the control group.

5.6 Breadth of Requirements Elicited

The second general measure of the quantity of information elicited by the two groups concerned the breadth of requirements. The mean number of different categories utilised

by the treatment group was higher than the control group (Treatment: 16.4; Control: 14.5), however it was found that there was no statistical difference between the groups for the breadth of requirements elicited (although results may have been significant with a larger sample size). The lack of statistical difference is consistent with the Browne and Rogich (2001) study and supports Hypothesis 6 which proposed that the breadth of requirements (ie. number of different requirements categories) elicited by the treatment group will not differ from the breadth elicited by the control group. These results indicate that there may be no advantage for either of the two groups in the breadth of information elicited. Browne and Rogich offer an alternative explanation for this finding as being the precision of the coding scheme. For example, the process level and task level contained only three and five categories of requirements, respectively. This compares with the goal and information level categories which consisted of ten and nine respectively. The limited number of categories in the process and task level categories may have been insufficient to measure adequately the breadth of requirements elicited by each technique. As suggested by Browne and Rogich, an area of future research may be to focus on the usefulness of the various categories and subcategories and enhancements that may be appropriate.

5.7 Differing Category Usage

In addition to the quantity of information measures, qualitative differences in the information elicited were of interest. If there were differences, it might suggest that a combination of techniques should be used by analysts. The ranking of generic requirement categories within each group, according to the number of subjects who mentioned that category, provided an indication of whether subjects in the two groups were emphasising different information.

Browne and Rogich (2001) used the Spearman test to determine if there was a correlation between the generic requirements categories evoked by subjects in the task characteristics group and the syntactic group. The Mann-Whitney U Test was performed in preference to the Spearman test in the present study to test whether there were significant differences in the methods, rather than if they were correlated. The test showed that the only significant difference was for the information category ($p < 0.01$). This partially disagrees with Hypothesis 7, which states that there will be no significant

qualitative differences in the types of requirements elicited by each group. A possible explanation for the greater difference in category use by the treatment group could be because structured techniques have been found to be the most successful way of eliciting information level requirements (Byrd et al., 1992).

The results also partially agree with Browne and Rogich's (2001) findings. They found that there was a high correlation between the generic requirements categories evoked by subjects in the treatment and control groups ($r_s = 0.77$; $p < 0.01$) and therefore, found no significant qualitative differences. Browne and Rogich did not view the lack of significant qualitative differences in their study as disappointing, because the use of several techniques for eliciting requirements is not appealing. This is because the use of more than one prompting technique would be time consuming and therefore costly (Whitten et al., 2001).

5.8 Limitations

A limitation of the research may have been the small sample size. The sample size reduced the ability to compare the statistical results with the Browne and Rogich (2001) study. Reasons for the sample size in the current study have been outlined in the discussion. Previous researchers, conducting verbal protocol analysis research with small samples, have also encountered difficulties with the application of standard statistical procedures (Todd & Benbasat, 1987).

Another possible limitation was that of researcher bias, which may have reduced the validity of the analyses. The researcher was the coder in the current study, which may have introduced subjectivity when coding the protocols. This was offset, however, by using a second person to code a random sample of 20 per cent of the protocols for the purpose of interrater reliability and achieving a high correlation. Difficulties associated with coding have been raised by Todd and Benbasat (1987) and it has been suggested that this problem can be overcome by having two or more coders, preferably neither being the principal researcher, and insisting on high intercoder agreement prior to undertaking any analysis.

5.9 Implications for Further Research

The current research was the first to apply the task characteristics technique to the development of a HRIS. The limitations of this study invite a future research agenda to explore further applications of the task characteristics technique for eliciting user requirements. It would be interesting to validate the results of the present study in other system development situations since the prompting technique was specifically constructed to be context-independent. A further avenue of research could be to explore the possible effect of cultural differences in the perspectives of users interviewed, eg. New Zealand versus United States, or differences in the industries being studied, eg. grocery company developing an Internet-based shopping system versus the development of a HRIS for an educational institution.

Research concerning the effectiveness of prompting methods in eliciting information from users in the information systems domain is still in its infancy, eg. Browne and Rogich's (2001) study was the first empirical test in this area. Browne and Rogich acknowledge that many aspects of their model of the requirements elicitation task, upon which their prompting technique is based on, require testing and validation.

In the current research, as in the Browne and Rogich (2001) study, the generic requirements categories were used to code subject's responses to questions from the elicitation techniques being tested. It is suggested that further research could focus on the usefulness of the various categories within the generic requirements coding scheme and determine enhancements that may be appropriate, eg. whether results would differ if the process level and task level requirements consisted of a higher number of subcategories.

The task characteristics technique did elicit a greater number of requirements overall than the syntactic technique. This was despite the task characteristics technique consisting of fewer questions than the syntactic technique. These findings suggest that the use of substantive and procedural prompts is helpful in overcoming cognitive obstacles. It is therefore likely that future research efforts between information systems researchers and cognitive scientists could provide further insight into the requirements elicitation task, by drawing upon theoretical perspectives from both domains

(Robilliard, 1999). Also, due to the exploratory stage of Browne and Rogich's (2001) task characteristics prompting technique, further research may be required to build on the prompting strategies they have provided and either refine or develop additional prompting schemes.

5.10 Implications for Practitioners

The findings of this research also have implications for information systems professionals and human resource managers. The literature revealed that the lack of understanding between HR users and system designers is one of the major impediments to a HRIS reaching its full potential (Kovach & Cathcart, 1999). Communication difficulties, such as hearing, understanding and talking, have been identified as one of the real failures in transferring understanding across the business/technology divide (Keen, 1993). Even when communication has been established, it is still necessary to find a balance between HR desires and information systems limitations (Wallsten, 1998). Interviewing has been one of the most common techniques that analysts have used in the user requirements determination, however there is very little guidance or advice on how the interview should be conducted and what type of questioning should be used. Furthermore, discussions with practicing system analysts revealed that they receive very little or no formal training in interviewing techniques (Moody et al., 1998). This lack of training can lead to analysts often asking the wrong questions or omitting vital questions altogether (Wetherbe, 1991). Therefore, the use of a structured prompting technique that is context-independent, and has been empirically tested, will be of great use to analysts because it provides an orderly and methodical approach to gathering user requirements. It will also help to reduce the risk of a new system not meeting the full expectations of end users.

The research found that by using a structured prompting strategy, a greater quantity of requirements was elicited. This too will be welcomed by practitioners, because if requirements are not mentioned by users, that information cannot be incorporated into the system. Therefore, eliciting as much information as possible provides the best opportunity for identifying information most relevant to the proposed system.

The generic requirements categories coding scheme developed by Browne and Rogich (2001) will also be a valuable tool for the task of organising the user requirements once they have been gathered. The coding scheme used in the current research will provide the analyst with a method to assemble or document the information they have gathered in an understandable and meaningful way. It will also provide an indication of when sufficient requirements have been captured in order to move to the next stage of the information requirements determination phase.

The research has demonstrated that the task characteristics technique can be used alone to effectively and efficiently gather requirements, thus perhaps reducing the time required to carry out the elicitation task. This has an immediate effect on the financial management of an organisation as the interviewee's time and the limited number of systems professionals are scarce resources that must be used efficiently (Moody et al., 1998).

5.11 Summary

While several implications have been drawn from the results of this research, the results do support Browne and Rogich's (2001) proposition that the task characteristics technique can be used confidently by practitioners for eliciting user requirements for an information system. The following chapter leads on to provide conclusions, a summary of the research findings, implications for practitioners and recommendations for future research directions.

CHAPTER 6: CONCLUSIONS

6.1 Introduction

This chapter presents the conclusions and provides a summary of the research findings, the implications for practice and makes recommendations for future research directions. The aim of this research was to apply and evaluate the effectiveness of the task characteristics prompting technique developed by Browne and Rogich (2001) to elicit user requirements for a HRIS. The study utilised the generic requirements categories coding scheme developed by Browne and Rogich to organise and code the requirements evoked. This research used two different prompting techniques: the task characteristics prompting technique and the syntactic prompting technique. The quantitative and qualitative differences between the two prompting techniques were investigated.

6.2 Summary of the Findings

6.2.1 Generic Requirement Categories

In order for the research findings to be analysed, the user requirements gathered were organised and coded based on the generic requirements categories coding scheme used by Browne and Rogich (2001). The framework provided the researcher with an efficient method of assembling and evaluating the results of the information elicited. It also provided an indication of which general level categories and subcategories had been captured. While there is scope for wider uses of the generic requirements categories scheme, the present study used it solely for the purpose of coding subject's responses from the prompting techniques being tested.

6.2.2 Prompting Technique – Treatment Group

The task characteristics prompting technique was used as the treatment group for the research. Browne and Rogich's (2001) empirical test of the technique was the first to be conducted on the effectiveness of a prompting technique for the elicitation of user requirements. The present study adapted the prompting technique to elicit user requirements for the development of a human resource information system for an educational institution. Because the prompting technique was designed to be context-independent, very few changes were required. The research suggests that the

effectiveness of this prompting technique could be due to the use of both substantive and procedural prompts. The substantive prompts were designed to improve recall of knowledge, whereas the procedural prompts focused on helping users overcome cognitive biases. It was evident from the research that the procedural prompts in particular enabled respondents to articulate information that they may not otherwise have provided.

6.2.3 Prompting Technique – Control Group

The syntactic prompting technique was used as the control group as it is commonly used in the development of information systems. The researcher found the task of formulating prompts difficult using this technique. This was because there was no guidance as to the types of questions to ask, apart from the interrogatories themselves. The present study found that overall, the syntactic prompts elicited fewer requirements per prompt than the substantive and procedural prompts.

6.2.4 Quantity of Requirements Elicited

One of the most important findings of the present study was the quantity of information elicited. Based on the findings of Browne and Rogich's (2001) study, five hypotheses were formed to determine the differences in the quantity of information elicited from the treatment and control groups. The hypotheses are presented below:

Hypothesis 1: That the total number of requirements elicited by the treatment group will be greater than from the number elicited by the control group.

The findings provided some support for Hypothesis 1. The absolute differences between the groups' means showed that the treatment group elicited a higher quantity of requirements than the control group. This was despite the treatment group consisting of less prompts than the control group. However, the differences were not found be to statistically significant. The sample size in the current study was smaller than Browne and Rogich's (2001) study, and it is likely that this may have reduced the ability to compare statistical differences. This limitation has been found by other researchers conducting verbal protocol analysis research with small samples (Todd & Benbasat, 1987).

Hypothesis 2: That the total number of goal level requirements elicited by the treatment group will not differ from the number elicited by the control group.

The treatment group evoked more goal level requirements than the control group, however the results were not significantly different. Although this finding supports Hypothesis 2, it is possible that the results may have been statistically different if the study had used a larger sample.

Hypothesis 3: That the total number of process level requirements elicited by the treatment group will differ from the number elicited by the control group.

The results do not support Hypothesis 3. This was unexpected as Browne and Rogich (2001) found there were significant differences between the groups for the process level requirements. Subjectivity of the coding by the researcher in the current research has been suggested as a possible explanation for the different results. Difficulties associated with coding have been raised by previous researchers and suggestions have been made to employ two or more coders, neither being the principal researcher, and to insist on high intercoder agreement (Todd & Benbasat, 1987). The reliability of the researcher's coding was tested by using a second person, blind to the hypotheses and unfamiliar with systems development, to code a random sample of 20% of the subjects' protocols. Interrater reliability between the two coders was 85% which indicated that the researcher's coding was reliable.

Hypothesis 4: That the total number of task level requirements elicited by the treatment group will differ from the number elicited by the control group.

The findings do not give total support to Hypothesis 4. Although there were more task level requirements elicited by the treatment group than the control group, the differences were not significant. As explained above, the smaller sample size in this study reduces the ability to compare the statistical differences between the current study and Browne and Rogich's (2001) study.

Hypothesis 5: That the total number of information level requirements elicited by the treatment group will differ from the number elicited by the control group.

Statistical testing found that the difference was strongly significant and therefore Hypothesis 5 was supported. This finding was consistent with Browne and Rogich's

(2001) study which found there were significant differences between the groups for the information level requirements.

6.2.5 Breadth of Requirements Elicited

As part of the test for the quantity of information elicited by the two groups, the breadth of requirements elicited was measured. The following hypothesis was formed:

Hypothesis 6: That the breadth of requirements (ie. number of different requirements categories) elicited by the treatment group will not differ from the breadth elicited by the control group.

This hypothesis was supported by the findings. Although the mean number of different categories utilised by the treatment group was higher than the control group, there were no statistical differences. This was consistent with the Browne and Rogich's (2001) study. This result indicates that there may be no advantage for either of the two groups in the breadth of information elicited. Alternatively, the coding scheme used may require further refinement to include more subcategories for the process level and task level requirements.

6.2.6 Differing Category Usage

A further hypothesis was formed to test for qualitative differences in the information elicited from the two groups:

Hypothesis 7: That there will be no significant qualitative differences in the types of requirements elicited by each group.

The results did not provide conclusive support for this hypothesis. The findings revealed that for three of the four categories there were no statistical differences. However, significant differences were found in the information level category for the treatment group. The lack of significant differences for the goal, process and task categories was not considered disappointing because the use of several techniques for eliciting requirements is not appealing to an analyst, both in terms of cost and time involved.

In conclusion, there were absolute differences in the requirements elicited between treatment group and control group. However, the requirements elicited from the information level category were the only requirements that were statistically different. The tests showed that the treatment group elicited a significantly greater number of requirements as well as a significantly greater usage of different categories than those elicited from the control group for information level requirements. This indicates that the task characteristics technique is no less effective as an elicitation technique than the traditionally used syntactic technique, and has the added advantage of eliciting a greater quantity and higher quality of information level requirements. This finding is important, as there have been calls for research that is directed at developing elicitation techniques for the information level category as well as evaluation research to be undertaken on elicitation techniques (Byrd et al., 1992).

6.3 Implications for Practice

Systems analysts are trained in the technological and economic aspects of computer applications, but far less commonly on the human aspects. If an information system is implemented which efficiently meets all the perceived requirements of the analyst, it is of little significance if the users are not satisfied with it (Avison & Fitzgerald, 1995). Whitten et al. (2001) concede that the success of a system analyst partially rests on their ability to interview users, however there is little guidance on the interview questions themselves, beyond the standard 'who', 'what', 'when', 'where', 'why' and 'how' type of wording. This often results in the analyst asking the wrong questions or leaving out important questions altogether (Browne & Rogich, 2001). Abbott (2001) believes that often, when analysts and users do talk, they may not necessarily be talking about the same thing. This is because it is difficult for users to articulate something they haven't seen and the analysts may not have the skills to elicit responses. Because the interview is the most popular method of gathering user requirements and the most time consuming, a prompting technique that can be used independently of the system being developed, will be welcomed by practitioners. It is also likely that the use of the technique will improve the relationship between the analyst and the user by providing the analyst with a framework that will enable the elicitation of users' needs and desires more effectively.

The literature revealed a major issue for the designers and users of a HRIS as being the difficulty of communicating complex HR information needs to specialist system designers (Nankervis et al., 1992). Communication issues often arise due to the cognitive limitations of humans. Cognitive problems are represented by the factors that affect the user's thinking such as recall problems. The task characteristics prompting technique was constructed by Browne and Rogich (2001) to focus on the cognitive problems of users. It used a combination of substantive and procedural prompts to help both users and analysts overcome cognitive problems associated with the requirements elicitation task. The current research found that the substantive and procedural prompts elicited a greater number of requirements per question than did the syntactic prompts. These findings suggest that practitioners can use the task characteristics technique as an aid to overcome cognitive obstacles when interviewing users.

Not only does the task characteristics technique help to overcome cognitive obstacles, it also generates a greater quantity of requirements. This is an important feature for practitioners in the information systems domain, as only those requirements that have been gathered can be included in the set of user requirements. As part of the requirements determination, each element of information can conceivably become a requirement for the proposed system (Browne & Rogich, 2001).

It was found that the generic requirements categories provided an excellent framework to organise and code the requirements once they had been elicited. This finding is important because a vital step in the requirements determination phase is assembling or documenting the information that has been elicited. "An important aspect of data gathering is the organisation of the data once obtained. This activity greatly reduces the time required for analysis of the data" (Couger, 1996, p. 127). The generic requirements categories also provide a mechanism whereby the analyst can determine when sufficient requirements have been gathered. Practitioners can thus use these categories "as a stopping rule for the collection of requirements" (Browne & Rogich, 2001, p. 237).

6.4 Recommendations for Future Research Directions

This research builds on the empirical test provided by Browne & Rogich (2001) and may provide a basis for further research efforts to evaluate the effectiveness of prompting techniques for the elicitation of information from users in the information systems domain. Lack of empirical studies in this area motivated the researcher to undertake the current study. The research applied the task characteristics prompting technique to a different context and in a different culture from Browne and Rogich's study. While numerous research possibilities present themselves, the three suggested research directions that follow seem to be both important and most likely to advance knowledge and contribute to future research.

First, it is recommended that further research is conducted to replicate the study using a larger sample size. This would overcome the difficulty experienced of comparing the statistical differences with Browne and Rogich's (2001) study. This would require greater resourcing in terms of time and researchers involved, due to the labour intensive nature of verbal protocol analysis research. It has been recommended that at least two coders are used, preferably neither of whom are the principal researcher (Todd & Benbasat, 1987).

Secondly, it is recommended that research attempts are made to extend the application of the prompting technique beyond the information systems development arena. If the task characteristics prompting technique can be used effectively, independent of context, to elicit user requirements for an information system, it could be applied to a wider range of situations where cognitive problems are an issue. This would provide opportunities for collaborative, interdisciplinary research. Strickler (1999) has identified the need for user-focused research, including elicitation methods for identifying audience beliefs and behaviour. Such research would provide a link between existing methods and bodies of knowledge in several domains.

Finally, research could be conducted to model the requirements gathered and present a complete set of user requirements. A large volume of potentially valuable user requirements have been gathered for the development of a HRIS. However, the actual

use of this information has not been addressed in the current research. This would not only be valuable information for the institution involved in the research, but would extend the research to encompass more completely the requirements determination phase. This initiative would also provide further examination of the generic requirements categories and extend its use beyond solely the coding of requirements.

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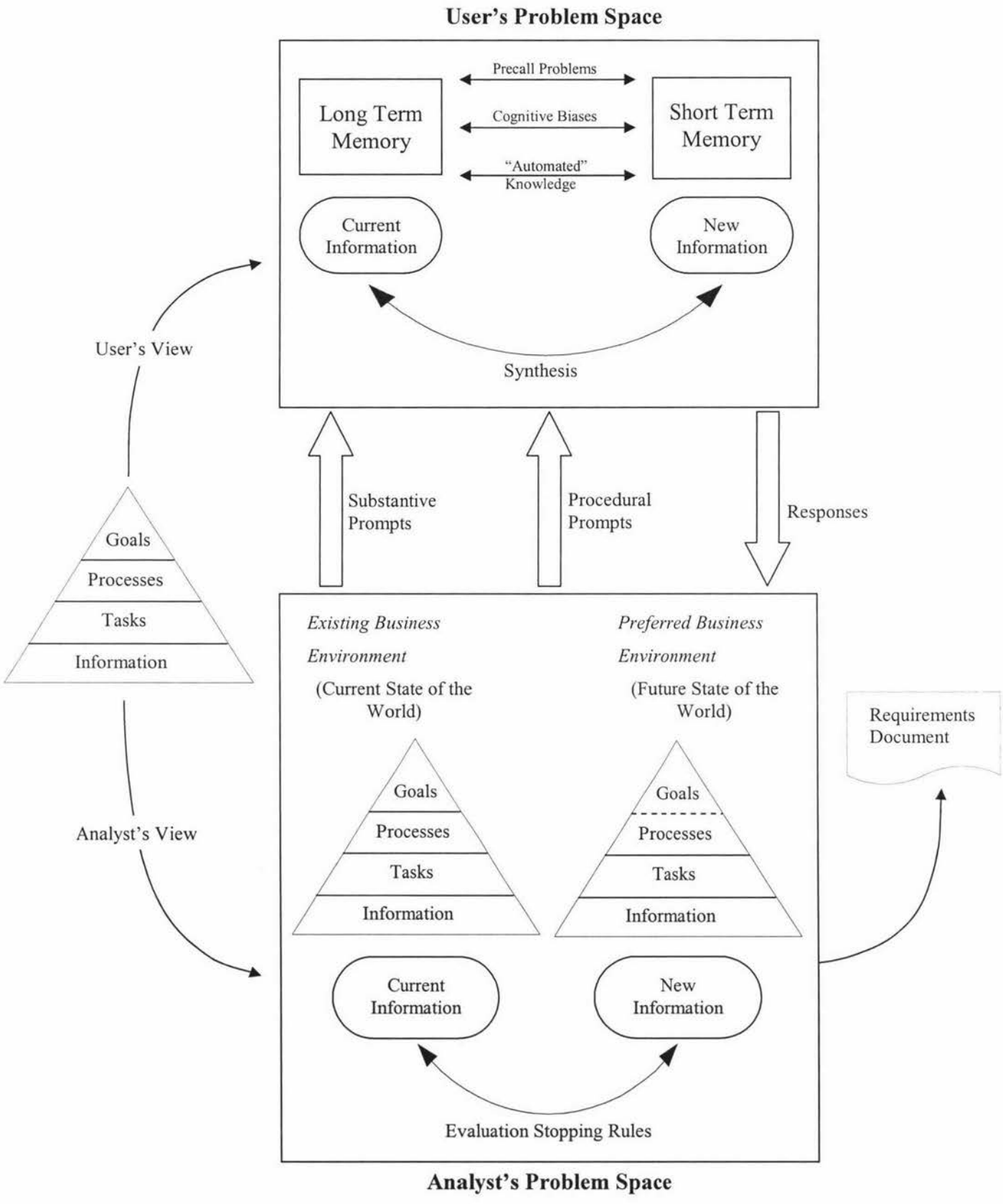
APPENDICES

Appendix A: Requirements Elicitation Task Model

Source: Browne and Rogich, (2001, p. 227).



Appendix B: UCOL Application for Research Approval Form

UCOL®
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APPLICATION FOR RESEARCH APPROVAL FORM

NOTE: Sections marked * are taken from the 'National application form for ethical approval of a research project'.

1. Title of research proposal

Human Resource Information Systems: Comparison of User Requirements Elicitation Techniques

2. Ethical approval

Having read the 'Guidelines for research approval form' (A10-G02A) it is my considered view that this project does not require ethical approval from the regional ethics committee (delete where applicable). The Massey Supervisor for this research is accredited to give ethics approval on behalf of Massey University. This means that his acceptance is equivalent to the project being approved by the Massey Ethics Committee. The proposal has been approved by my supervisor.

3. Preliminary discussion

All proposals must be discussed with a research discussant (e.g. Professor, Associate Professor, Director of Academic Development) prior to submission.

Name of research discussants: Barrie Humphreys, Massey University Supervisor; Nicky Gardner, Research Co-ordinator, UCOL.

4. Personal data

Lead researcher and contact person

Name:	Catherine Snell-Siddle
Qualifications:	BBS (Marketing & Communication Mgt), PostGrad Dip Business & Administration (Human Resource Mgt), DipTT, NZDipBus, NZIM Cert Mgt, Completing Masters in Business Studies by Thesis
Current Position:	Programme Leader & Senior Lecturer, Information Systems

Faculty: HUB

Contact details: 952 7001 ext 8133, c.snell-siddle@ucol.ac.nz

5. Summary of research proposal

This research will fulfil the requirements for a 100-point Master of Business Studies thesis at Massey University. The research will be based on a hypothetical situation where UCOL is considering the development of an on-line Human Resource Information System (HRIS) to enable employees to access human resource information electronically. The study will make a comparison between two prompting techniques used to elicit user requirements.

The focus of the research will be on the user requirements for a new on-line HRIS and will not consider current systems.

The BAppIS degree has four threads: Information Systems, Software Development, Technology, and Organisation. This research underpins the Information Systems thread and in particular, supports the several Systems Analysis units delivered within that thread.

6. Project details

***6.1 What is the hypothesis/research question?** (State briefly)

How effective is the task characteristic prompting technique, as developed by Browne & Rogich (2001) when applied to the determination of user requirements of a Human Resource Information System?

6.2 What are the specific aims of the project? (State briefly)

- To determine user requirements
- Critique the prompting technique model developed by Browne & Rogich (2001).

6.3 Theoretical background of the research

Computerised human resource information systems were initially designed to provide administrative and operational information to management. Today they are expected to integrate human resource policies with an organisation's strategic objectives and provide comprehensive information to a wide range of users.

The literature suggests that the development and implementation of a human resource information system is both a complex task and expensive investment. Much of the effort to date has focused on the automation of administrative and routine tasks, while the competitive potential of many investments in HR information technology have not been fully exploited. A major issue for the designers and users of HRIS is the difficulty of communicating complex information needs to system analysts. It is critical that system analysts clearly define user requirements before the choice and installation of a HRIS is made. A

review of the systems analysis literature confirms that the requirements determination phase is of significant importance to the success of any information systems project, and is one of the most difficult tasks. An important part of the requirements determination phase is the task of gathering information and eliciting the information. The information systems literature reveals a lack of empirical evidence for the evaluation of the different techniques used to effectively elicit user requirements. Browne and Rogich's (2001) research on the evaluation of prompting techniques for eliciting user requirements is the first in the information systems domain. There is no evidence in the literature that research has been conducted to evaluate different techniques for eliciting user requirements specifically in the human resource domain. This revealed limitation from the literature search shaped and focused my main research question. My research will use Browne & Rogich's prompting technique and evaluate its effectiveness when applied to the task of determining user requirements for a human resource information system.

Research undertaken to improve the requirements determination phase in the development of a HRIS could help to increase the effectiveness of the information system solution, as well as to ensure that the organisation's strategic objectives are matched with HR systems and applications that support them. (A literature review has been conducted and is available if required).

***6.4 Describe the study design**

This is an experimental study, utilising a hypothetical case of a tertiary education provider interested in developing an on-line Human Resource Information System (HRIS). In the study, a comparison will be made between two prompting techniques to elicit user requirements. It is proposed that the participants in the study will be 16 UCOL employees who have managerial/executive responsibility. Systematic sampling will be used to select the participants. The experiment will be designed with two groups. One group will be labelled the "task characteristics group" and receive a set of prompts developed by Browne & Rogich (2001). This will be the treatment group for the study. The second group will be the "syntactic group" and will be the control group for the experiment. This group will receive a set of questions based on the interrogatories technique of questioning. See Appendix A for the task characteristic group questions & Appendix B for the syntactic group questions.

Verbal protocol analysis will be utilised in this study. "Verbal protocols are collected by instructing subjects to "think aloud" during their deliberations, to report any thoughts that come to mind without self-censorship. Unlike introspections, subjects are not asked to speculate on what they are doing but are asked to verbalise as much of the content of their thoughts as possible" (Carroll, Bazerman & Maury, 1988, p.358). Tape recorded interviews will be transcribed for analysis and coding. Before coding, the protocols will be first parsed into meaningful units. The context space parsing scheme used by Browne & Rogich (2001) will be utilised. After the protocols are parsed, they will be coded into the generic requirements categories as developed by Browne & Rogich (2001). See Appendix C.

***6.4.1 Describe any methods for obtaining information**

Structured interviews will be conducted and will be no more than one hour, on an individual basis. Interviews will be tape-recorded. Eight participants will be asked questions based on the task characteristics prompting technique as developed by Browne & Rogich (2001). This will be the treatment group. The other eight participants will be the control group and will be asked questions based on the syntactic prompting technique. A scenario for the elicitation task will be provided at the interview. See Appendix D.

6.5 Duration of research project

See timeline below

Timeline	
March 2002	Submit application to UCOL Research Committee Begin data collection via interviews
April 2002	Conduct interviews
May 2002	Conduct interviews
June 2002	Transcribe interviews
July 2002	Commence data analysis and interpretation
August 2002	Write up results and discussion
September 2002	Write up results and discussion
October 2002	Submit first draft of research report
November 2002	Submit final report for completion of Masters thesis

***6.6 Information, consent, confidentiality and use of results**

Consent should be obtained in writing, unless there are good reasons to the contrary. If consent is not to be obtained in writing the justification should be given and the circumstances under which consent is obtained should be recorded.

6.6.1 By whom, and how will the project be explained to potential participants? All potential participants will be given a written information sheet about the study prior to consenting to be interviewed. See Appendix E.

6.6.2 When and where will the explanation be given? See 6.6.1

6.6.3 Will the participants be capable of giving consent themselves? If not, to whom will the project be explained and who will give the consent?

The UCOL Human Resource Manager has given consent to the researcher to approach potential employees of UCOL, subject to viewing the interview questions.

6.6.4 In what form (written or oral) will consent be obtained? If oral consent only, state reasons.
Written consent will be obtained prior to the interview.

6.6.5 How will data, including audio and video tapes, be handled and stored to safeguard confidentiality (both during and after completion of the research project)?
All details of the interviews, the tapes and transcriptions will be kept in a locked filing cabinet or cupboard. Access to the tapes and interview scripts will only be available to the researcher and the transcriber. If the researcher does not transcribe all the audio-tapes, the person transcribing the tapes will sign a confidentiality agreement. At completion of the research project the audio-tapes and transcripts will be securely locked in a filing cabinet. If a participant would like to retain the tape of their interview, it will be made available to them.

6.6.6 What will be done with the raw data when the study is finished?
Destroyed

6.6.7 How long will the data be kept and who will be responsible for its safe keeping?
Until completion of research project. The researcher will take responsibility for the safe keeping of data.

6.6.8 Who will have access to the raw data and/or clinical records during or after the study?
The researcher and a transcriber. The transcriber will be asked to sign a confidentiality agreement.

6.6.9 Describe any arrangements to make results known to participants, including whether they will be offered their audio or video tapes.
Participants will be asked if they would like a summary of the user requirements elicited by ticking a box in the information sheet.

6.6.10 If recordings are made, will participants be offered the opportunity to edit the transcripts of the recordings? Yes/No
Yes.

7. Budget and use of resources

NOTE: The Research Committee does not make decisions on funding of projects, this is the responsibility of the Dean/GM.

7.1 Funding requested (GST inclusive)

(Proposed equipment costs must be detailed and accompanied by quotes).

Funding requested	2002
(a) Salaries/Wages Transcriber	 $300
(b) Data processing	*N/A*
(c) Travel	$100
(d) Equipment Tape recorder Microphone	 $170 $100
(e)Consumables Batteries Tapes **A4 paper** Photocopying/Printing	 *$50* *$40* *$50* *$10*
(f) Other	*N/A*
TOTALS	**$820.00**

7.2 Site and resources

Research may be undertaken at UCOL in Palmerston North, Wairarapa and Levin.

7.3 Have you applied to any other organisation for funding related to this project? If so give details

In the first instance these costs are being requested from Massey.

8. Benefits to UCOL

UCOL would have a list of requirements for the development of a HRIS. These will be available by December 2002.

9. Outputs

- It is intended that there will be research output by July 2003

- Internal research seminars
- Conference Presentation
- Journal article

10. Intellectual property

N/A

11. List referees who could be contacted if the Research Committee deems necessary

Barrie Humphreys
Supervisor
Massey University
Private Bag, Palmerston North.
Ph: 06 356 9099 extn 2373
Email: B.Humphreys@Massey.ac.nz

Stephen Legg
Supervisor
Massey University
Private Bag, Palmerston North.
Ph: 06 356 9099
Email: S.Legg@Massey.ac.nz

12. Sign off

By signing this form, I, the applicant show that I have read and agree to UCOL's research reporting procedure (A10-G03A).

Signed: _____ ____/____/____
Applicant date

Signed: _____ ____/____/____
Research discussant date

Signed: _____ ____/____/____
Dean/General Manager date

Please send this completed form to the Research Co-ordinator.

Appendix C: Approval for UCOL to be used as a Hypothetical study

Penny Hargreaves

From: Penny Hargreaves
Sent: Wednesday, November 28, 2001 2:19 PM
To: Catherine Snell-Siddle
Subject: Masters Thesis

Dear Catherine

I confirm that your masters thesis is approved using UCOL as a hypothetical study for Human Resource Information Systems. I confirm that you will present your questions to me in February before putting them to the target groups.

The terms of reference you have proposed are accepted.

I look forward to meeting with you in February to discuss this further.

Yours sincerely

Penny Hargreaves
Acting Human Resources Manager

Appendix D: Email Invitation to Participate in Study

Dear

I am conducting research for a thesis which contributes to a thesis for a Master of Business Studies. As part of this research I am interviewing a sample of UCOL staff. I would like to invite you to take part in an interview for this research. I have attached an information sheet which provides more detail about the research.

If you do give your consent to be interviewed, could you please print and complete the tear off slip, or reply to this email giving your consent to be interviewed.

I will contact you to arrange a suitable time for an interview if you give your consent. I would be most appreciative of your time.

Yours sincerely
Catherine Snell-Siddle

Catherine Snell-Siddle
Information Systems
Faculty of Business, UCOL
Private Bag 11022, Palmerston North.
Email: c.snell-siddle@ucol.ac.nz
Ph: (06) 952 7001 ext 8133
Fax: (06) 952 7002

Appendix E: Information Sheet and Consent Form

Dear

As a UCOL employee you are invited to take part in a hypothetical case study to determine user requirements for an on-line Human Resource Information System (HRIS). This research is being conducted by Catherine Snell-Siddle (Programme Leader, Information Systems) and will contribute to a thesis for a Master of Business Studies. The results of this research may also be used for a conference presentation and a journal article. Approval for the research has been given by the UCOL Research Committee and the Chief Executive of UCOL.

The aim of the research is to make a comparison between two prompting techniques used to elicit user requirements. The development and implementation of a Human Resource Information System (HRIS) is more than just converting existing records and processes into a computerised system. When a proposal is made to develop and implement a HRIS, it is in reality a major organisational change initiative. As part of the systems development process, one of the most difficult activities is determining user requirements. While off-the-shelf solutions exist, an organization must still complete a user requirements determination. This will help to ensure that the information system solution continues to meet future growth, and that the organisation's strategic objectives are matched with HR systems and applications that support them. This research will help to determine user requirements for an on-line HRIS.

Interviews will be conducted and may take approximately 30 minutes of your time. Appointments to conduct an interview will be made at a time convenient to you. In the interview you will be asked some open-ended questions. If you agree, the interview will be audio taped to ensure accurate transcription. Your identity will not be revealed and all information gathered for the purpose of the research will be treated confidentially. The information collected will be destroyed at the end of the research. You may withdraw your information at any time and you have the right to view your records at any time. You may also decline to answer any particular questions.

Should you have any questions, please contact myself on (06) 952 7001 extn 8133 or email c.snell-siddle@ucol.ac.nz. Alternatively, you are welcome to contact my supervisor, Barrie Humphreys on (06) 350 5799 extn 2373. Please indicate on the tear off slip below if you agree to participate in the research.

Yours sincerely,

Catherine Snell-Siddle.

Please cut ✂ .....

Please return to: Catherine Snell-Siddle, Staff Studio, Block One, UCOL.

I (_____) give consent to be interviewed **YES ☐ NO ☐**

If yes, please indicate if you wish to receive a summary of the research findings **YES ☐ NO ☐**

Signed _____ Date _____

Appendix F: Instructions for the Interview

As well as answering the questions, I would like to encourage you to speak all of your thoughts out loud. The interview will be tape recorded with your consent. Everything that goes through your head is equally important, even if you have already said it before. Say everything, even if you are reading a sentence from the question. While you are talking, I may at times be taking notes.

Appendix G: Scenario for the Case Study

A Human Resource Information System (HRIS) is a software-based system that manages all or part of the human resource function for an organisation. Typical parts of the system include employment demographics, benefits, training, payroll and reporting.

UCOL is a tertiary education provider with campuses currently in Palmerston North, Wairarapa, Levin and Wanganui. UCOL has decided to implement an on-line Human Resource Information System (HRIS) whereby employees can access their personal information across all campuses. The system will also provide information and reporting facilities to managerial and executive staff.

As the first step in this process, UCOL must develop a set of user requirements to guide the design and development of the on-line HRIS. As a UCOL employee with managerial/executive responsibility, you have been selected to help define user requirements for the new on-line HRIS. A systems analyst will meet with you and ask a series of questions designed to help you articulate what should be included in the new system.

Appendix H: Parsed and Coded Responses

Coding Scheme. Source: Browne and Rogich, (2001 p. 236).

Generic Requirements Categories	
Generic Requirement	**Description**
1. Goal Level Requirements	
1.1 Goal State Specification:	Identifying the particular goal state to be achieved.
1.2 Gap Specification:	Comparing existing and desired states.
1.3 Difficulties and Constraints:	Identifying factors inhibiting goal achievement.
1.4 Ultimate Values and Preferences:	Stating the final ends served by a solution.
1.5 Means and Strategies:	Specifying how a solution might be achieved.
1.6 Causal Diagnosis:	Identifying the causes of the problematic state.
1.7Knowledge Specification:	Stating facts and beliefs pertinent to the problem.
1.8 Perspective:	Adopting an appropriate point of view on the situation.
1.9 Existing Support Environment:	Description of the existing technological environment that can be applied to support the system to be developed.
1.10 Stakeholders:	Organisational units, customers, suppliers, competitors.
2. Process Level Requirements	
2.1 Process Description:	A series of steps or tasks designed to produce a product or service.
2.2 Process Knowledge Specification:	Facts, rules, beliefs, algorithms, and decisions required to perform a process.
2.3 Difficulties, Constraints:	Factors that may prohibit process completion.
3. Task Level Requirements	
3.1 Task Description:	Identification of the sequence of actions required to complete a task.
3.2 Task Knowledge Specification:	Facts, rules, beliefs, assumptions, algorithms, and decisions required to perform a task.
3.3 Performance Criteria:	Statement that associates an outcome with specific conditions, actions, and constraints.
3.4 Roles and Responsibilities:	Individuals or departments who are charged with performing tasks or steps within tasks.
3.5 Justification:	Explanations of why specific actions are or are not to be taken.
4. Information Level Requirements	
4.1 Displayed information:	Data to be presented to end-users in paper or electronic format.
4.2 Interface design:	Language and formats used in presenting "Displayed Information".
4.3 Inputs:	Data that must be entered into the system.
4.4 Stored Information:	Data saved by the system.
4.5 Objects and Events:	Physical entities and occurrences in the world that are relevant to the system.
4.6 Relationships Between Objects and Events:	Descriptions of how one object or event is associated with another object or event.
4.7 Data attributes:	Characteristics of objects and events.
4.8 Validation Criteria:	Rules that govern the validity of data.
4.9 Computations:	Information created by the system.

Total Count	662
Count of Major Requirement: Goal (1)	235
Count of Major Requirement: Process (2)	21
Count of Major Requirement: Task (3)	147
Count of Major Requirement: Information (4)	259
	662
Total Generic Requirements	662
Count of Generic Requirements: 1.1	28
Count of Generic Requirements: 1.2	14
Count of Generic Requirements: 1.3	35
Count of Generic Requirements: 1.4	4
Count of Generic Requirements: 1.5	52
Count of Generic Requirements: 1.6	34
Count of Generic Requirements: 1.7	47
Count of Generic Requirements: 1.8	16
Count of Generic Requirements: 1.9	2
Count of Generic Requirements: 1.10	3
Count of Generic Requirements: 2.1	3
Count of Generic Requirements: 2.2	14
Count of Generic Requirements: 2.3	4
Count of GenericRequirements: 3.1	37
Count of Generic Requirements: 3.2	9
Count of Generic Requirements: 3.3	16
Count of Generic Requirements: 3.4	78
Count of Generic Requirements: 3.5	7
Count of Generic Requirements: 4.1	86
Count of Generic Requirements: 4.2	18

	Minutes
Time No. 1	35
Time No. 2	25
Time No. 3	45
Time No. 4	25
Time No. 5	30
Time No. 6	30
Time No. 7	35
Time No. 8	60
Average time	35.625

Task Characteristics Questions Summary Sheet

Count of Generic Requirements: 4.3	43
Count of Generic Requirements: 4.4	102
Count of Generic Requirements: 4.5	1
Count of Generic Requirements: 4.6	2
Count of Generic Requirements: 4.7	0
Count of Generic Requirements: 4.8	3
Count of Generic Requirements: 4.9	4
	662

Total Count	441
Count of Major Requirement: Goal (1)	198
Count of Major Requirement: Process (2)	21
Count of Major Requirement: Task (3)	106
Count of Major Requirement: Information (4)	116
	441
Total Generic Requirements	441
Count of Generic Requirements: 1.1	49
Count of Generic Requirements: 1.2	21
Count of Generic Requirements: 1.3	13
Count of Generic Requirements: 1.4	16
Count of Generic Requirements: 1.5	40
Count of Generic Requirements: 1.6	4
Count of Generic Requirements: 1.7	31
Count of Generic Requirements: 1.8	15
Count of Generic Requirements: 1.9	0
Count of Generic Requirements: 1.10	9
Count of Generic Requirements: 2.1	13
Count of Generic Requirements: 2.2	3
Count of Generic Requirements: 2.3	5
Count of Generic Requirements: 3.1	22
Count of Generic Requirements: 3.2	1
Count of Generic Requirements: 3.3	7
Count of Generic Requirements: 3.4	65
Count of Generic Requirements: 3.5	11
Count of Generic Requirements: 4.1	26
Count of Generic Requirements: 4.2	3
Count of Generic Requirements: 4.3	50

	Minutes
Time No. 1	30
Time No. 2	25
Time No. 3	40
Time No. 4	20
Time No. 5	35
Time No. 6	30
Time No. 7	40
Time No. 8	60
Average time	35

Syntactic Questions Summary Sheet

Count of Generic Requirements: 4.4	29
Count of Generic Requirements: 4.5	1
Count of Generic Requirements: 4.6	0
Count of Generic Requirements: 4.7	0
Count of Generic Requirements: 4.8	5
Count of Generic Requirements: 4.9	2
	441

Prompt 1	Requirement Level		Generic Requirement	Explanation
Most would want to access their employment contracts,	4		4.4	Data saved by the system
Job descriptions,	4		4.4	Data saved by the system
Legal rights, key requirements in the Employment Relations Act,	4		4.1	Data to be presented to end-users in electronic form
Salary reviews,	4		4.4	Data saved by the system
Market relativity of salaries.	4		4.1	Data to be presented to end-users in electronic form
Prompt 2				
Unless technophobic, most would	1		1.3	Identifying factors inhibiting goal achievement
Prompt 3				
Training is the key tool,	3		3.4	Department or individuals charged with performing tasks
Showing people what advantages they can get from the facility,	1		1.4	Stating the final ends served by a solution
Especially if it linked to a web type interactivity where they can access different types of information	4		4.2	Format used in presenting displayed information
Prompt 4				
Access to all employment contracts online,	4		4.4	Data saved by the system
As well as job descriptions.	4		4.4	Data saved by the system
I would want a user friendly environment where I could get an index, like a table of contents	4		4.2	Format used in presenting displayed information
Also, salaries and marketing material in so far as what the market offers in terms of salary bands.	4		4.4	Data saved by the system

Key performance indicators,	4		4.4	Data saved by the system
And if you had balanced scorecard philosophy, then I would want that built in.	4		4.4	Data saved by the system
I would want to go back in time and look at individual's yearly or quarterly reviews.	4		4.4	Data saved by the system
Would also want to access relevant legislation such as Employment Relations Act and Health and Safety in Employment Act.	4		4.1	Data to be presented to end-users in electronic form
Prompt 5				
Password protected,	3		3.3	Statement that associates an outcome with specific conditions, actions and constraints
Parts of the system that couldn't be accessed by others, such as salaries.	2		2.2	Rules or algorithms required to perform a process
Discreet elements of the system that would not be accessible to all.	2		2.2	Rules or algorithms required to perform a process
Privacy Act would dictate privacy of information	1		1.3	Identifying factors inhibiting goal achievement
Prompt 6				
If they were able to access information not directly related to themselves and any sensitive information	1		1.6	Identifying causes of the problematic state
Need firewall and passwords, would need to make sure that hackers could not get into the system	1		1.5	Specifying how a solution might be achieved
Prompt 7				
Management systems in place, culture in the organisation has to be constantly monitored	1		1.5	Specifying how a solution might be achieved

Rather than have people issues blow up in your face you need to have people who can get out and sort them out	3		3.4	Department or individuals charged with performing tasks
Can build in worst case scenarios – password protect it, build firewalls, do all the techno things that are necessary to protect databases,	3		3.3	Statement that associates an outcome with specific conditions, actions and constraints
but need to take one step back and have proper management systems in place, proper reviews,	3		3.4	Department or individuals charged with performing tasks
and you need to have a management that actually and effectively has credibility in terms of its practices and what its doing	1		1.1	Organisational units, customers, suppliers, competitors.
More a people issue than a technical issue	3		3.4	Department or individuals charged with performing tasks
Being able to manage succession management and address the desires and wants of employees and being honest about opportunities for people	1		1.1	Identifying the particular goal state to be achieved
Prompt 8				
Needs to be protocol specific to the person	3		3.3	Statement that associates an outcome with specific conditions, actions and constraints
Would need to be given access to a directory and have security clearance	3		3.2	Rules or algorithms required to perform a process
Prompt 9				
HR and driven out of management. Combination of departmental heads as well as HR needs to take ownership.	3		3.4	Department or individuals charged with performing tasks

To have integrity the CEO needs to be part of the overview, certainly the guys that manage the academic databases and incorporate data.	3		3.4	Department or individuals charged with performing tasks
IT has to be part of the process as well as the data analyst. I see it split into two things, the hardware environment and the other is the databases that can they access. One is database management and the other is actually traditional IT which are two quire separate things	3		3.4	Department or individuals charged with performing tasks
Prompt 10				
HR I see as a tool for management, not as management per se.	3		3.4	Department or individuals charged with performing tasks
I have seen HR departments out of control where they will by default become the decision maker because they have scared off the management team into making decisions because of legal issues, but HR sometimes over extends themselves and are sometimes out of their depth.	1		1.3	Identifying factors inhibiting goal achievement
So HR to me is actually about making sure administrative procedures are in place, the right type of documentation occurs and that they are there to support managers,	3		3.4	Department or individuals charged with performing tasks
But the management team must make the calls	3		3.4	Department or individuals charged with performing tasks

Departmental heads must make sure all t's are crossed and I's are dotted – that's where the support from HR comes from to make sure we have the correct recruitment policies, ongoing review processes.	3		3.4	Department or individuals charged with performing tasks
HR needs to be able to give management a nudge to remind them of what needs to be happening. They need to own the process.	3		3.4	Department or individuals charged with performing tasks
but HR need to support and provide tools needed to deliver the management process.	3		3.4	Department or individuals charged with performing tasks
Managers need to own what their people are doing, salary ranges, market rates.	3		3.4	Department or individuals charged with performing tasks
Database manager would be guardian, for example, make sure material is upgraded,eg. legislations	3		3.4	Department or individuals charged with performing tasks
IT is to ensure that suitable security is in place, when staff move on, information is passed on and people are taken off the system.	3		3.4	Department or individuals charged with performing tasks
Prompt 11				
Could automate the system to advise salary reviews are due on certain contracts, if annual review coming up.	4		4.1	Data to be presented to end-users in electronic form
Useful for managers to know what legislative changes have happened and have some kind of critical comments as to what that means in terms of what they need to be aware of.	4		4.1	Data to be presented to end-users in electronic form

I would like to know how much my salary bands are moving so when I'm actually doing my budgeting on a monthly basis, I can forecast what it is going to cost me in terms of salary as well as ACC premiums and all the elements that make up the cost of employees.	4		4.1	Data to be presented to end-users in electronic form
It is currently a complex process to get someone employed here.	1		1.6	Identifying causes of the problematic state
Prompt 12				
I don't believe there is anything they couldn't do.	1		1.8	Adopting an appropriate point of view on the situation
Could do more with the system. At the moment HR doesn't have time to respond to queries as quickly as would be desired. The turnaround time in HR is incredibly slow.	1		1.2	Comparing existing and desired states
Prompt 13				
Provide a unique identifier – this needs to have a criteria that allows access to certain elements of the database in terms of a wider scope, certainly have to be an employee, must have signed a contract, have a clearly defined job description and meet the basic criteria in terms of being an employee.	3		3.3	Statement that associates an outcome with specific conditions, actions and constraints
Prompt 14				
Official Information Act – should be able to get anything related to their own personal records eg. contract, job description, comments on their file,	4		4.1	Data to be presented to end-users in electronic form

so if they can get it through the official channels, then they should get it through the system.	4		4.1	Data to be presented to end-users in electronic form
Some may want critical comments not being on the system	3		3.5	Explanation of why a specific action is taken
Total Count	55	Total Count	55	
Count of Major Requirement: Goal (1)	12	Count of Generic Requirements: 1.1	2	
Count of Major Requirement: Process (2)	2	Count of Generic Requirements: 1.2	1	
Count of Major Requirement: Task (3)	22	Count of Generic Requirements: 1.3	3	
Count of Major Requirement: Information (4)	19	Count of Generic Requirements: 1.4	1	
	55	Count of Generic Requirements: 1.5	2	
		Count of Generic Requirements: 1.6	2	
		Count of Generic Requirements: 1.7	0	
		Count of Generic Requirements: 1.8	1	
		Count of Generic Requirements: 1.9	0	
		Count of Generic Requirements: 1.10	0	

		Count of Generic Requirements: 2.1	0	
		Count of Generic Requirements: 2.2	2	
		Count of Generic Requirements: 2.3	0	
		Count of GenericRequirements: 3.1	0	
		Count of Generic Requirements: 3.2	1	
		Count of Generic Requirements: 3.3	4	
		Count of Generic Requirements: 3.4	16	
		Count of Generic Requirements: 3.5	1	
		Count of Generic Requirements: 4.1	8	
		Count of Generic Requirements: 4.2	2	
		Count of Generic Requirements: 4.3	0	
		Count of Generic Requirements: 4.4	9	
		Count of Generic Requirements: 4.5	0	
		Count of Generic Requirements: 4.6	0	

		Count of Generic Requirements: 4.7	0	
		Count of Generic Requirements: 4.8	0	
		Count of Generic Requirements: 4.9	0	
			55	

Prompt 1	Requirement Level		Generic Requirement	Explanation
Probably be able to get in and look up what leave they have had,	4		4.4	Data saved by the system
perhaps their pay rates,	4		4.4	Data saved by the system
when they last got a pay rise,	4		4.4	Data saved by the system
any reports against them by management perhaps,	4		4.4	Data saved by the system
in fact what benefits they are allowed. It could be a lecturer who works in the outdoors is eligible for clothing allowance.	4		4.4	Data saved by the system
Perhaps, how long have been here,	4		4.4	Data saved by the system
taxes paid.	4		4.1	Information created by the system
Prompt 2				
Unless they are computer illiterate	1		1.3	Difficulties and constraints
Prompt 3				
Training of course. Training would have to be promoted	3		3.4	Roles and responsibilities
Prompt 4				
As a Manager foremost you would need to know how much your staff earn when they come to you about a pay rise,	4		4.4	Data saved by the system
what leave they have taken and what leave they are entitled to, sick leave entitled to, what PDL leave, annual leave	4		4.4	Data saved by the system
what contract they are under, they might be under a different contract eg. ASTE contract or individual contract -	4		4.4	Data saved by the system

some get more leave than others, so leave is an important one as a manager because leave applications come to us, as a manager so we need to make sure that when we sign something, they are actually eligible for that leave in the first place.	4		4.4	Data saved by the system
Could just be personal details, you might need to contact somebody at home	4		4.4	Data saved by the system
when we have to do evaluations on their teaching/job - when it is due, how often we have to do it,	4		4.1	Data to be presented to end-users in electronic format
could be basic job descriptions	4		4.4	Data saved by the system
Prompt 5				
Well, I guess training	3		3.4	Individuals or depts who are charged with performing tasks.
passwords.	3		3.3	Statement that associates an outcome with specific conditions, actions and constraints.
It would have to be strict with limited access and as to who was allowed into what part of it, so you'd have rights as to the level eg. manager has different rights to an employee and as a manager couldn't see what CEO was earning	2		2.2	Rules or algorithms required to perform a process
Interviews - you could start with that and interview panels, have all information available when go to employ a new staff member	4		4.1	Data to be presented to end-users in paper or electronic format
Prompt 6				
Blind!	1		1.6	Identifying the causes of the problematic state.

If they didn't have computer access, could be off site, in the hills doing forestry.	1		1.6	Identifying the causes of the problematic state.
Prompt 7				
Providing everyone with a laptop,	1		1.5	Stating how a solution might be achieved
internet access to get into it.	1		1.5	Stating how a solution might be achieved
Prompt 8				
Log on to system and get into particular records.	3		3.2	Rules, algorithms required to perform a task
Prompt 9				
HR, Managers, IT	3		3.4	Individuals or departments who are charged with performing tasks
Prompt 10				
HR will have to update records and keep intact.	3		3.4	Individuals or departments who are charged with performing tasks
Who is going to input information?	3		3.4	Individuals or departments who are charged with performing tasks
Will employees be able to get in and say what leave they have taken or does it have to be given to HR to input?	3		3.4	Individuals or departments who are charged with performing tasks
Somebody will have to have overall control over what goes in.	3		3.4	Individuals or departments who are charged with performing tasks
Limited rights for some people, wouldn't want anyone reading my personal stuff other than my manager.	2		2.2	Rules or algorithms required to peform a process.
Managers - do they just view information or do they get to input information?	3		3.4	Individuals or departments who are charged with performing tasks
Prompt 11				
How much information would we want people to actually see?	4		4.1	Data to be presented to end-users

If someone was to key in current leave owing, would it spew out that information?	4		4.1	Data to be presented to end-users
How would staff know what is their eligibility,	2		2.2	Facts and rules required to perform a task
will it have a copy of their contract in there that they could actually go in and read their contract?	4		4.1	Data to be presented to end-users
So is it going to be payroll and HR together?	1		1.7	Stating facts pertinent to the problem
Or I suppose an employee has a right to see everything that is on their file,	1		1.1	Identifying the particular goal state to be achieved
but what if there is a complaint against them?	1		1.3	Identifying factors inhibiting goal achievement
How much would go on the system or just kept in a separate file.	4		4.4	Data saved by the system
Often managers keep separate files that wouldn't want going on the system.	1		1.1	Identifying factors inhibiting goal achievement
Is this doing away with paper records totally?	1		1.1	Identifying the particular goal state to be achieved
Prompt 12				
Could depend on what access you give them.	2		2.2	Rules and algorithms required to perform a process
You can go to HR now and have a look at the paper system - most people don't know that they can do that, but they have every right under the Privacy Act to do that.	1		1.2	Comparing existing and desired states
They may not have access to absolutely everything in a system like this.	1		1.5	Specifying how a solution might be achieved
What sort of history is going to be there? - some people have been here for years.	1		1.7	Stating facts and beliefs pertinent to the problem

What if somebody has left UCOL and wants to find out information while they were here -	1		1.7	Stating facts and beliefs pertinent to the problem
what is the regulation on how long that information is kept for -	1		1.7	Stating facts and beliefs pertinent to the problem
especially the fact that it is on line - how long will it be kept there	1		1.7	Stating facts and beliefs pertinent to the problem
At the moment they have a big safe to keep historical records	1		1.7	Stating facts and beliefs pertinent to the problem
Prompt 13				
Name,	4		4.4	Data saved by the system
employee no.	4		4.4	Data saved by the system
and password.	4		4.4	Data saved by the system
At a minimum you would need that, maybe even their tax code.	4		4.4	Data saved by the system
Prompt 14				
Personal information pertinent to the needs of them.	4		4.3	Data that must be entered into the system
Just about all of personal information.	4		4.3	Data that must be entered into the system
The job of putting all the past information would be a massive job.	1		1.7	Stating facts and beliefs pertinent to the problem
Would you start from a certain date and just put what contracts they are on at the time?	1		1.5	Specifying how a solution might be achieved
But wouldn't be good for someone who had been there for a long time, eg. might want to know how much sick leave they've got.	1		1.3	Identifying factors inhibiting goal achievement
Total Count	59	Total Count	59	0
Count of Major Requirement: Goal (1)	20	Count of Generic Requirements: 1.1	3	

Count of Major Requirement: Process (2)	4	Count of Generic Requirements: 1.2	1	
Count of Major Requirement: Task (3)	10	Count of Generic Requirements: 1.3	3	
Count of Major Requirement: Information (4)	25	Count of Generic Requirements: 1.4	0	
Total requirements	59	Count of Generic Requirements: 1.5	4	
		Count of Generic Requirements: 1.6	2	
		Count of Generic Requirements: 1.7	7	
		Count of Generic Requirements: 1.8	0	
		Count of Generic Requirements: 1.9	0	
		Count of Generic Requirements: 1.10	0	
		Count of Generic Requirements: 2.1	0	
		Count of Generic Requirements: 2.2	4	
		Count of Generic Requirements: 2.3	0	
		Count of Generic Requirements: 3.1	0	
		Count of Generic Requirements: 3.2	1	
		Count of Generic Requirements: 3.3	1	

		Count of Generic Requirements: 3.4	8	
		Count of Generic Requirements: 3.5	0	
		Count of Generic Requirements: 4.1	6	
		Count of Generic Requirements: 4.2	0	
		Count of Generic Requirements: 4.3	2	
		Count of Generic Requirements: 4.4	17	
		Count of Generic Requirements: 4.5	0	
		Count of Generic Requirements: 4.6	0	
		Count of Generic Requirements: 4.7	0	
		Count of Generic Requirements: 4.8	0	
		Count of Generic Requirements: 4.9	0	
		Total generic requirements	59	

Prompt 1	Requirement Level		Generic Requirement	Explanation
They would want payroll information,	4		4.4	Data saved by the system
they would want to know when their next pay day is,	4		4.4	Data saved by the system
they will want to know how much leave they have got available,	4		4.4	Data saved by the system
they'll want to know what their sick leave entitlement is,	4		4.4	Data saved by the system
they'll probably want to know what their contract says,	4		4.4	Data saved by the system
in other words, they would like to look at things without having to go back to the file each time,	4		4.4	Data saved by the system
so that would be what entitlements they've got,	4		4.4	Data saved by the system
their terms and conditions.	4		4.4	Data saved by the system
Talking about payroll, we require from them their qualifications	4		4.3	Data that must be entered into the system
and keeping up to date records about their staff development, e.g. training, courses, seminars, things like that.	4		4.3	Data that must be entered into the system
It would seem to me that it would be really useful that if in some way they were prompted to update those things.	1		1.5	Specifying how a solution might be achieved
Useful for employees and the organisation - if we say to them - "what have you done since you last updated" - they will want to know what's there, so that they could access the system to know what to put in.	1		1.5	Specifying how a solution might be achieved

Training opportunities - if there was some way that it could be used to send information to employees about what training is coming up - let's take Treaty of Waitangi for example, it would be useful if it flagged form them that the last time you did a treaty workshop was 5 years ago, do you think it is about time you went to another one,	1		1.5	Specifying how a solution might be achieved
you have a practicing certificate that requires you to have updates every now and then – have you done your latest competency, have you paid your fees, have you renewed your membership.	1		1.5	Specifying how a solution might be achieved
Some people have loans for their higher study – an update on what their loan is,	4		4.4	Data saved by the system
probably something about their medical insurance if they are a member.	4		4.4	Data saved by the system
Prompt 2				
I would imagine only if they are technophobic, sometimes people like a piece of paper in their hand.	1		1.3	Identifying factors inhibiting goal achievement
Payroll have recently made available electronic payslips so will be interesting to see what the uptake is.	1		1.9	Description of the existing technological environment that can be applied to support the system to be developed
Prompt 3				
That is a training issue and encouraging people	3		3.4	Departments or individuals who are charged with performing tasks or steps within tasks
and also user friendly.	4		4.2	Language and formats used

For example our public folders are not user friendly.	1		1.2	Comparing existing and desired states
It needs to be something that is easy to log on to,	1		1.1	Identifying the particular goal state to be achieved
you don't have to go on a search to find the URL or whatever to get into it,	1		1.1	Identifying the particular goal state to be achieved
something that is easy to get at,	1		1.1	Identifying the particular goal state to be achieved
password protected obviously so it is confidential	3		3.3	Statement that associates an outcome with specific conditions, actions and constraints
but easy to access and easy to use	1		1.1	Identifying the particular goal state to be achieved
and some encouragement emailed to people to use the system, saying have you last thought about when you last did a Health and Safety update, OOS workshop.	1		1.5	Specifying how a solution might be achieved
Obviously very dependent on the data being entered correctly.	1		1.7	Stating facts and beliefs pertinent to the problem
Prompt 4				
Employment contracts	4		4.4	Data saved by the system
letters of appointment,	4		4.4	Data saved by the system
variations of contract,	4		4.4	Data saved by the system
initial application,	4		4.4	Data saved by the system
their updated job description,	4		4.4	Data saved by the system
performance management,	4		4.4	Data saved by the system
probation completed,	4		4.4	Data saved by the system
salary, any changes to salary,	4		4.4	Data saved by the system
variations along that line, when they return back to what they might have been,	4		4.4	Data saved by the system

any special responsibility allowances,	4		4.4	Data saved by the system
payroll,	4		4.4	Data saved by the system
memberships of different things,	4		4.4	Data saved by the system
health benefits,	4		4.4	Data saved by the system
staff development update,	4		4.4	Data saved by the system
whether they completed their performance management ,	4		4.4	Data saved by the system
and training needs identified,	4		4.4	Data saved by the system
health and safety training needs,	4		4.4	Data saved by the system
all those other workshops.	4		4.4	Data saved by the system
Conference attendance would be great as well,	4		4.4	Data saved by the system
any trips that they did or any benefits such as overseas trips,	4		4.4	Data saved by the system
I think that should be captured centrally because I don't think we're doing that very well.	1		1.2	Comparing existing and desired states
Prompt 5				
Password protection.	3		3.3	Statement that associates an outcome with specific conditions, actions, constraints
They need to have a log on, they need to have pass word protected,	3		3.3	Statement that associates an outcome with specific conditions, actions, constraints
I think most of it is probably read only	1		1.1	Identifying the particular goal state to be achieved

but there needs to be some mechanism for people actually entering their own data, eg. when I did the survey to try to capture people's qualifications, recent staff development, staff development needs a couple of years ago, that was electronically filled in and returned so there needs to be some way that the information can be entered, but others that are read only because we certainly don't people changing their employment conditions and things like that,	1		1.1	Identifying the particular goal state to be achieved
so easily accessed,	1		1.1	Identifying the particular goal state to be achieved
easy to read and to find your way through,	1		1.1	Identifying the particular goal state to be achieved
key word which leads me to think about policies and procedures could be linked eg. HR policies.	4		4.2	Language and formats used
I've talked about entitlements and things, also what are my rights in terms of getting postgraduate study,	4		4.1	Data to be presented to end-users
what do I need to do if I have an accident eg. ACC. If I'm off on ACC what I am able to use my sick leave for,	4		4.1	Data to be presented to end-users
maybe some FAQ questions would be good,	1		1.5	Specifying how a solution might be achieved
and I think the answer to that one is that if the ACC is work related then work pays for the first week and am able to use my sick leave if I'm on ACC,	4		4.1	Data to be presented to end-users

what's my bereavement leave entitlement, what is the policy regarding this,	4		4.1	Data to be presented to end-users
what if I am likely to become surplus, what is the surplus staffing policy,	4		4.1	Data to be presented to end-users
so all those things that affect a person's employment should be linked into this database.	1		1.1	Identifying the particular goal state to be achieved
Prompt 6				
Only time an employee would have a problem was if it was too complex,	1		1.3	Identifying factors inhibiting goal achievement
if it was not easy to use,	1		1.3	Identifying factors inhibiting goal achievement
and if it was not easy to find your way through.	1		1.3	Identifying factors inhibiting goal achievement
Not a problem in this institution as everyone has their own Ids.	1		1.9	Description of the existing technological environment that can be applied to support the system to be developed
Prompt 7				
Making it easier by offering training, staff development in the way of a series of workshops.	1		1.5	Specifying how a solution might be achieved
Prompt 8				
They log on and put in their password.	3		3.1	Identification of the sequence of actions required to complete a task
They will then get a screen with icons that says access your HR records, double click on and it says Welcome X, here is your HR record – what do you want to know.	3		3.1	Identification of the sequence of actions required to complete a task

Then it would have a series of things that they could click on ie. what's my current leave, my salary, what is my leave entitlement.	3		3.1	Identification of the sequence of actions required to complete a task
I think it would have a step at the end to remind you to log off to close it down.	3		3.1	Identification of the sequence of actions required to complete a task
Prompt 9				
HR	3		3.4	Departments who are charged with performing tasks or steps within tasks
and Payroll	3		3.4	Departments who are charged with performing tasks or steps within tasks
and Finance,	3		3.4	Departments who are charged with performing tasks or steps within tasks
people involved in staff development,	3		3.4	Individuals or departments who are charged with peforming tasks or steps within tasks
so it is an HR responsibility but also the Faculty probably needs to have some involvement.	3		3.4	Individuals or departments who are charged with peforming tasks or steps within tasks
There would be different access for those people who give the information to HR for entry or would have some sort of access, eg. Clayton (HR advisor) would have lists of people who had attended this workshop, somehow that needs to be transferred from his list into each person's individual file.	3		3.4	Individuals or departments who are charged with peforming tasks or steps within tasks
This is currently done by putting a photocopy into their hard file.	1		1.7	Stating facts pertinent to the problem

Is their anything from the Office of the Chief Executive? – well, they have to sign off the probation forms, employee contracts go through but it is usually a manual transaction that goes back to HR and payroll.	1		1.2	Comparing existing and desired states
Prompt 10				
Payroll – they take the contract and enter it into their database,	3		3.4	Individuals or departments who are charged with peforming tasks or steps within tasks
they need to record the variations so their particular task would be to enter that data,	3		3.5	Explanation of why specific actions are to be taken
recording the leave,	3		3.1	Identification of the sequence of actions required to complete a task
time sheets and it is possible that along with this you would have an electronic way of people recording the timesheets and signed off some how so that it goes electronically into their records,	3		3.1	Identification of the sequence of actions required to complete a task
for completing their leave records,	3		3.1	Identification of the sequence of actions required to complete a task
for completing sick leave,	3		3.1	Identification of the sequence of actions required to complete a task
tax and ACC things,	3		3.1	Identification of the sequence of actions required to complete a task
also do refunds of expenses, superannuation.	3		3.1	Identification of the sequence of actions required to complete a task
Faculty staff would need to record if they did their own staff development workshops,	3		3.4	Individuals or departments who are charged with peforming tasks or steps within tasks

First thing that comes to mind is that they will not have pieces of paper in their hand.	1		1.3	Identifying factors inhibiting goal achievement
They wouldn't be able to flick through a paper file unless we replicate a whole lot of stuff that is on the other system.	1		1.3	Identifying factors inhibiting goal achievement
I wont be able to go to HR for example as a representative of an employer and say can I have so and sos file and look through to see what is there.	1		1.3	Identifying factors inhibiting goal achievement
So it is possible that a lot of historical stuff could be hard to find, unless we get into scanning documents we wont have signed things on an electronic file so there has to be some way that that can be captured.	1		1.2	Comparing existing and desired states
For example, the one thing that I find really irritating is when you go into an old document that you've got and you print it off because you want to take it to read and it is today's date	1		1.7	Stating facts pertinent to the problem
– I know that is to do with templates, so those things would have to be set up so that they don't automatically change when printed.	1		1.5	Specifying how a solution might be achieved
The date must be fixed as to when it was done and not be able to be changed.	1		1.5	Specifying how a solution might be achieved
This is one of my anxieties of electronic systems is that it is quite easy to tamper with things that not ought to be,	1		1.3	Identifying factors inhibiting goal achievement
needs to be ways to protect this.	1		1.7	Stating facts pertinent to the problem

there is sort of some debate from time to time about inservice versus staff development and I know nursing does quite a bit of inservice where they get together and they have meetings about particular topics for a whole day and I see that as staff development.	1		1.7	Stating facts pertinent to the problem
Staff development and inservice is synonymous – what is a person's allowance for professional development	4		4.4	Data saved by the system
and what is their entitlement and how much have they used,	4		4.4	Data saved by the system
which takes me back to the beginning again about when you talked about the system recording, so keeping a record of that person's research and the time that they have had available for that research – maybe an academic issue rather than HR.	4		4.3	Data that must be entered into the system
Prompt 11				
Things like prompts of due dates eg. if a person is on a fixed term contract, then I would expect that at least one month that is flagged that the contract is due to expire	4		4.1	Data to be presented to end-users
and if we are talking about that sort of thing I suppose also leave that is owing at the end,	4		4.1	Data to be presented to end-users
so some sort of bring up flagging to do particularly the dates when their probation reports are due, salary	4		4.1	Data to be presented to end-users
Prompt 12				

When you look at the original piece of paper with no twink, obviously factual, feel more confident than with an electronic one.	1		1.6	Identifying the causes of the problematic state
Prompt 13				
Name,	4		4.3	Data must be entered into the system
age,	4		4.3	Data must be entered into the system
dob,	4		4.3	Data must be entered into the system
general personal information,	4		4.3	Data must be entered into the system
tax code and tax number.	4		4.3	Data must be entered into the system
They have to supply all their personal information such as qualifications – verified,	4		4.3	Data must be entered into the system
have to say when they have been to workshops, conferences,	4		4.3	Data must be entered into the system
they have to advise when they have completed a qualification or they have gained a paper towards a qualification.	4		4.3	Data must be entered into the system
They have to provide evidence of a whole lot of those things, sometimes we now ask for drivers licence numbers for example,	4		4.3	Data must be entered into the system
evidence that they've got no convictions,	4		4.3	Data must be entered into the system
bank account no.,	4		4.3	Data must be entered into the system
if they're getting medical insurance paid they have to supply the correct account no. and evidence of receipts they're making claims on.	4		4.3	Data must be entered into the system
How could make sure that receipts that are scanned are originals?	1		1.3	Identifying factors inhibiting goal achievement
Prompt 14				
It needs to supply them with two weekly payslips,	4		4.1	Data to be presented to end-users
an annual tax return,	4		4.1	Data to be presented to end-users

the pay slip should have on it their leave status,	4		4.1	Data to be presented to end-users
it should have on it information such as flagging that your practicing certificate is due,	4		4.1	Data to be presented to end-users
whether employees would want that, it just seems that those things are so linked.	1		1.8	Adopting an appropriate point of view on the situation
Total Count	124	Total Count	124	0
Count of Major Requirement: Goal (1)	40	Count of Generic Requirements: 1.1	9	
Count of Major Requirement: Process (2)	0	Count of Generic Requirements: 1.2	4	
Count of Major Requirement: Task (3)	23	Count of Generic Requirements: 1.3	9	
Count of Major Requirement: Information (4)	61	Count of Generic Requirements: 1.4	0	
Total Requirements	124	Count of Generic Requirements: 1.5	9	
		Count of Generic Requirements: 1.6	1	
		Count of Generic Requirements: 1.7	5	
		Count of Generic Requirements: 1.8	1	
		Count of Generic Requirements: 1.9	2	
		Count of Generic Requirements: 1.10	0	
		Count of Generic Requirements: 2.1	0	

		Count of Generic Requirements: 2.2	0	
		Count of Generic Requirements: 2.3	0	
		Count of GenericRequirements: 3.1	10	
		Count of Generic Requirements: 3.2	0	
		Count of Generic Requirements: 3.3	3	
		Count of Generic Requirements: 3.4	9	
		Count of Generic Requirements: 3.5	1	
		Count of Generic Requirements: 4.1	12	
		Count of Generic Requirements: 4.2	2	
		Count of Generic Requirements: 4.3	15	
		Count of Generic Requirements: 4.4	32	
		Count of Generic Requirements: 4.5	0	
		Count of Generic Requirements: 4.6	0	
		Count of Generic Requirements: 4.7	0	

		Count of Generic Requirements: 4.8	0	
		Count of Generic Requirements: 4.9	0	
		Total Generic Requirements	124	

Prompt 1	Requirement Level		Generic Requirement	Explanation
My employees would want it to show what leave they had taken and actively record what leave they had left,	4		4.4	Data saved by the system
it would show their payslips,	4		4.4	Data saved by the system
they would want it to have a record of their fortnightly pay if it changes often.	4		4.4	Data saved by the system
They also may want it for training opportunities	4		4.1	Data to be presented to end-users
- HR might put on the system for them to access.	3		3.4	Individuals or departments who are charged with performing tasks
The main thing is holiday leave and payslips.	4		4.4	Data saved by the system
Prompt 2				
The ones that wouldn't would be the ones who don't like technology and would prefer to have it given to them on paper.	1		1.3	Identifying factors inhibiting goal achievement
But if the details were accurate then the majority of them would be happy to use it.	1		1.5	Specifying how a solution might be achieved
Prompt 3				
Just training in the use of it and pointing out the advantages	3		3.4	Individuals or departments who are charged with peforming tasks
eg. they will have instant access to information.	1		1.1	Identifying the particular goal state to be achieved
Prompt 4				
I would like the system to be user friendly as far as entering holidays go, what leave is available and taken,	4		4.2	Language and formats used
easily look up addresses and phone nos.	4		4.2	Language and formats used
Sometimes to look up salary details of employees,	4		4.4	Data saved by the system

also I would like it to accurately record the hours that are worked, sometimes I'm not certain which programmes staff are working on.	4		4.9	Information created by the system
Prompt 5				
Training in using it and understand the advantages of using the system.	3		3.3	Statement that associates an outcome with specific conditions, actions
Prompt 6				
Only if data was inaccurate	1		1.6	Identifying causes of the problematic state
or if they didn't like using the technology	1		1.6	Identifying causes of the problematic state
because everyone is able to use it if they have access,	1		1.8	Adopting an appropriate point of view on the situation
but if people had to share a computer, they may not be able to get on to the system when they need it.	1		1.3	Identifying factors inhibiting goal achivement
Prompt 7				
Making access to computers more accessible.	1		1.5	Specifying how a solution might be achieved
Also ensuring that the data is correct.	1		1.5	Specifying how a solution might be achieved
Prompt 8				
Open the software,	3		3.1	Identification of the sequence of actions required to complete a task
presumably they would enter their employee ID no. or name,	3		3.2	Facts, rules, algorithms and decisions required to perform a task
I would envisage it would be a GUI interface with icons or hypertext that they could click to go wherever they wanted.	4		4.2	Language and formats

They would enter their name and that would get them into their file if they want to look at payroll details.	3		3.1	Identification of the sequence of actions required to complete a task
Prompt 9				
IT people,	3		3.4	Individuals or departments who are charged with performing tasks or steps within tasks
payroll people,	3		3.4	Individuals or departments who are charged with performing tasks or steps within tasks
HR	3		3.4	Individuals or departments who are charged with performing tasks or steps within tasks
executive and managers.	3		3.4	Individuals or departments who are charged with performing tasks or steps within tasks
Prompt 10				
Payroll – must accurately record pay and holidays and that their system accurately works out what holidays are left	3		3.1	Identification of the sequence of actions required to complete a task
IT people – would need to get the software up and running and that the system is not crashing – the software works.	3		3.1	Identification of the sequence of actions required to complete a task
HR – make sure adequate training is done in the use of the software, benefits of using it pointed out, policies are put on the system and make sure that all employees data is put on the system.	3		3.1	Identification of the sequence of actions required to complete a task

Managers/executive – they would need to make sure they use it to provide an example to staff, and point out the benefits to those people who don't like using it and give training themselves – one on one training if necessary.	3		3.1	Identification of the sequence of actions required to complete a task
Prompt 11				
May need to show when information was last updated and has to be correct.	4		4.1	Data to be presented to end-users
Also a user friendly help file	4		4.2	Language and formats used
and able to provide reports on the information needed.	4		4.1	Data to be presented to end-users
Prompt 12				
Can't think of anything. You wouldn't need to go to HR.	1		1.8	Adopting an appropriate point of view on the situation
Prompt 13				
Name,	4		4.3	Data that must be entered into the system
address,	4		4.3	Data that must be entered into the system
phone no.	4		4.3	Data that must be entered into the system
Area they work in,	4		4.3	Data that must be entered into the system
subjects they teach,	4		4.3	Data that must be entered into the system
age,	4		4.3	Data that must be entered into the system
date of birth,	4		4.3	Data that must be entered into the system

training for certain needs.	4		4.3	Data that must be entered into the system
Prompt 14				
Leave details,	4		4.1	Data to be presented to end-users
fortnightly salary,	4		4.1	Data to be presented to end-users
running record of earning	4		4.1	Data to be presented to end-users
and tax paid.	4		4.1	Data to be presented to end-users
How much has been received in allowances and details of allowances.	4		4.1	Data to be presented to end-users
Could also be advised ahead of time of semester dates, public holidays.	4		4.1	Data to be presented to end-users
Total Count	51	Total Count	51	0
Count of Major Requirement: Goal (1)	10	Count of Generic Requirements: 1.1	1	
Count of Major Requirement: Process (2)	0	Count of Generic Requirements: 1.2	0	
Count of Major Requirement: Task (3)	14	Count of Generic Requirements: 1.3	2	
Count of Major Requirement: Information (4)	27	Count of Generic Requirements: 1.4	0	
Total Requirements	51	Count of Generic Requirements: 1.5	3	
		Count of Generic Requirements: 1.6	2	
		Count of Generic Requirements: 1.7	0	
		Count of Generic Requirements: 1.8	2	

		Count of Generic Requirements: 1.9	0	
		Count of Generic Requirements: 1.10	0	
		Count of Generic Requirements: 2.1	0	
		Count of Generic Requirements: 2.2	0	
		Count of Generic Requirements: 2.3	0	
		Count of GenericRequirements: 3.1	6	
		Count of Generic Requirements: 3.2	1	
		Count of Generic Requirements: 3.3	1	
		Count of Generic Requirements: 3.4	6	
		Count of Generic Requirements: 3.5	0	
		Count of Generic Requirements: 4.1	9	
		Count of Generic Requirements: 4.2	4	
		Count of Generic Requirements: 4.3	8	
		Count of Generic Requirements: 4.4	5	

		Count of Generic Requirements: 4.5	0	
		Count of Generic Requirements: 4.6	0	
		Count of Generic Requirements: 4.7	0	
		Count of Generic Requirements: 4.8	0	
		Count of Generic Requirements: 4.9	1	
		Total Generic requirements	51	

Prompt 1	Requirement Level		Generic Requirement	Explanation
A whole range of things I suppose.	1		1.8	Adopting an appropriate point of view on the situation
Contact nos. and a bit of information about specialties	4		4.4	Data saved by the system
I think also as a facility for people to update their information	2		2.1	A series of steps or tasks designed to produce a product or service
and a choice whether personal details are public or not.	1		1.7	Stating facts and beliefs pertinent to the problem
I assume the system is just for staff or students?	1		1.01	Organisational units, customers
I would like to be consulted as to whether I would like it	1		1.7	Stating facts and beliefs pertinent to the problem
– privacy is important.	1		1.7	Stating facts and beliefs pertinent to the problem
Background,	4		4.4	Data saved by the system
roles,	4		4.4	Data saved by the system
how many hours working,	4		4.4	Data saved by the system
timetable and the kind of responsibilities that you have,	4		4.4	Data saved by the system
the kind of contract you're on.	4		4.4	Data saved by the system
Prompt 2				
I suppose sometimes people fear a little bit about privacy	1		1.3	Identifying factors inhibiting goal achievement
and an impersonal approach if people are accessing things about you that you haven't been consulted about.	1		1.3	Identifying factors inhibiting goal achievement
Security also – if things are on line and can be hacked into and if it can be hacked into what other information is there.	1		1.3	Identifying factors inhibiting goal achievement

Personally, myself, obviously within a large organisation with many campuses, it is important to have access to information about people's strengths and so on.	4		4.4	Data saved by the system
Prompt 3				
Transparency,	1		1.5	Specifying how a solution might be achieved
consultation	1		1.5	Specifying how a solution might be achieved
and security.	1		1.5	Specifying how a solution might be achieved
Prompt 4				
Contact phone nos.,	4		4.4	Data saved by the system
addresses,	4		4.4	Data saved by the system
breakdown of skills/strengths.	4		4.4	Data saved by the system
like for instance can I ask this person to work weekends, attend meetings or not.	4		4.4	Data saved by the system
Do they have any clause in their contract that means if I give them additional work or responsibilities, so I need to know as an intermediate manager, what is reasonable to ask these people.	4		4.4	Data saved by the system
Say if you had a person who wasn't doing a lot of work here, do they have an agreement with the manager in their contract that said they didn't have to be here all the time.	1		1.1	Identifying the particular goal state to be achieved

Previously as a manager I have had a staff member who I asked to attend meetings and they weren't prepared to attend meetings because they weren't getting paid for it – there is a little bit of greyness there,	1		1.6	Identifying the causes of the problematic state
and I was also told that I wasn't allowed to have their information in the contract, so I didn't know what I was allowed to ask them to do and what I wasn't able to ask them to do.	1		1.3	Identifying factors inhibiting goal achievement
I suppose timetabling issues are obviously a concern because I am directly involved in doing the timetable.	1		1.7	Stating facts and beliefs pertinent to the problem
Prompt 5				
Again, they would have their own pin no. through the internet and have their own security no.	3		3.3	Statement that associates an outcome with specific conditions, actions, constraints
They would need to be updated in terms of their skills so they know how to use it	1		1.1	Identifying the particular goal state to be achieved
and obviously access to machinery to do that.	1		1.1	Identifying the particular goal state to be achieved
There needs to be a system so that changes can be made but also they can't go in and permanently change things without good reason.	2		2.2	Facts, rules, algorithms and decisions required to perform a process
Prompt 6				
Access to machinery/computer,	1		1.6	Identifying the causes of the problematic state
reliability of the internet,	1		1.6	Identifying the causes of the problematic state

privacy issues,	1		1.6	Identifying the causes of the problematic state
in a busy staff room where people behind you can see what you are dialling into.	1		1.6	Identifying the causes of the problematic state
People with disabilities – visual problems.	1		1.6	Identifying the causes of the problematic state
I know there are two staff members who don't use computers.	1		1.6	Identifying the causes of the problematic state
Reliability seems to be a major issue for any computer system.	1		1.6	Identifying the causes of the problematic state
Prompt 7				
We are in a situation where we are hot desking, at the moment we use computers in staff room or in studios with students.	1		1.7	Stating facts and beliefs pertinent to the problem
Staff development on how to use the system	1		1.5	Specifying how a solution might be achieved
Prompt 8				
Need access to it,	3		3.2	Facts, rules, algorithms and decisions required to perform a task
a user friendly interface and can find your way around it	4		4.2	Language and formats
and contact people about it,	3		3.4	Individuals or departments who are charged with performing tasks
good graphics,	4		4.2	Language and formats
security codes.	3		3.3	Statement that assoicates an outcome with specific conditions, actions, constraints
Good navigation system.	4		4.2	Language and formats
Prompt 9				

First of all HR	3		3.4	Individuals or departments who are charged with performing tasks
and then IT includes the web master.	3		3.4	Individuals or departments who are charged with performing tasks
Also immediate managers and any team managers/course leaders.	3		3.4	Individuals or departments who are charged with performing tasks
And the timetable office.	3		3.4	Individuals or departments who are charged with performing tasks
Prompt 10				
Obviously people like Clive, such as senior managers have to have an overview for staff budgets, staff student ratios, staff/EFT ratios, information about contracts, leave, reminder systems for contracts that are about to expire.	1		1.1	Identifying the particular goal state to be achieved
An electronic file on staff, funds for staff development and making time for staff to learn the system.	3		3.1	Identification of the sequence of actions required to complete a task
My position is lack of time to do staff development.	1		1.3	Identifying factors inhibiting goal achievement
HR I suppose would be responsible for staff budgets as well, qualifications and experience, training, administration, contracts, holidays, leave and what are reasonable workloads and safe workloads in terms of stress.	3		3.4	Individuals or departments who are charged with performing tasks
It would be immediate obvious if someone had a huge amount of hours that health and safety will be an issue.	4		4.6	Description of how one object or event is associated with another object or event

IT would provide machinery, construct an appropriate system – provide expertise for training and checking with people afterwards. Obviously troubleshooting, protection for viruses and access. Backing up protection. They also need systems to update and design.	3		3.1	Identification of the sequence of actions required to complete a task
The timetable office would need to be well and truly integrated with this system – wouldn't want to enter information twice. Updating information in terms of staff hours and spaces used.	3		3.1	Identification of the sequence of actions required to complete a task
Prompt 11				
Access to your own details,	4		4.1	Data to be presented to end-users
so you can see whether it has been updated or not.	4		4.1	Data to be presented to end-users
They would probably want stats,	4		4.1	Data to be presented to end-users
student/staff ratio,	4		4.1	Data to be presented to end-users
room usage,	4		4.1	Data to be presented to end-users
problems,	4		4.1	Data to be presented to end-users
bugs in the system,	4		4.1	Data to be presented to end-users
feedback from staff whether the system is working for them.	1		1.01	Organisational units, customers
Prompt 12				
Face to face maybe.	1		1.8	Adopting an appropriate point of view on the situation
Sometimes it easier to explain something in detail through a conversation than through a box on a computer screen.	1		1.6	Identifying the causes of the problematic state

I suppose sometimes what happens is that you get information overload. So instead of getting one or two notes in your pigeon hole, nowadays you get 10-15 emails per day and you have to respond to it.	1		1.6	Identifying the causes of the problematic state
Prompt 13				
An updated CV,	4		4.3	Data that must be entered into the system
updated personal information for contacts,	4		4.3	Data that must be entered into the system
maybe a statement about who should have access to it.	4		4.3	Data that must be entered into the system
For them to be able to use it they would have to select or be given a code.	2		2.2	Facts, rules, algorithms and decisions required to perform a process
They would also have to supply detail such as timetable and staff hours.	4		4.3	Data that must be entered into the system
Prompt 14				
How many holidays left,	4		4.1	Data presented to end-users
any entitlements,	4		4.1	Data presented to end-users
sick leave,	4		4.1	Data presented to end-users
times for application for salary reviews.	4		4.1	Data presented to end-users
Reminders if on limited contract, any other kind of things that need to be done.	4		4.1	Data presented to end-users
If they have forgotten their password – prompts how to bypass or change it.	4		4.1	Data presented to end-users
I think they should give them a reminder message basically saying who has access to the system and what the system does – transparency	4		4.1	Data presented to end-users
– who has access at certain levels – privacy.	4		4.1	Data presented to end-users

Not that I'm paranoid or anything.	1		1.7	Stating facts and beliefs pertinent to the problem
Staff development – what's available, how to enrol.	4		4.1	Data presented to end-users
Total Count	84	Total Count	84	0
Count of Major Requirement: Goal (1)	33	Count of Generic Requirements: 1.1	4	
Count of Major Requirement: Process (2)	3	Count of Generic Requirements: 1.2	0	
Count of Major Requirement: Task (3)	12	Count of Generic Requirements: 1.3	5	
Count of Major Requirement: Information (4)	36	Count of Generic Requirements: 1.4	0	
	84	Count of Generic Requirements: 1.5	4	
		Count of Generic Requirements: 1.6	10	
		Count of Generic Requirements: 1.7	6	
		Count of Generic Requirements: 1.8	2	
		Count of Generic Requirements: 1.9	0	
		Count of Generic Requirements: 1.10	2	
		Count of Generic Requirements: 2.1	1	

		Count of Generic Requirements: 2.2	2	
		Count of Generic Requirements: 2.3	0	
		Count of GenericRequirements: 3.1	3	
		Count of Generic Requirements: 3.2	1	
		Count of Generic Requirements: 3.3	2	
		Count of Generic Requirements: 3.4	6	
		Count of Generic Requirements: 3.5	0	
		Count of Generic Requirements: 4.1	16	
		Count of Generic Requirements: 4.2	3	
		Count of Generic Requirements: 4.3	4	
		Count of Generic Requirements: 4.4	12	
		Count of Generic Requirements: 4.5	0	
		Count of Generic Requirements: 4.6	1	
		Count of Generic Requirements: 4.7	0	

		Count of Generic Requirements: 4.8	0	
		Count of Generic Requirements: 4.9	0	
			84	

Prompt 1	Requirement Level		Generic Requirement	Explanation
Keep track of leave,	4		4.4	Data saved by the system
rate of pay,	4		4.4	Data saved by the system
record training requirements – what they had and would like to have.	4		4.4	Data saved by the system
Performance appraisal type stuff – that's a possibility.	4		4.4	Data saved by the system
Prompt 2				
They are very focussed on working with students so the time they have free is slight for the front office staff.	1		1.6	Identifying the causes of the problematic state
That means that they would have to have uninterrupted time to have a look	1		1.5	Specifying how a solution might be achieved
– it would be confidential so you wouldn't want anyone looking over your shoulder.	1		1.7	Stating facts and beliefs pertinent to the problem
Mainly time, there is no problem with accessing it .	1		1.6	Identifying the causes of the problematic state
It would have to be confidential so you couldn't look at other people's stuff	1		1.1	Identifying the particular goal state to be achieved
and that it didn't record unnecessary things.	1		1.7	Stating facts and beliefs pertinent to the problem
Prompt 3				
The manager would have to make sure that they did have private time when they could access their stuff out of the public eye and that could be woven to break times.	1		1.5	Specifying how a solution might be achieved
So time factor is tricky – would have to schedule it.	1		1.5	Specifying how a solution might be achieved
There would be some training given in accessing it	1		1.5	Specifying how a solution might be achieved

I guess and that would involve as well proof that the system was confidential.	1		1.5	Specifying how a solution might be achieved
On the whole it would be welcomed because while we are told that we have access to our files, going in to ask to look at your file is something that people rarely do.	1		1.2	Comparing existing and desired states
Prompt 4				
Rate of pay,	4		4.4	Data saved by the system
time when someone started the job,	4		4.4	Data saved by the system
leave entitlements always important.	4		4.4	Data saved by the system
Information about different kinds of things like bereavement leave,	4		4.4	Data saved by the system
or what are the different policies for leave depending on the type contract people are on.	4		4.1	Data to be presented to end-users
Those are the kinds of things I ask HR about.	1		1.8	Adopting an appropriate point of view on the situation
It would be really quite useful to know what the equivalent rates of pay are across institutions so what does a lecturer get and what does that involve – does it include preparation time – what are the teaching loads that people are carrying.	4		4.1	Data to be presented to end-users
It would be pretty useful – we keep a database of all our learning assistance tutors – if centralised would be good to keep records of their pay etc.	1		1.2	Comparing existing and desired states
The training that people have had, the amount of time they've had in training compared to other people would be a good thing to check.	4		4.4	Data to be presented to end-users
Prompt 5				

I think they would need training to get them into it and show them benefits and show them how it can be used.	3		3.4	Individuals or departments who are charged with performing tasks
Training at the beginning and then training a little bit more down the track when they know a bit more.	3		3.5	Explanation of why specific actions are to be taken
Also opportunities to use it as well if they are in exposed situations, so a good time to use it for example would be before they had their performance assessment and that they would come with information that they would have checked and if the performance appraisal results went on to the computer they could be asked to check them.	1		1.5	Specifying how a solution might be achieved
Prompt 6				
If they didn't have any training and they didn't know what they were looking for,	1		1.6	Identifying the causes of the problematic state
if the system wasn't user friendly.	1		1.6	Identifying the causes of the problematic state
So bit of training	1		1.5	Specifying how a solution might be achieved
and a really accessible system.	1		1.5	Specifying how a solution might be achieved
And someone they could ask as well – knowing someone they could ask questions if they were stuck – sort of like a help desk.	1		1.5	Specifying how a solution might be achieved
Prompt 7				
A brief manual to remind them if they haven't used it for a while.	1		1.5	Specifying how a solution might be achieved

An icon on screen to go straight into would be good.	4		4.2	Language and formats
Prompt 8				
Normal log on for the computer and some sort of log on to get you on to the system.	3		3.2	Facts, rules, algorithms and decisions required to perform a task
I would like a separate log on because one of the things that happens here is that people open up their drive and sometimes a person comes along after them if relieving for a break, their log on is still on the system, so it could be accessed by someone else.	3		3.2	Facts, rules, algorithms and decisions required to perform a task
Maybe a help button regarding general things or issues relating to your contract.	4		4.2	Language and formats
Who would do the entering of data?	1		1.7	Stating facts and beliefs pertinent to the problem
Would it be HR?	3		3.4	Individuals or departments who are charged with performing tasks
Because I imagine it would be the sort of the system that you could ask it questions but you couldn't change the data itself.	1		1.7	Stating facts and beliefs pertinent to the problem
Prompt 9				
HR,	3		3.4	Individuals or departments who are charged with performing tasks
payroll	3		3.4	Individuals or departments who are charged with performing tasks
and managers.	3		3.4	Individuals or departments who are charged with performing tasks
Some of the information would have to be either given by your manager to HR to enter.	3		3.4	Individuals or departments who are charged with performing tasks
Prompt 10				

HR keeps track of leave, starting salary, parity, probation, performance appraisal, employee records.	3		3.1	Identification of the sequence of actions required to complete a task
Payroll keeps track of timesheets, contracts beginning and end.	3		3.1	Identification of the sequence of actions required to complete a task
Managers would provide information on training that had taken place and in association with performance appraisal. Managers deal with timesheets also.	3		3.1	Identification of the sequence of actions required to complete a task
Prompt 11				
It would have to provide information mainly eg. when advertising – need reminding of process – where can access documents on the intranet or giving me hard copies of documents and reminding me of the process for applications, and information on leave entitlement and any extraordinary circumstances.	4		4.1	Data to be presented to end-users
I would go to HR if I had problems with employees as well, that really has to be face to face – you count on that expert information and if drafting a letter sending it to HR to make sure on the right track.	3		3.4	Explanations of why specific actions are to be taken
Prompt 12				
Still would get face to face information if that's what they needed,	3		3.3	Statement that associates an outcome with specific conditions, actions, and constraints

so HR wouldn't disappear but it would supplement the work that they are doing. It would make their work easier hopefully. It would be vital to still have the human factor.	1		1.7	Stating facts and beliefs pertinent to the problem
Prompt 13				
Accurate information as per cvs.	4		4.3	Data that must be entered into the system
They have some responsibility to update information – probably need reminders to know what needs to be updated.	4		4.4	Data presented to end-users
For example seeing that there was a record of training they've done and making sure that their manager is aware of the training and that it would be entered into the system and if they find it's not there they would let their manager know and follow it up.	4		4.3	Data that must be entered into the system
Prompt 14				
I would say they would have to supply all the information that is in there.	4		4.1	Data to be presented to end-users
So anything that is entered or referenced there is subject to confidentiality but the employee should have the right to access all that information so that nothing is hidden from them.	4		4.1	Data to be presented to end-users
So if it is the equivalent of a letter on their file which is in that system, they would be able to access it as well.	4		4.1	Data to be presented to end-users
I don't know if the organisation should hold what positions are being paid, not individual people, but positions, eg general rates of pay.	4		4.1	Data to be presented to end-users

What benefits are you entitled to – that should be made clear – often what is in your contract is not remembered.	4		4.1	Data to be presented to end-users
Total Count	59	Total Count	59	0
Count of Major Requirement: Goal (1)	23	Count of Generic Requirements: 1.1	1	
Count of Major Requirement: Process (2)	0	Count of Generic Requirements: 1.2	2	
Count of Major Requirement: Task (3)	14	Count of Generic Requirements: 1.3	0	
Count of Major Requirement: Information (4)	22	Count of Generic Requirements: 1.4	0	
	59	Count of Generic Requirements: 1.5	10	
		Count of Generic Requirements: 1.6	4	
		Count of Generic Requirements: 1.7	5	
		Count of Generic Requirements: 1.8	1	
		Count of Generic Requirements: 1.9	0	
		Count of Generic Requirements: 1.10	0	
		Count of Generic Requirements: 2.1	0	
		Count of Generic Requirements: 2.2	0	

		Count of Generic Requirements: 2.3	0	
		Count of Generic Requirements: 3.1	3	
		Count of Generic Requirements: 3.2	2	
		Count of Generic Requirements: 3.3	1	
		Count of Generic Requirements: 3.4	7	
		Count of Generic Requirements: 3.5	1	
		Count of Generic Requirements: 4.1	8	
		Count of Generic Requirements: 4.2	2	
		Count of Generic Requirements: 4.3	2	
		Count of Generic Requirements: 4.4	10	
		Count of Generic Requirements: 4.5	0	
		Count of Generic Requirements: 4.6	0	
		Count of Generic Requirements: 4.7	0	
		Count of Generic Requirements: 4.8	0	
		Count of Generic Requirements: 4.9	0	

Prompt 1	Requirement Level		Generic Requirement	Explanation
I'm not sure what my employees would want the system to do.	1		1.8	Adopting an appropriate point of view on the situation
As a manager, keeping track of time off in lieu,	4		4.4	Data saved by the system
leave,	4		4.4	Data saved by the system
sick days,	4		4.4	Data saved by the system
hours worked,	4		4.4	Data saved by the system
overtime worked and those sorts of things.	4		4.4	Data saved by the system
Off the top of my head that's about it. Maybe employees could add their own staff development, not internal but external that HR doesn't know about.	4		4.3	Data that must be entered into the system
Prompt 2				
I would have no idea because I think it would be a brilliant thing to have on board.	1		1.4	Stating final ends served by the solution
It would save time and running up and down stairs and making phone calls and sending emails so if something on screen would be much better.	1		1.2	Comparing existing and desired states
I think employees would be concerned at the privacy of any information that is on there, but it would be great for lots of things	1		1.3	Identifying factors inhibiting goal achievement
May be seen as another thing we have to do.	1		1.7	Stating facts and beliefs pertinent to the problem
Prompt 3				
If streamlined system and could be accessed daily, I wouldn't imagine it would be too onerous	1		1.8	Adopting an appropriate point of view on the situation
but as a manager, I think it would be brilliant.	1		1.8	Adopting an appropriate point of view on the situation

I'm not sure what would be in place to cover privacy so hackers couldn't get in.	1		1.3	Identifying factors inhibiting goal achievement
Prompt 4				
HR mostly to check employees files and what contract they're on for annual leave and sick leave entitlements.	3		3.1	Identification of the sequence of actions required to complete a task
If there are any variations, what their pay rate is,	3		3.1	Identification of the sequence of actions required to complete a task
checking CVs and qualifications.	3		3.1	Identification of the sequence of actions required to complete a task
Prompt 5				
I guess that is open to debate, because in my mind it would start with who is setting up the system,	3		3.4	Individuals or departments who are charged with performing tasks
I imagine someone would set it up, implement it so you could run everything on it,	2		2.1	A series of steps or tasks designed to produce a product or service
so I imagine an employee would log on with a special code and be able to look at the information as you can do now and open the file.	2		2.2	Facts, rules, beliefs, algorithms and decisions required to perform a process
I think it should be read only so that might be an issue.	2		2.3	Factors that may prohibit process completion
An area where they can input staff development, which is another way of capturing information for reporting to Board of Studies etc	4		4.3	Data that must be entered into the system
Especially for the in house staff development because HR keeps records of these, so should be easy enough to do.	3		3.5	Explanation of why specific actions are to be taken
Prompt 6				

Not that I can think of. I thing that came to me, should it only be accessed while you're at UCOL or can it be accessed outside UCOL.	1		1.3	Identifying factors inhibiting goal achievement
In the forestry section there is only one computer that is accessible out there at the Aokatere campus so that would be a problem,	1		1.3	Identifying factors inhibiting goal achievement
there is only person who uses the computer, the rest use fax or phone.	1		1.6	Identifying the causes of the problematic state
The others can but choose not to – whether it because they don't know how to – may be they don't know how to log on.	1		1.6	Identifying the causes of the problematic state
However they do have access to all the computers at the main campus.	1		1.7	Stating facts and beliefs pertinent to the problem
Prompt 7				
I think it is staff attitude – want resources available immediately.	1		1.7	Stating facts and beliefs pertinent to the problem
Just common sense really, would address problems as they arise, like a help desk person.	3		3.4	Individuals or departments who are charged with performing tasks
Confidentiality would be an issue. For example if employing five help desk technicians, that's five extra people who can access that information.	1		1.7	Stating facts and beliefs pertinent to the problem
Prompt 8				
If it was me I would go to the appropriate shortcut,	3		3.1	Identification of the sequence of actions required to complete a task

it may have several levels of log in on so that if you are staff member you can only log on to your own information, if you're a manager, you can only log on to those relevant to your teaching team or whom you have responsibility for,	2		2.2	Facts, rules, algorithms and decisions required to perform a process
and I wonder within that if there are levels of information that can be accessed.	2		2.2	Facts, rules, algorithms and decisions required to perform a process
There would need to be user friendly navigation tools.	4		4.2	Language and formats used
Then again read only – any changes would need to be signed off on the proper forms.	4		4.8	Rules that govern the validity of data
I wonder if with a system if there could be links to HR policies rather than scrolling through an index – just HR policies, rather than the raft of policies that we have.	4		4.2	Language and formats used
Also the system could note who has accessed the system, who has been looking.	4		4.5	Physical entities and occurrences in the world that are relevant to the system
Prompt 9				
Obviously HR if setting up,	3		3.4	Individuals or departments who are charged with performing tasks
Deans,	3		3.4	Individuals or departments who are charged with performing tasks
payroll.	3		3.4	Individuals or departments who are charged with performing tasks
Staff encouraged to use it and benefits would have to be clear to them.	1		1.5	Specifying how a solution might be achieved
User friendly. It should easy to navigate.	4		4.2	Language and formats used
Prompt 10				

HR would need to decide which information is public access, I would see a mixture of IT and HR. HR people could answer the HR questions and computer questions asked of IT people.	3		3.4	Individuals or departments who are charged with performing tasks
The dean is more to help with the buy in of employees,	3		3.3	Statement that associates an oucome with specific actions
I think all managers and Programme Leaders would jump at it,	1		1.8	Adopting an appropriate point of view on the situation
there would have to be lots and lots of sessions available to get around teaching, but then again not just lecturers, would be all staff.	1		1.5	Specifying how a solution might be achieved
IT would help with the set up and continuing support	3		3.4	Individuals or departments who are charged with performing tasks
and what happens when system fall over?	1		1.6	Identifying causes of the problematic state
I would expect HR staff would make improvements as well as the IT people.	3		3.4	Individuals or departments who are charged with performing tasks
I wonder if a payroll task would be to keep track of pay day and amounts and would only be available to payroll and employee.	1		1.5	Specifying how a solution might be achieved
The leave that's taken would need to be accessible by managers.	4		4.1	Data to be presented to end-users
Prompt 11				
Depends on how it is set up	4		4.2	Language and format used
– when you go into that area, you should be see the information.	4		4.1	Data to be presented to end-users
It would have to be seen to be working.	1		1.7	Stating facts and beliefs pertinent to the problem
Would want reports on activities.	4		4.1	Data to be presented to end-users

Prompt 12				
Would management think less people are needed in HR?	1		1.7	Stating facts and beliefs pertinent to the problem
This would be a bad thing – you need to have people, specialist people with human resource knowledge as some things need to discuss.	1		1.1	Identifying the particular goal state to be achieved
Time saving for HR staff.	1		1.4	Stating the final ends served by the solution
Prompt 13				
Agreement for the information to be set up that sort of way and open to view in that sort of way.	1		1.01	Organisational units, customers
I imagine that everything is needed to go in a system like that is already in a file in HR so I guess permission is needed.	1		1.5	Specifying how a solution might be achieved
It would enable the employee to see that everything is up to date as far as CVs.	1		1.4	Stating the final ends served by a solution
It may need more people in HR.	1		1.8	Adopting an appropriate point of view on the situation
Maybe an HR person to look after the system as well as an IT person.	3		3.4	Individuals or departments who are charged with performing tasks
Prompt 14				
Whatever has been agreed to be on the system	4		4.8	Rules that govern the validity of data
– must be able to access that information, so again it comes back to the beginning and deciding what is legally OK to have in the system.	4		4.8	Rules that govern the validity of data

Employees will need to realise that they can only look at their own file and not anyone elses.	3		3.2	Facts, rules, algorithms and decisions required to perform a task
It would supply to them how much annual leave they've got left	4		4.1	Data to be presented to end-users
or how much sick leave have actually taken,	4		4.1	Data to be presented to end-users
if they have time off in lieu in their contract,	4		4.1	Data to be presented to end-users
or long service leave.	4		4.1	Data to be presented to end-users
Payroll could be linked – can get payslips on line now.	1		1.2	Comparing existing and desired states
To me HR embodies payroll and human resources things, I don't see it as separate, so it needs to be an integrated system.	1		1.1	Identifying the particular goal state to be achieved
Total Count	73	Total Count	73	
Count of Major Requirement: Goal (1)	30	Count of Generic Requirements: 1.1	2	
Count of Major Requirement: Process (2)	5	Count of Generic Requirements: 1.2	2	
Count of Major Requirement: Task (3)	16	Count of Generic Requirements: 1.3	4	
Count of Major Requirement: Information (4)	22	Count of Generic Requirements: 1.4	3	
	73	Count of Generic Requirements: 1.5	4	
		Count of Generic Requirements: 1.6	3	
		Count of Generic Requirements: 1.7	6	

		Count of Generic Requirements: 1.8	5	
		Count of Generic Requirements: 1.9	0	
		Count of Generic Requirements: 1.10	1	
		Count of Generic Requirements: 2.1	1	
		Count of Generic Requirements: 2.2	3	
		Count of Generic Requirements: 2.3	1	
		Count of Generic Requirements: 3.1	4	
		Count of Generic Requirements: 3.2	1	
		Count of Generic Requirements: 3.3	1	
		Count of Generic Requirements: 3.4	9	
		Count of Generic Requirements: 3.5	1	
		Count of Generic Requirements: 4.1	7	
		Count of Generic Requirements: 4.2	4	
		Count of Generic Requirements: 4.3	2	
		Count of Generic Requirements: 4.4	5	

		Count of Generic Requirements: 4.5	1	
		Count of Generic Requirements: 4.6	0	
		Count of Generic Requirements: 4.7	0	
		Count of Generic Requirements: 4.8	3	
		Count of Generic Requirements: 4.9	0	
			73	

Prompt 1	Requirement Level		Generic Requirement	Explanation
It covers payroll as well doesn't it.	1		1.8	Adopting an appropriate point of view on the situation
I think they would want to be able to do time sheets on line,	4		4.3	Data that must be entered into the system
contact people in payroll about the system,	1		1.1	Identifying the particular goal state to be achieved
find out their access to personal details on line to ensure confidentiality,	3		3.2	Facts, rules, algorithms required to perform a task
access codes to each persons data	2		2.2	Facts, rules, algorithms required to perform a process
and time sheets would need to be signed off on line and submitted so that would cover – they could see what sick leave and leave so they could track holidays and get those approved by their managers.	4		4.6	Description of how one event is associated with another event
As long as they could access their personal data and see when their contracts are coming up for renewal,	4		4.4	Data saved by the system
probably casual staff would want to check from home	1		1.7	Stating facts and beliefs pertinent to the problem
and I guess professional development could be checked on line.	4		4.4	Data saved by the system
Prompt 2				
I can imagine some people would have concerns about the confidentiality element,	1		1.3	Identifiying factors inhibiting goals achievement
some are quite focussed on human element so it would effectively remove a lot of their contact with payroll and human resource and with their managers	1		1.7	Stating facts and beliefes pertinent to the problem

and I guess it's a balance between frustration with not being able to see their manager versus actually being able to see that manager,	1		1.7	Stating facts and beliefes pertinent to the problem
and as the organisation gets bigger and management is quite small it might remove that human contact and it might end up with people in the satellite areas never actually seeing management	1		1.3	Identifiying factors inhibiting goals achievement
and I don't think educational staff – that type of approach would appeal to them prefer to vent their frustrations to someone	1		1.7	Stating facts and beliefes pertinent to the problem
there could also be delays and I imagine their could be concern about the system crashing	1		1.3	Identifiying factors inhibiting goals achievement
and how will those records be maintained in the meantime and if it crashed for week, how do they access that information in the meantime.	2		2.3	Factors that may prohibit process completion
It is probably past distrust because we've had issues with leave recording before.	1		1.3	Identifiying factors inhibiting goals achievement
Prompt 3				
I think robust measures around the confidentiality issue and staff being made well aware of how their information is kept confidential	1		1.5	Specifying how a solution might be achieved
and also IT processes.	2		2.1	A series of steps or tasks designed to produce a product or service
Would need reassurances that the system wasn't going to crash and that there were appropriate measures and back ups around that	1		1.5	Specifying how a solution might be achieved

and that if it did crash there was some kind of manual print out or recording that they could access	1		1.5	Specifying how a solution might be achieved
and probably sell them the fact that managers would probably be more available to visit satellite areas and meet with them about less mundane issues,	1		1.1	Identifying the particular goal state to be achieved
but I don't actually know if that would follow through in practice.	1		1.7	Stating facts and beliefs pertinent to the problem
Prompt 4				
As I said on line time sheets,	4		4.4	Data saved by the system
online leave recording,	4		4.4	Data saved by the system
annual planning,	4		4.4	Data saved by the system
annual, sick, bereavement leave,	4		4.4	Data saved by the system
would also have discretion around some of those things for managers to plug in as bereavement leave is often a discretionary entitlement, so would have to cope with those things.	3		3.2	Facts, rules, assumptions and decisions required to perform a task
It would have to be able to be updated from a number of different sources	3		3.1	Identification of the sequence of actions required to complete a task
so not only would human resources be updating but payroll and managers would be updating different elements,	3		3.4	Individuals or departments who are charged with performing tasks
obviously would have to have specific levels of access for all those different people, as to what they could see.	2		2.2	Facts, rules, assumptions and decisions required to perform a process
It would have to be easy to use for the staff	4		4.2	Language and formats used

and I think it would also have to be monitored from time to time to make sure it wasn't going to far and perhaps have some means of pulling back on things if staff are finding it upsetting,	1		1.7	Stating facts and beliefs pertinent to the problem
like I don't think you would want anything to do with disciplinary processes run through that system.	1		1.8	Adopting an appropriate point of view on the situation
I've heard of some that send out reminders and warnings and all sorts of things, and I think that those are things that still must be done face to face	1		1.8	Adopting an appropriate point of view on the situation
and so I think what I said about having balance you need to be able to pull back on some of these tasks because you could end up in the situation where the only stuff staff are getting face to face are negative things so that concerns me.	1		1.3	Identifying factors inhibiting goal achievement
So you wouldn't want a system that once you've got it, you're locked in to every component of it running.	1		1.7	Stating facts and beliefs pertinent to the problem
If you decided to put some professional development – that would need to be entered by different training providers,	4		4.3	Data that must be entered into the system
so that would be – would need some kind of low level of access for that which may not tie in with it.	2		2.3	Factors that may prohibit process completion
So I guess you would need someone to maintain it fulltime to deal with applications for access at different levels	3		3.4	Individuals or departments who are charged with performing tasks

because what you don't want is delays and a really good system, with delays in people getting at information.	1		1.6	Identifying the causes of the problematic state
ACC	4		4.4	Data saved by the system
Health and Safety.	4		4.4	Data saved by the system
Any additional responsibilities,	4		4.4	Data saved by the system
pay allowances	4		4.4	Data saved by the system
and clothing entitlements	4		4.4	Data saved by the system
Provide statistical reporting.	4		4.9	Information created by the system
Prompt 5				
They would have to have a specific access login that allowed him to access their information,	3		3.3	Statement that associates an outcome with specific conditions, actions and constraints
there has to be something that links them to the appropriate managers and to the systems that get them approval from the appropriate people,	1		1.5	Specifying how a solution might be achieved
so that would have to be linked so I imagine for the employee all they need is the password and everything would have been loaded ready for them to use	3		3.3	Statement that associates an outcome with specific conditions, actions and constraints
and some training given on what they can get from the system and how they go about it.	3		3.4	Individuals or departments who are charged with performing tasks
The system would be useless if they could not get that access and training as soon as they start,	2		2.3	Factors that may prohibit process completion
if you had someone waiting six months for training to use the system then they are going to be going to the manual people in the meantime,	1		1.6	Identifying causes of the problematic state

so that's why you would need a fulltime person dedicated to it,	3		3.5	Explanation of why specific actions are to be taken
they would have to have weekly training sessions to get people in line with it.	1		1.5	Specifying how a solution might be achieved
Prompt 6				
Aside from if the system crashed,	1		1.6	Identifying the causes of the problematic state
I can imagine things like some of the systems going too far with disciplinary procedures,	1		1.6	Identifying the causes of the problematic state
so I can imagine employees wouldn't be very impressed with that, they may have problems when submitting their leave plan and having it declined and then they can't get a time to see management because their time is cut down because of the system	1		1.6	Identifying the causes of the problematic state
so they may have problems with the human element being cut back too much	1		1.6	Identifying the causes of the problematic state
and the system isn't flexible enough to work with options,	1		1.6	Identifying the causes of the problematic state
the other thing is with bereavement leave if you end up with a system where you request bereavement leave or sick leave on line and you are not there to do it, or it's not accessible from home, people might not be coming in and it depends are there still options to let their managers know	1		1.6	Identifying the causes of the problematic state
and you would hope there would be, but it depends how reliant on the system you become.	1		1.7	Stating facts and beliefs pertinent to the problem
Prompt 7				

One of the main things is keeping enough management to keep a human face available	1		1.5	Specifying how a solution might be achieved
and keeping other back up options available in case the system crashes	1		1.5	Specifying how a solution might be achieved
and having an appropriate support person to provide training so if they are unable to log in to the system, there is someone they can go to who can sit them down and explain step by step who they log in.	1		1.5	Specifying how a solution might be achieved
Another issue is that if you have different campuses you need someone at each site who can be of assistance.	1		1.7	Stating facts and beliefs pertinent to the problem
Prompt 8				
I would imagine the first thing is that they are given training,	3		3.4	Individuals or departments who are charged with performing tasks
are advised that they need to create a password and they will be issued with a login	2		2.2	Facts, rules, algorithms required to perform a process
and that at the training they will be advised how they will make applications and what they were required to input,	3		3.1	Identification of the sequence of actions required to complete a task
such as annual plan for leave and how they would apply for sick leave etc,	3		3.1	Identification of the sequence of actions required to complete a task
how they could use the system to arrange meetings with management or those types of issues to discuss.	3		3.1	Identification of the sequence of actions required to complete a task

Then I guess you might let them go away and trial it for a week doing different things and then get them to report back about different questions they might have and you would probably need more advanced training as you go along	1		1.5	Specifying how a solution might be achieved
because I can imagine that you could get into a situation where they advance to a higher level of management and they need to know the different user requirements.	1		1.7	Stating facts and beliefs pertinent to the problem
I guess they might be required if it's going to cover financial things like a clothing allowance,	4		4.4	Data saved by the system
when timesheets are going through they may be required to enter a running total so it might put responsibility back on them to get that correct data in there.	4		4.3	Data that must be entered into the system
Prompt 9				
Obviously IT for a start.	3		3.4	Individuals or departments who are charged with performing tasks
If it's them or a separate unit that does it, management have to buy in and be prepared to deal with the probable responses needed ,	1		1.1	Identifying the particular goal state to be achieved
human resources, payroll and finance would all need to buy in into they system,	1		1.1	Identifying the particular goal state to be achieved
because if all those areas aren't going to use it, then it's not going to run properly,	3		3.5	Explanation of why specific actions are to be taken
so there needs to be quite a bit of time training those areas up and making sure they are all happy with the processes	1		1.5	Specifying how a solution might be achieved

and that it is meeting all of the reporting requirements before you gave it out to staff.	1		1.5	Specifying how a solution might be achieved
Management and programme leaders will probably have some component to initially approve annual leave and then it is okayed by the senior manager.	3		3.4	Individuals or departments who are charged with performing tasks
Library may also be linked in with the system, would need to consult librarians.	3		3.4	Individuals or departments who are charged with performing tasks
Prompt 10				
If we start with the programme leaders – they would have to initially approve leave and timetabling requests so that would fit in with other people in the team	3		3.1	Identification of the sequence of actions required to complete a task
and they would have to work to approve the annual plans so that the teams annual plans all fit in together	3		3.5	Explanation of why specific actions are to be taken
and then they would probably give the initial approval for sick leave or bereavement leave within the leave available	3		3.1	Identification of the sequence of actions required to complete a task
and those requests would only go up to senior management if there was no leave entitlement available and it was a discretionary call.	3		3.1	Identification of the sequence of actions required to complete a task
Programme leaders might also be able to make all calls about allowances and those types of things that people might have as their upper limit	3		3.4	Individuals or departments who are charged with performing tasks
so there is that need to access that kind of information	4		4.1	Data to be presented to end-users
but then senior managers would have to make calls.	1		1.7	Stating facts and beliefs pertinent to the problem

Senior managers would have to make calls about payroll and anything to do with discretionary payments, things like bonus payments, whether or not they are going to be approved.	3		3.1	Identification of the sequence of actions required to complete a task
Extensions of hours would have go to senior level.	1		1.5	Specifying how a solution might be achieved
Would have to give the final ok for annual plans.	3		3.4	Individuals or departments who are charged with performing tasks
Salary review applications would need to go to senior managers but would go through programme leaders first and they would add their recommendation to the senior manager.	3		3.1	Identification of the sequence of actions required to complete a task
If we look at HR, they would have to load the initial contract data and I guess loading the approved variations if they weren't going to happen for a while,	3		3.1	Identification of the sequence of actions required to complete a task
disciplinary issues and staff development information would be loaded through HR	3		3.4	Individuals or departments who are charged with performing tasks
and health and safety and ACC information.	4		4.3	Data that must be entered into the system
Payroll would have to check timesheets,	3		3.4	Individuals or departments who are charged with performing tasks
whether payroll print and check, not quite sure how it would work.	3		3.4	Individuals or departments who are charged with performing tasks
Also checking against contracts for hours and oversee leave entitlements.	3		3.1	Identification of the sequence of actions required to complete a task
IT have to maintain the system, run appropriate training when they have updates/changes.	3		3.4	Individuals or departments who are charged with performing tasks

Finance's role might be quite limited, it depends how much budget once the system is running is tied to it – otherwise through payroll.	3		3.4	Individuals or departments who are charged with performing tasks
If you had salary decisions centralised in HR that's probably not going to be on line because it's a decision you make before it goes to the system.	1		1.7	Stating facts and beliefs pertinent to the problem
Prompt 11				
It would have to notify staff if things were due,	4		4.1	Data to be presented to end-users
so probably a week before send reminders if they are taking leave and it would notify senior manager and programme leader that person is on leave at this time,	4		4.1	Data to be presented to end-users
and it would have to probably advise them if they used up leave entitlements,	4		4.1	Data to be presented to end-users
be able to print reports on all those things,	4		4.1	Data to be presented to end-users
also staff development they've done and any requirements such as ACAT	4		4.1	Data to be presented to end-users
and maybe provided reminders about where people should be at for achieving those targets.	4		4.1	Data to be presented to end-users
Probably staff out of interest would like to load the things they would like reminders on as well.	4		4.3	Data that must be entered into the system

I don't know if you could get a system that could annually load staffs timetables, but if you could it could work out when things are available and let them know things that are available that would fit into their timeframe.	4		4.9	Information created by the system
It might also remind them about when their annual performance review is up or if they have a probation period.	4		4.1	Data to be presented to end-users
The manager should review it and reminds the manager that a meeting needs to be scheduled.	4		4.1	Data to be presented to end-users
I guess for people like payroll with things to action, they would want reminding that this payrun there are things due to happen.	4		4.1	Data to be presented to end-users
So if you had entered into a surplus arrangement and people were due to be paid out on a certain date and people were finishing on a certain date – would want reminders that their final pay would be due.	4		4.1	Data to be presented to end-users
Also if you were interviewing, might well be able to, once have conducted the interview, do some of the sign offs by sending it through the team on line.	4		4.3	Data that must be entered into the system
Interview facilitation – some of the feedback could be on line and you would want to send some of the questions through the system to the panel so that you could verify and get final sign off by the manager.	4		4.3	Data that must be entered into the system
Could probably do the same for advertising.	4		4.3	Data that must be entered into the system
Prompt 12				

Have more face to face with management, HR and payroll.	1		1.1	Identifying the particular goal state to be achieved
Probably change leave, I imagine that would be a lot harder, at the moment can just change it by talking to the Programme leader, depending on how the system is working, that may not be possible.	1		1.2	Comparing existing and desired states
So it may have more set sign offs for different things.	1		1.3	Identifying factors inhibiting goal achievement
At the moment managers can delay certain activities for certain things, if it was restricted to the system they would lose the ability to run timeframes, which may be a good thing but it might be difficult for the employee.	1		1.2	Comparing existing and desired states
I think it would make discretionary entitlements more difficult because if you don't have them where on earth do you put them in the system and I think it's a lot more easier for a manager to decline a request for additional leave if there is a request for something and they just need to push a button.	1		1.7	Stating facts and beliefs pertinent to the problem
Salary setting and those types of things – could be difficult in some situations.	1		1.3	Identifying factors inhibiting goal achievement
Should be able to generate statistics for things like EEO reporting and full time equivalent staffing by area.	4		4.9	Information created by the system
Hard to generate at the moment.	1		1.2	Comparing existing and desired states

At the moment staff have a hard file and they can access whats on there. Might not have the same access on line, depends how much storage capacity has.	1		1.2	Comparing existing and desired states
The system is probably only going to record the terms of your current contract and the terms and conditions of that.	1		1.7	Stating facts and beliefs pertinent to the problem
Prompt 13				
I think that's verification of their login and password	3		3.3	Facts, rules, algorithms and decisions required to perform a task
and when they are due to take leave,	4		4.3	Data that must be entered into the system
because I would imagine that their generic contract information would all be held by HR somewhere else, so it would just be the annual applications for leave and the timesheets.	4		4.3	Data that must be entered into the system
Prompt 14				
It would have to give responses on whether annual leave plan has been approved,	4		4.1	Data to be presented to end-users
what their balance of sick leave is,	4		4.1	Data to be presented to end-users
give them updates about professional development,	4		4.1	Data to be presented to end-users
and reports given electronically.	4		4.1	Data to be presented to end-users
Needs to give an overall picture of if leave is declined why, just too many other people, so generic responses on that.	4		4.1	Data to be presented to end-users
It needs to schedule meetings between them and their manager.	1		1.1	Identifying the particular goal state to be achieved

It should be able to tell when their performance payments are due if they're not getting them and why, so part of that needs a meeting with the manager first.	4		4.1	Data to be presented to end-users
Advising if timesheets have or haven't been approved.	4		4.1	Data to be presented to end-users
Might want to see from payroll what pay has gone into their accounts,	4		4.1	Data to be presented to end-users
an electronic printout of pay.	4		4.1	Data to be presented to end-users
One of the main problems at UCOL not everybody works on computers,	1		1.6	Identifying the causes of the problematic state
the people at Aokautere refuse to even have log ins,	1		1.6	Identfiying the causes of the problematic state
so the system would rely on everybody having a computer on their desk to access it	1		1.7	Stating facts and beliefs pertinent to the problem
and to a degree it also requires in the case of sick leave/bereavement leave, someone being able to access it from home because if managers are not readily available by phone, it will rely on accessing the system.	1		1.7	Stating facts and beliefs pertinent to the problem
Or some centralised place that HR can still ring in to and say they are sick and ask to put into the system for them.	1		1.5	Specifying how a solution might be achieved
I can imagine management would shrink over time and some of the services areas would shrink and there may only be two or three people in HR who are maintaining the system, so it is a different form of HR,	1		1.7	Stating facts and beliefs pertinent to the problem

but you would still need a face that people that take problems to such as disciplinary problems that you could not do on line	1		1.7	Stating facts and beliefs pertinent to the problem
so would need a systems administrator in HR with authority to make changes rather than just in the training division.	3		3.4	Individuals or departments who are charged with performing tasks
With log ins you would need someone who was authorised to make calls and input data and contact managers through the system.	3		3.4	Individuals or departments who are charged with performing tasks
The culture shift would have to be got through first before the system would be effective.	1		1.8	Adopting an appropriate point of view on the situation
Would need the facility for some staff to have data inputted for them.	3		3.4	Individuals or departments who are charged with performing tasks
And depends whether you need a computer per person, may only need one per site.	1		1.5	Specifying how a solution might be achieved
Need to be careful it doesn't get too overloaded.	1		1.3	Identifying factors inhibiting goal achievement
May be good to start of using for just a couple of basic things like timesheets	1		1.5	Specifying how a solution might be achieved
and leave reporting and over time increase things that come out of it.	1		1.5	Specifying how a solution might be achieved
Training all staff to use the system and running new systems at the same time could be difficult at the start.	1		1.3	Identifying factors inhibiting goal achievement
Total Count	157	Total Count	157	0
Count of Major Requirement: Goal (1)	67	Count of Generic Requirements: 1.1	6	

Count of Major Requirement: Process (2)	7	Count of Generic Requirements: 1.2	4	
Count of Major Requirement: Task (3)	36	Count of Generic Requirements: 1.3	9	
Count of Major Requirement: Information (4)	47	Count of Generic Requirements: 1.4	0	
	157	Count of Generic Requirements: 1.5	16	
		Count of Generic Requirements: 1.6	10	
		Count of Generic Requirements: 1.7	18	
		Count of Generic Requirements: 1.8	4	
		Count of Generic Requirements: 1.9	0	
		Count of Generic Requirements: 1.10	0	
		Count of Generic Requirements: 2.1	1	
		Count of Generic Requirements: 2.2	3	
		Count of Generic Requirements: 2.3	3	
		Count of Generic Requirements: 3.1	11	
		Count of Generic Requirements: 3.2	2	
		Count of Generic Requirements: 3.3	3	

		Count of Generic Requirements: 3.4	17	
		Count of Generic Requirements: 3.5	3	
		Count of Generic Requirements: 4.1	20	
		Count of Generic Requirements: 4.2	1	
		Count of Generic Requirements: 4.3	10	
		Count of Generic Requirements: 4.4	12	
		Count of Generic Requirements: 4.5	0	
		Count of Generic Requirements: 4.6	1	
		Count of Generic Requirements: 4.7	0	
		Count of Generic Requirements: 4.8	0	
		Count of Generic Requirements: 4.9	3	
			157	

Prompt 1	Requirement Level		Generic Requirement	Explanation
The system will be used by employees also	3		3.4	Individuals or departments who are charged with performing tasks.
and team leaders, managers, and senior managers,	3		3.4	Individuals or departments who are charged with performing tasks.
HR also.	3		3.4	Individuals or departments who are charged with performing tasks.
Prompt 2				
They would use the system to log in the events which sometimes you forget to put in their personal file – like good and bad things	4		4.3	Data that must be entered into the system.
And like key performance indicators can be loaded into the system so that it becomes very easy to manage their performance and to track their growth while they are working for this organisation	4		4.3	Data that must be entered into the system.
And it will be a good resource for new managers, when they come on board, they do not have any history of that current employee – they can just go to the system and see all the history of that person.	4		4.1	Data to be presented to end-users
If that person is asking for a transfer to some other department, the other person can see everything on line quite easily.	4		4.1	Data to be presented to end-users
Basically saves a lot of time also, increases the throughput.	1		1.1	Identifying the particular goal state to be achieved.
Prompt 3				
The system should be able to help in identifying weaknesses of employees, and areas for training.	1		1.3	Identifying factors inhibiting goal achievement

The other thing the system should be able to do is calculate performance for bonuses,	4		4.1	Information created by the system
and we should be able to record all key incidents	4		4.3	Data that must be entered into the system
Prompt 4				
Mainly available to everybody with a password,	3		3.3	Statement that associates an outcome with specific conditions, actions and constraints
all information should be protected.	3		3.3	Statement that associates an outcome with specific conditions, actions and constraints
Employees could enter data themselves, and senior managers also.	4		4.3	Data that must be entered into the system
Prompt 5				
Anytime when anything happens – on Saturday also. Also for people working from home – anytime, anywhere.	1		1.1	Identifying the particular goal state to be achieved
Prompt 6				
They will get training from the person who is implementing the system.	3		3.4	Individuals or departments who are charged with performing tasks
Need to explain what the benefits of using the system are to get on board.	1		1.5	Specifying how a solution might be achieved
Prompt 7				
Employees and overall on bottom line of organisation also, because it will increase the efficiency.	1		1.1	Organisational units, customers, suppliers, competitors
Prompt 8				
Efficiency will turn into dollars	1		1.1	Identifying the particular goal state to be achieved

Able to manage our funds in a better way.	1		1.1	Identifying the particular goal state to be achieved
Prompt 9	1		1.1	Identifying the particular goal state to be achieved
As an employer you will be able to show how you are tracking – so once we set up these expectations and this is how you are performing based on this expectation, if there is a huge gap then you will try to reduce that gap and we will give you the tools to reduce that gap.	1		1.2	Comparing existing and desired states
So employees can take charge of their own performance.	1		1.1	Identifying the particular goal state to be achieved
Prompt 10				
Again by getting an agreement from the employee that it is for their benefit,	1		1.5	Specifying how a solution might be achieved
and introduce it in phases	1		1.5	Specifying how a solution might be achieved
with proper training	1		1.5	Specifying how a solution might be achieved
and all the necessary tools given to all the relevant people	1		1.5	Specifying how a solution might be achieved
Prompt 11				
During the lean period either end of March, beginning of April, or end of July.	1		1.5	Specifying how a solution might be achieved
Prompt 12				
Training would need to be done on the weekends because normally people are already too busy.	3		3.5	Explanation of why specific actions are taken

Training would be on-site and would need on-hand training.	1		1.5	Specifying how a solution might be achieved
Prompt 13				
When you are developing the system, the information will come from the staff, the people who are getting affected from it, and they will be able to tell you in a better way what are their needs.	2		2.1	A series of steps or tasks designed to produce a product or service
Later on also, the information will be provided by the staff and their managers.	3		3.4	Individuals or departments who are charged with performing tasks
Prompt 14				
Personal information of the employee, qualifications, background, job history, references,.	4		4.3	Data that must be entered into the system
remuneration, industry standards,	4		4.3	Data that must be entered into the system
training providers and training programmes,	4		4.3	Data that must be entered into the system
benchmarking of some kind	4		4.1	Data to be presented to the end-users
There has to be some sort of system which will say - when we started the system our efficiency was this much and now over time efficiency is increasing. It is some sort of evaluating system to see how it is working.	4		4.5	Physical entitities and occurrences in the world that are relevant to the system
Prompt 15				
Because without this information, you wont be able to develop a good system and in the end it wont be good for anybody.	1		1.3	Identifying factors inhibiting goal achievement
Prompt 16				

In the beginning also when you are developing the system	2		2.1	A series of steps or tasks designed to produce a product or service
and after, when it has been implemented then they have to provide information into the system as they are moving along.	4		4.3	Data that must be entered into the system
Prompt 17				
In the beginning the information will be provided in a verbal way	3		3.1	Identification of action required to complete the task
and if the person who is developing the system, he can set up a questionnaire also which all the users who are getting affected will answer and that way it will be consistent also and you will be getting the same sort of information from different sources	3		3.1	Identification of action required to complete the task
and then he can talk to those people who replied to the questionnaire to clarify some of the points.	3		3.1	Identification of action required to complete the task
Another thing, they can talk to other people also who have already implemented a system so they can learn from other people's experiences also. Good to learn from other peoples experiences and know pitfalls so that we can avoid those things	1		1.2	Comparing existing and desired states
and last but not least we need to convey the message very strongly to people who will be affected that this is for their benefit, if they don't see that it would be very hard to implement anything new.	1		1.4	Stating the final ends served by a solution
Prompt 18				

If it is before implementing the system, then it will be monitored by the developer,	2		2.1	A series or steps or tasks designed to produce a product or service
after the implementation I think that the control would be given to HR,	3		3.4	Individuals or departments who are charged with performing tasks
but also a bit of responsibility comes on the individual managers also because they need to monitor the performance of their team and they can evaluate that very easily with this system.	3		3.4	Individuals or departments who are charged with performing tasks
But if we had cross checks in place that is always better because sometimes a manager is too busy and HR people can say there some results missing in your area, have you done anything about that.	3		3.5	Explanations of why specific actions are taken
Total Count	49	Total Count	49	0
Count of Major Requirement: Goal (1)	19	Count of Generic Requirements: 1.1	7	
Count of Major Requirement: Process (2)	3	Count of Generic Requirements: 1.2	2	
Count of Major Requirement: Task (3)	14	Count of Generic Requirements: 1.3	2	
Count of Major Requirement: Information (4)	13	Count of Generic Requirements: 1.4	1	
	49	Count of Generic Requirements: 1.5	7	
		Count of Generic Requirements: 1.6	0	
		Count of Generic Requirements: 1.7	0	

		Count of Generic Requirements: 1.8	0	
		Count of Generic Requirements: 1.9	0	
		Count of Generic Requirements: 1.10	0	
		Count of Generic Requirements: 2.1	3	
		Count of Generic Requirements: 2.2	0	
		Count of Generic Requirements: 2.3	0	
		Count of Generic Requirements: 3.1	3	
		Count of Generic Requirements: 3.2	0	
		Count of Generic Requirements: 3.3	2	
		Count of Generic Requirements: 3.4	7	
		Count of Generic Requirements: 3.5	2	
		Count of Generic Requirements: 4.1	4	
		Count of Generic Requirements: 4.2	0	
		Count of Generic Requirements: 4.3	8	
		Count of Generic Requirements: 4.4	0	

		Count of Generic Requirements: 4.5	1	
		Count of Generic Requirements: 4.6	0	
		Count of Generic Requirements: 4.7	0	
		Count of Generic Requirements: 4.8	0	
		Count of Generic Requirements: 4.9	0	
			49	

Prompt 1	Requirement Level		Generic Requirement	Explanation
I think it would get quite a bit of use from programme leaders in terms of staff development, employment relations etc	3		3.4	Individuals who are charged with performing tasks
individuals if it involved a payroll system to keep track of what is happening.	3		3.4	Individuals who are charged with performing tasks
Probably a good system to report staff evaluations as well, so an employer/ee can keep track of what's happening.	4		4.4	Data saved by the system
Prompt 2				
I guess just more information gathering to help with potential decisions that are going to be made.	4		4.1	Data to be presented to end-users
Prompt 3				
I guess you're looking for procedures – so you can find out what you need follow	3		3.1	Identification of the sequence of actions required to complete a task
eg, staff leave,	3		3.1	Identification of the sequence of actions required to complete a task
when employing new staff.	3		3.1	Identification of the sequence of actions required to complete a task
Prompt 4				
You would have to make sure that they have access to it from their local machines.	1		1.1	Identifying the particular goal state to be achieved
It would need to be online so they could quickly access the system.	1		1.5	Specifying how a solution might be achieved
Prompt 5				
If they are unsure about something,	1		1.1	Identifying the particular goal state to be achieved
need to find out procedure need to follow,	1		1.1	Identifying the particular goal state to be achieved

trying to track down the right person, it would be there to assist.	1		1.5	Specifying how a solution might be achieved
Prompt 6				
Training of course –	3		3.4	Individuals or departments who are charged with performing tasks or steps within tasks
they would be put through some sort of training and a guide as to what the capabilities of the system are, potential uses,	1		1.5	Specifying how a solution might be achieved
often the developer knows more than the people using it so there needs to be some kind of training.	1		1.7	Stating facts and beliefs pertinent to the problem
Prompt 7				
Managers mainly –	1		1.01	Organisational units, customers.
from an employee view it could be quite good to keep track of personal information.	4		4.4	Data saved by the system
Prompt 8				
I guess that would be assisting, they would feel that they had help closer at hand.	1		1.8	Adopting an appropriate point of view on the situation
Prompt 9				
I guess it could have things like confidentiality	1		1.3	Identifying factors inhibiting goal achievement
as well with personal details being available.	4		4.4	Data saved by the system
Prompt 10				
It would need to be password protected	3		3.3	Statement that associates an outcome with specific conditions, actions, constraints
and limited access for some people.	2		2.2	Rules or algorithms required to perform a process
It could have an impact on the manager as well.	1		1.01	Organisational units, customers.

Prompt 11				
At the end of the semester because that way there are couple of weeks with no teaching – over the Xmas break is one time when can sit down and use system.	1		1.5	Specifying how a solution might be achieved
Prompt 12				
On site or close to where the person works,	1		1.5	Specifying how a solution might be achieved
would need to be spread over the campuses.	1		1.5	Specifying how a solution might be achieved
Prompt 13				
A lot of it would come from HR from what they have on file already.	3		3.4	Individuals or departments who are charged with performing tasks or steps within tasks
Terms and procedures and policies should be there.	4		4.1	Data to be presented to end-users
Staff would have input as well –	3		3.4	Individuals or departments who are charged with performing tasks or steps within tasks
could impact on time required to their job if required to put things on line.	1		1.3	Identifying factors inhibiting goal achievement
Prompt 14				
Personal details,	4		4.3	Data that must be entered into the system
performance appraisals.	4		4.3	Data that must be entered into the system
Prompt 15				
More to help make people's jobs easier,	1		1.1	Identifying the particular goal state to be achieved

less demanding and hopefully less stressful.	1		1.1	Identifying the particular goal state to be achieved
Because if you're trying to make a decision, but you can't find all the information you need to come to that decision is very frustrating.	1		1.3	Identifying factors inhibiting goal achievement
Prompt 16				
Provided before the system is up and running	2		2.1	A series of steps or tasks designed to produce a product or service
rather than starting with the basics and learning as you go which can be frustrating.	1		1.3	Identifying factors inhibiting goal achievement
Prompt 17				
It would come from different sources,	4		4.3	Data that must be entered into the system
some would be computer based,	4		4.3	Data that must be entered into the system
some of it would be print based,	4		4.3	Data that must be entered into the system
someone would collate it all and update the system.	3		3.4	Individuals or departments who are charged with performing tasks or steps within tasks
Prompt 18				
That would still be HR task since the information is based with them	3		3.4	Individuals or departments who are charged with performing tasks or steps within tasks
so it would potentially be their responsibility to ensure that information is accurate and correct.	3		3.4	Individuals or departments who are charged with performing tasks or steps within tasks

Total Count	43	Total Count	43	0
Count of Major Requirement: Goal (1)	19	Count of Generic Requirements: 1.1	5	
Count of Major Requirement: Process (2)	2	Count of Generic Requirements: 1.2	0	
Count of Major Requirement: Task (3)	12	Count of Generic Requirements: 1.3	4	
Count of Major Requirement: Information (4)	10	Count of Generic Requirements: 1.4	0	
Total Major Requirements	43	Count of Generic Requirements: 1.5	6	
		Count of Generic Requirements: 1.6	0	
		Count of Generic Requirements: 1.7	1	
		Count of Generic Requirements: 1.8	1	
		Count of Generic Requirements: 1.9	0	
		Count of Generic Requirements: 1.10	2	
		Count of Generic Requirements: 2.1	1	
		Count of Generic Requirements: 2.2	1	
		Count of Generic Requirements: 2.3	0	
		Count of Generic Requirements: 3.1	3	

		Count of Generic Requirements: 3.2	0	
		Count of Generic Requirements: 3.3	1	
		Count of Generic Requirements: 3.4	8	
		Count of Generic Requirements: 3.5	0	
		Count of Generic Requirements: 4.1	2	
		Count of Generic Requirements: 4.2	0	
		Count of Generic Requirements: 4.3	5	
		Count of Generic Requirements: 4.4	3	
		Count of Generic Requirements: 4.5	0	
		Count of Generic Requirements: 4.6	0	
		Count of Generic Requirements: 4.7	0	
		Count of Generic Requirements: 4.8	0	
		Count of Generic Requirements: 4.9	0	
		Total Generic Requirements	43	

Prompt 1	Requirement Level		Generic Requirement	Explanation
I would as a manager	3		3.4	Individuals or departments who are charged with performing tasks or steps within tasks
and it would depend on how open the system is to other staff,	1		1.3	Identifying factors inhibiting goal achievement
and what access the staff had,	3		3.1	Identification of the sequence of actions required to complete a task
and what protection there was for everybody's elses information,	1		1.3	Identifying factors inhibiting goal achievement
so when we are asked who will use the system, it could be the whole staff if there were safeguards put in,	1		1.4	Stating the final ends served by the solution
one staff member may be able to access their files straight away at that the level,	4		4.4	Data saved by the system
to the CEO level who would be able to access everyone's files.	1		1.1	Identifying the particular goal state to be achieved
Prompt 2				
Check personal details,	4		4.4	Data saved by the system
salary increase application	4		4.3	Data that must be entered into the system
– know prior history	4		4.4	Data saved by the system
staff development undertaken,	4		4.4	Data saved by the system
keep abreast of where currently right up through to the other end of the scale people wanting to employ others in similar positions	4		4.4	Data saved by the system
and can look to see qualifications required in that sort of work	4		4.1	Data to be presented to end-users
or if someone has a dispute.	4		4.4	Data saved by the system
Prompt 3				

You would want it to filter out information under specific headings,	4		4.2	Language and formats used
for example years of service,	4		4.4	Data saved by the system
payrate,	4		4.4	Data saved by the system
or qualifications.	4		4.4	Data saved by the system
Also collate information across the campus,	4		4.4	Data saved by the system
eg. find average salary for people in similar positions,	4		4.9	Information created by the system
or average qualifications and types of qualifications and list them under common things	4		4.1	Data to be presented to end-users
and then find commonalities within the staff.	4		4.9	Information created by the system
Perhaps if setting up a new programme could check on staff resources – who already has skills.	4		4.1	Data to be presented to end-users
Like using the staff resource to its fullest.	1		1.1	Identifying the particular goal state to be achieved
Staff training as well with things like first aid, lecturer resource.	4		4.4	Data saved by the system
Prompt 4				
From their desks.	1		1.1	Identifying the particular goal state to be achieved
Prompt 5				
Whenever they want to.	1		1.1	Identifying the particular goal state to be achieved
Prompt 6				
There would have to be a formal training process	3		3.4	Individuals or departments charged with performing tasks
and the system would grow –	1		1.7	Stating facts and beliefs pertinent to the problem

it would need to be reasonably flexible to take add ons.	1		1.5	Specifying how a solution might be achieved
Training would need to be ongoing.	1		1.5	Specifying how a solution might be achieved
Security a big thing, so when people leave.	1		1.7	Stating facts and beliefs pertinent to the problem
I think external access would be good as long as 100% secure.	1		1.1	Identifying the particular goal state to be achieved
Prompt 7				
Well it would have an impact on the managers who are using it,	1		1.01	Organisational units, customers
it would have an impact on everybody I suppose.	1		1.01	Organisational units, customers
The managers using the system should be able to manage staff resources more efficiently,	1		1.2	Comparing existing and desired states
so therefore cost effective across the organisation	1		1.4	Stating the final ends served by a solution
and this in turn affects the staff.	1		1.01	Organisational units, customers
Prompt 8				
Currency of personnel is known,	4		4.4	Data saved by the system
qualifications	4		4.4	Data saved by the system
and if everybody is being used to their full potential	1		1.1	Identifying a particular goal state to be achieved
so that must impact on the organisation as a whole.	1		1.01	Organisational units, customers, suppliers, competitors
Prompt 9				

Well it could have an impact on an employee because someone might figure that because you have got qualification A then you can go and teach over in location B, so that could have an impact,	1		1.7	Stating facts and beliefs pertinent to the problem
whereas now you may be employed in a particular area by a particular person for a particular reason and this would maximise the utilisation of staff.	1		1.1	Identifying a particular goal state to be achieved
So the impact would be that the employee could be called upon to do extra things.	1		1.7	Stating facts and beliefs pertinent to the problem
Prompt 10				
Would need full consultation with unions: re individual contracts, privacy act.	1		1.5	Specifying how a solution might be achieved
Biggest impact could be if information not secure – a vital point.	1		1.3	Identifying factors inhibiting goal achievement
Prompt 11				
That has a negative connotation as if the system is a negative one – I don't see it as one.	1		1.8	Adopting an appropriate point of view on the situation
Well it could be a gradual thing – implemented in stages.	1		1.5	Specifying how a solution might be achieved
Needs to be time to consult and test.	2		2.1	A series of steps or tasks designed to produce a product or service
Prompt 12				
On site or off site – so long as time is made available.	1		1.5	Specifying how a solution might be achieved
Shouldn't just be an email advertising from 12-1pm.	1		1.7	Stating facts and beliefs pertinent to the problem
Prompt 13				

Well the existing HR section because they would have quite a few of the records.	3		3.4	Individuals or departments who are charged with performing tasks
They would then be sent to the staff members concerned to check and update the records to see that they are current	3		3.1	Identification of sequence of actions required to complete a task
– it's the ongoing currency that is also important	1		1.8	Adopting an appropriate point of view on the situation
and who should update?	1		1.7	Stating facts and beliefs pertinent to the problem
Prompt 14				
DOB,	4		4.3	Data that must be entered into the system
standard CV information	4		4.3	Data that must be entered into the system
– ongoing staff development information,	4		4.3	Data that must be entered into the system
things which have cropped up	4		4.3	Data that must be entered into the system
eg. contentious issues	4		4.3	Data that must be entered into the system
or job well done that is worth recording by a manager,	4		4.3	Data that must be entered into the system
upgrading of qualifications,	4		4.3	Data that must be entered into the system
staff development	4		4.3	Data that must be entered into the system
and perhaps also external relativity type things.	4		4.3	Data that must be entered into the system

It would be useful to know if you were a manager if you were going to employ Lecturer A, what Lecturer A gets in other institutes around the country.	4		4.1	Data to be presented to end-users
A database on external things relating to subject material	4		4.1	Data to be presented to end-users
eg. staff/student ratios, staff per square area of office space to give the manager information overall.	4		4.1	Data to be presented to end-users
Prompt 15				
For the efficient running of the organsiation,	1		1.4	Stating the final ends served by a solution
to be fair to the employee, eg. the employee not taken advantage, treated in a fair manner.	1		1.1	Identifying the particular goal state to be achieved
Also looking at things that are happening externally so that relativities can be maintained.	1		1.1	Identifying the particular goal state to be achieved
Not just on people but on positions as well eg. like for technicians, they may ask what generally does a technician need, eg. electrical refresher courses, CPR, these things could be flagged by the system whenever they arise.	1		1.1	Identifying the particular goal state to be achieved
Could be a legal requirement.	1		1.7	Stating facts and beliefs pertinent to the problem
Prompt 16				
It would be a managed process by whoever set up the system prior to general training.	3		3.4	Individuals or departments who are charged with performing tasks or steps within tasks
Key people, everybody involved would have to be asked as to when.	1		1.01	Organisational units, customers

Prompt 17				
Verbally with documented proof so that it is official.	4		4.3	Data that must be entered into the system
Prompt 18				
The HR manager.	3		3.4	Individuals or departments who are charged with performing tasks or steps within tasks
It is a very good point – a key point.	1		1.7	Stating facts and beliefs pertinent to the problem
The security of the system once again is important.	1		1.7	Stating facts and beliefs pertinent to the problem
If you go down to HR, they are able to say yes, you are able to look at that file, but how do you do that on a computer.	1		1.2	Comparing existing and desired states
The system itself could monitor passwords and so on,	1		1.5	Specifying how a solution might be achieved
but updating passwords, and deleting the passwords and changing the levels of security, I might be in position A, but move to position D, and therefore shouldn't have access to that information any more, so who monitors that?	1		1.7	Stating facts and beliefs pertinent to the problem
It has to be HR who monitors those activities	3		3.4	Individuals or departments who are charged with performing tasks or steps within tasks
and the system should be set up so that all transactions should be monitored daily by the HR person.	3		3.4	Individuals or departments who are charged with performing tasks or steps within tasks
You would still need a human resource person.	1		1.7	Stating facts and beliefs pertinent to the problem

Total Count	85	Total Count	85	0
Count of Major Requirement: Goal (1)	42	Count of Generic Requirements: 1.1	10	
Count of Major Requirement: Process (2)	1	Count of Generic Requirements: 1.2	2	
Count of Major Requirement: Task (3)	9	Count of Generic Requirements: 1.3	3	
Count of Major Requirement: Information (4)	33	Count of Generic Requirements: 1.4	3	
Total Requirements	85	Count of Generic Requirements: 1.5	6	
		Count of Generic Requirements: 1.6	0	
		Count of Generic Requirements: 1.7	11	
		Count of Generic Requirements: 1.8	2	
		Count of Generic Requirements: 1.9	0	
		Count of Generic Requirements: 1.10	5	
		Count of Generic Requirements: 2.1	1	
		Count of Generic Requirements: 2.2	0	
		Count of Generic Requirements: 2.3	0	
		Count of Generic Requirements: 3.1	2	

		Count of Generic Requirements: 3.2	0	
		Count of Generic Requirements: 3.3	0	
		Count of Generic Requirements: 3.4	7	
		Count of Generic Requirements: 3.5	0	
		Count of Generic Requirements: 4.1	6	
		Count of Generic Requirements: 4.2	1	
		Count of Generic Requirements: 4.3	11	
		Count of Generic Requirements: 4.4	13	
		Count of Generic Requirements: 4.5	0	
		Count of Generic Requirements: 4.6	0	
		Count of Generic Requirements: 4.7	0	
		Count of Generic Requirements: 4.8	0	
		Count of Generic Requirements: 4.9	2	
			85	

Prompt 1	Requirement Level		Generic Requirement	Explanation
Employees,	3		3.4	Individuals or departments who are charged with performing tasks
managers,	3		3.4	Individuals or departments who are charged with performing tasks
executive staff,	3		3.4	Individuals or departments who are charged with performing tasks
HR,	3		3.4	Individuals or departments who are charged with performing tasks
payroll and finance.	3		3.4	Individuals or departments who are charged with performing tasks
Prompt 2				
Employees would use it to check their details.	4		4.4	Data saved by the system
Managers would use it to check leave.	4		4.4	Data saved by the system
Executive staff I imagine would use it for reporting purposes.	4		4.1	Data to be presented to end-users
HR would be the main inputs.	3		3.4	Individuals or departments who are charged with performing tasks
Payroll would use it for salary information and special payments.	4		4.4	Data saved by the system
Finance would use it for reporting too.	4		4.1	Data to be presented to end-users
Prompt 3				
Salaries,	3		3.3	Statement that associates an outcome with specific conditions
leave,	3		3.3	Statement that associates an outcome with specific conditions
qualifications.	3		3.3	Statement that associates an outcome with specific conditions
Prompt 4				

At their workstations, or from home.	1		1.1	Identifying the particular goal state to be achieved
Prompt 5				
24 hours a day.	1		1.1	Identifying the particular goal state to be achieved
Prompt 6				
Training.	3		3.4	Individuals or departments who are charged with performing tasks
Prompt 7				
HR – it would be a huge input for them.	1		1.01	Organisational units
Employees would have to learn the new system.	3		3.1	Identification of the sequence of actions required to complete a task
Prompt 8				
Better access of information.	1		1.2	Comparing existing and desired states
Prompt 9				
May not be computer literate.	1		1.6	Identifying the causes of the problematic state
Prompt 10				
Training would be the main thing.	3		3.3	Identification of the sequence of actions required to complete a task
Prompt 11				
Not over the Xmas break. It would be better during term breaks such as April/June/September to enable time for training.	1		1.5	Specifying how a solution might be achieved
Prompt 12				
Structured training sessions in computer rooms.	3		3.1	Identification of the sequence of actions required to complete a task
It could be in groups or have the option of one on one if some would prefer.	3		3.1	Identification of the sequence of actions required to complete a task

Prompt 13				
HR would provide information	3		3.4	Individuals or departments who are charged with specific conditions
and would also be responsible for checking information.	3		3.4	Individuals or departments who are charged with specific conditions
Prompt 14				
Terms of employment,	4		4.3	Data that must be entered into the system
salary,	4		4.3	Data that must be entered into the system
leave.	4		4.3	Data that must be entered into the system
Prompt 15				
So that information stored in the system is accurate.	3		3.5	Explanation of why specific actions are to be taken
Prompt 16				
In a timely fashion.	3		3.5	Explanation of why specific actions are to be taken
Prompt 17				
Each person's details would be summarised and sent to the employee for checking.	3		3.1	Identification of the sequence of actions required to complete a task
Prompt 18				
HR.	3		3.4	Individuals or departments who are charged with performing tasks
Total Count	34	Total Count	34	0
Count of Major Requirement: Goal (1)	6	Count of Generic Requirements: 1.1	2	
Count of Major Requirement: Process (2)	0	Count of Generic Requirements: 1.2	1	

Count of Major Requirement: Task (3)	20	Count of Generic Requirements: 1.3	0	
Count of Major Requirement: Information (4)	8	Count of Generic Requirements: 1.4	0	
	34	Count of Generic Requirements: 1.5	1	
		Count of Generic Requirements: 1.6	1	
		Count of Generic Requirements: 1.7	0	
		Count of Generic Requirements: 1.8	0	
		Count of Generic Requirements: 1.9	0	
		Count of Generic Requirements: 1.10	1	
		Count of Generic Requirements: 2.1	0	
		Count of Generic Requirements: 2.2	0	
		Count of Generic Requirements: 2.3	0	
		Count of Generic Requirements: 3.1	4	
		Count of Generic Requirements: 3.2	0	
		Count of Generic Requirements: 3.3	4	
		Count of Generic Requirements: 3.4	10	

		Count of Generic Requirements: 3.5	2	
		Count of Generic Requirements: 4.1	2	
		Count of Generic Requirements: 4.2	0	
		Count of Generic Requirements: 4.3	3	
		Count of Generic Requirements: 4.4	3	
		Count of Generic Requirements: 4.5	0	
		Count of Generic Requirements: 4.6	0	
		Count of Generic Requirements: 4.7	0	
		Count of Generic Requirements: 4.8	0	
		Count of Generic Requirements: 4.9	0	
			34	

Prompt 1	Requirement Level		Generic Requirement	Explanation
I guess the manager if you have staff you would use it.	3		3.4	Individuals or departments who are charged with performing tasks
It may be that parts of it, staff would have access to eg. their own records.	1		1.1	Identifying the particular goal state to be achieved
Also finance and support people.	3		3.4	Individuals or departments who are charged with performing tasks
Prompt 2				
In my mind it is just an electronic form of gathering information in one place – would use as they now go to HR and say I want to look at my contract.	1		1.2	Comparing existing and desired states
So it is to gather information they require on a staff member.	4		4.4	Data saved by the system
Prompt 3				
You would want it to be up to date and current information on payroll eg. see how much leave they have.	4		4.4	Data saved by the system
Managers could use to check contracts and changes in contracts.	4		4.4	Data saved by the system
All information about one person in one place	1		1.1	Identifying the particular goal state to be achieved
– everyone would have their own individuals needs for it I would imagine.	1		1.8	Adopting an appropriate point of view on the situation
As a manager it would be good to have access immediately.	1		1.1	Identifying the particular goal state to be achieved
On a personal level they would have to make sure it was only their own records that they could access.	3		3.2	Facts, rules, algorithms required to perform a task
Prompt 4				

On their desks.	1		1.1	Identifying the particular goal state to be achieved
Prompt 5				
Whenever they needed it – as information is required –	1		1.1	Identifying the particular goal state to be achieved
24 hours per day.	1		1.1	Identifying the particular goal state to be achieved
Prompt 6				
Training people could set up sessions. May be lunch sessions.	3		3.4	Individuals or departments who are charged with performing tasks
Would the library be involved re organisational records?	3		3.4	Individuals or departments who are charged with performing tasks
Prompt 7				
It would have a positive impact for managers and the general staff because they would have ready access.	1		1.8	Adopting an appropriate point of view on the situation
The greatest impact I would imagine would be payroll, finance and HR and it would involve a shift in how they do their processing.	1		1.7	Stating facts and beliefs pertinent to the problem
I don't imagine it would involve a shift in any time – because these things never free up any time, in fact it works the other way, but it will affect them more than anything really.	1		1.7	Stating facts and beliefs pertinent to the problem
Prompt 8				
Bringing people on board such as HR and payroll.	1		1.5	Specifying how a solution might be achieved
Prompt 9				
Easy access of information,	1		1.1	Identifying the particular goal state to be achieved

more demand for information and there will be a need to make sure it is current and updated regularly.	1		1.7	Stating facts and beliefs pertinent to the problem
Payroll still have to do payroll but what they are doing is putting that information on to the system	4		4.3	Data that must be entered into the system
– whether the systems can cross I don't know. If integrated with HR would be desirable.	1		1.2	Comparing existing and desired states
There would be more work initially.	1		1.7	Stating facts and beliefs pertinent to the problem
There would be privacy issues,	2		2.3	Factors that may prohibit process completion
I can only see positive things for staff members. If they wanted to look at their original contracts, instead of going through the manager.	1		1.2	Comparing existing and desired states
Prompt 10				
Make sure training is done and the organisation gives everyone the opportunity to train.	1		1.5	Specifying how a solution might be achieved
I guess the other thing is that you would have to assure staff that their records are not accessible by others – or who has access to their records.	1		1.5	Specifying how a solution might be achieved
Could be some resistance due to confidentiality issues.	1		1.7	Stating facts and beliefs pertinent to the problem
Prompt 11				
All processes need to be in place, they can't be rushed.	2		2.1	A series of steps or tasks designed to produce a product or service

Training and payroll would need to be ready to go.	2		2.1	A series of steps or tasks designed to produce a product or service
To lessen the impact, all testing should be done with small groups first.	2		2.1	A series of steps or tasks designed to produce a product or service
Prompt 12				
I guess it needs to be a hands on training or you could have a presentation to convince or show the staff what will be happening.	1		1.5	Specifying how a solution might be achieved
Will staff have input into what information is put there?	1		1.7	Stating facts and beliefs pertinent to the problem
Also training sessions set up so that all staff can attend – set up in studios for hands on training.	1		1.5	Specifying how a solution might be achieved
Prompt 13				
HR with personal records,	3		3.4	Individuals or departments who are charged with performing tasks
payroll, finance, managers – depends how complex the system is.	3		3.4	Individuals or departments who are charged with performing tasks
It would be nice to have training, performance reviews, staff development and everything documented so could be flagged or a reminder in six months time.	2		2.1	A series of steps or tasks designed to produce a product or service
Anyone who holds information on staff.	3		3.4	Individuals or departments who are charged with performing tasks
Prompt 14				
Leave.	4		4.3	Data that must be entered into the system
Prompt 15				
HR is the reason for its existence.	1		1.8	Adopting an appropriate point of view on the system

It would include anything to do with the staff member.	1		1.8	Adopting an appropriate point of view on the system
Prompt 16				
As soon as it is available. It must be current, otherwise it could cause frustration.	2		2.3	Factors that may prohibit process completion
You couldn't have a backlog building up otherwise the system would break down.	2		2.3	Factors that may prohibit process completion
Prompt 17				
The system may allow input via templates and forward on to a person in charge of the system.	2		2.1	A series of steps or tasks designed to produce a product or service
The more on line , the more successful it will be.	1		1.8	Adopting an appropriate point of view on the system
Ideally the manager could input directly.	3		3.4	Individuals or departments who are charged with performing tasks
Prompt 18				
It would involve more people and more time, I can't see it as cost cutting.	1		1.3	Identifying factors inhibiting goal achievement
It would be necessary to set up a group responsible for monitoring – probably sits with HR.	3		3.4	Individuals or departments who are charged with performing tasks
Total Count	50	Total Count	50	0
Count of Major Requirement: Goal (1)	27	Count of Generic Requirements: 1.1	7	
Count of Major Requirement: Process (2)	8	Count of Generic Requirements: 1.2	3	

Count of Major Requirement: Task (3)	10	Count of Generic Requirements: 1.3	1	
Count of Major Requirement: Information (4)	5	Count of Generic Requirements: 1.4	0	
	50	Count of Generic Requirements: 1.5	5	
		Count of Generic Requirements: 1.6	0	
		Count of Generic Requirements: 1.7	6	
		Count of Generic Requirements: 1.8	5	
		Count of Generic Requirements: 1.9	0	
		Count of Generic Requirements: 1.10	0	
		Count of Generic Requirements: 2.1	5	
		Count of Generic Requirements: 2.2	0	
		Count of Generic Requirements: 2.3	3	
		Count of Generic Requirements: 3.1	0	
		Count of Generic Requirements: 3.2	1	
		Count of Generic Requirements: 3.3	0	
		Count of Generic Requirements: 3.4	9	

		Count of Generic Requirements: 3.5	0	
		Count of Generic Requirements: 4.1	0	
		Count of Generic Requirements: 4.2	0	
		Count of Generic Requirements: 4.3	2	
		Count of Generic Requirements: 4.4	3	
		Count of Generic Requirements: 4.5	0	
		Count of Generic Requirements: 4.6	0	
		Count of Generic Requirements: 4.7	0	
		Count of Generic Requirements: 4.8	0	
		Count of Generic Requirements: 4.9	0	
			50	

Prompt 1	Requirement Level		Generic Requirement	Explanation
I imagine human resource people and programme leader type people to get information about staff and a higher level to get information about us.	3		3.4	Individuals or departments who are charged with performing tasks
Prompt 2				
Payroll issues,	4		4.4	Data saved by the system
leave entitlements,	4		4.4	Data saved by the system
specific contractual issues,	4		4.4	Data saved by the system
workload, hours specified,	4		4.4	Data saved by the system
professional development updates.	4		4.4	Data saved by the system
Prompt 3				
Payroll, how much leave is owing,	4		4.4	Data saved by the system
being able to tell what has happened	4		4.4	Data saved by the system
– central record of staff development and give equity for other people.	1		1.1	Identifying the particular goal state to be achieved
Prompt 4				
I imagine if it's going to be accessible to a range of people it's got to be central, a database system like Promis that you can log in to with a separate password.	2		2.3	Facts, rules, algorithms and decisions required to perform a process
I can imagine there would be a lot of confidential stuff that would be on the system.	1		1.7	Stating facts and beliefs pertinent to the problem
So it could be managed centrally by HR but accesses by approved people.	3		3.4	Individuals or departments who are charged with performing tasks
Prompt 5				
All the time –	1		1.1	Identifying the particular goal state to be achieved
HR would use it constantly,	3		3.4	Individuals or departments who are charged with performing tasks

as a manager I can imagine myself checking up every other week on staff who I have responsibility for eg. different types of leave, special leave, sick leave, bereavement leave, annual leave.	3		3.1	Identification of the sequence of actions required to complete a task
Prompt 6				
After training and ongoing support.	1		1.5	Specifying how a solution might be achieved
There would need to be someone who has intimate knowledge of the system.	1		1.7	Stating facts and beliefs pertinent to the problem
Prompt 7				
HR staff – it would make their jobs smoother, less bits of paper,	1		1.2	Comparing existing and desired states
and the whole management structure from programme leaders up.	1		1.2	Comparing existing and desired states
There would be more accurate and real time perspective of staffing.	1		1.4	Stating the final ends served by a solution
Prompt 8				
Initially there would be more workload as you got used to the system, but it would reduce.	1		1.7	Stating facts and beliefs pertinent to the problem
Prompt 9				
More accurate information themselves with regards to pay rates and pay rises.	1		1.4	Stating the final ends served by a solution
Prompt 10				
I see the impact as positive but training and assurance needed to that it's not a kind of Big Brother	1		1.5	Specifying how a solution might be achieved
and that information is held confidentially	1		1.1	Identifying the particular goal state to be achieved
and is accurate	4		4.8	Rules that govern the validity of data

and safe.	1		1.1	Identifying the particular goal state to be achieved
Prompt 11				
Any time	1		1.8	Adopting an appropriate point of view on the situation
Prompt 12				
Probably good to be off site so that you are not affected by environment eg. email, phone, enquiries, opportunities to play and practice and follow up.	1		1.5	Specifying how a solution might be achieved
Prompt 13				
Programme leaders,	3		3.4	Individuals or departments who are charged with performing tasks
managers,	3		3.4	Individuals or departments who are charged with performing tasks
lecturers	3		3.4	Individuals or departments who are charged with performing tasks
and general staff	3		3.4	Individuals or departments who are charged with performing tasks
– they have to take responsibility to record any leave taken.	3		3.4	Individuals or departments who are charged with performing tasks
Prompt 14				
Leave,	4		4.3	Data that must be entered into the system
address,	4		4.3	Data that must be entered into the system
family circumstances, maybe child support,	4		4.3	Data that must be entered into the system
and obviously contractual specifications of each person.	4		4.3	Data that must be entered into the system

Prompt 15				
So that the organisation has got accurate information	1		1.1	Identifying the particular goal state to be achieved
and is meeting legal and tax obligations	1		1.1	Identifying the particular goal state to be achieved
and ensure that they are meeting contractual rights of each person.	1		1.1	Identifying the particular goal state to be achieved
There would be financial implications if not recorded.	3		3.5	Explanations of why specific actions are to be taken
Prompt 16				
There would be like an initial getting the system up and running and then a fortnightly deadline, or as it occurs at the time.	2		2.1	A series of steps or tasks designed to produce a product or service
Prompt 17				
Electronically.	3		3.1	Identification of action required to complete the task
Prompt 18				
Through HR and payroll.	3		3.4	Individuals or departments who are charged with performing tasks
Total Count	44	Total Count	44	0
Count of Major Requirement: Goal (1)	18	Count of Generic Requirements: 1.1	7	
Count of Major Requirement: Process (2)	2	Count of Generic Requirements: 1.2	2	
Count of Major Requirement: Task (3)	12	Count of Generic Requirements: 1.3	0	
Count of Major Requirement: Information (4)	12	Count of Generic Requirements: 1.4	2	

	44	Count of Generic Requirements: 1.5	3	
		Count of Generic Requirements: 1.6	0	
		Count of Generic Requirements: 1.7	3	
		Count of Generic Requirements: 1.8	1	
		Count of Generic Requirements: 1.9	0	
		Count of Generic Requirements: 1.10	0	
		Count of Generic Requirements: 2.1	1	
		Count of Generic Requirements: 2.2	0	
		Count of Generic Requirements: 2.3	1	
		Count of Generic Requirements: 3.1	2	
		Count of Generic Requirements: 3.2	0	
		Count of Generic Requirements: 3.3	0	
		Count of Generic Requirements: 3.4	9	
		Count of Generic Requirements: 3.5	1	
		Count of Generic Requirements: 4.1	0	

		Count of Generic Requirements: 4.2	0	
		Count of Generic Requirements: 4.3	4	
		Count of Generic Requirements: 4.4	7	
		Count of Generic Requirements: 4.5	0	
		Count of Generic Requirements: 4.6	0	
		Count of Generic Requirements: 4.7	0	
		Count of Generic Requirements: 4.8	1	
		Count of Generic Requirements: 4.9	0	
			44	

Prompt 1	Requirement Level		Generic Requirement	Explanation
The managers or people who have somebody reporting to them so they can access data about their staff.	3		3.4	Individuals or departments who are charged with performing tasks
Prompt 2				
They would use the system to keep tabs on whichever staff member it is, re professional development which enables them to provide better monitoring therefore better support to their staff.	1		1.4	Stating the final ends served by the solution
Prompt 3				
They would want the system to provide up to date data on current status of that staff member from everything from holiday entitlements,	4		4.1	Data to be presented to end-users
leave taken, leave left,	4		4.1	Data to be presented to end-users
current salary, date of next automatic salary increments,	4		4.1	Data to be presented to end-users
date of any reports that are due such as probation reports	4		4.1	Data to be presented to end-users
and information about their current staff development projects and any reports that have been handed in.	4		4.1	Data to be presented to end-users
Prompt 4				
That would be in the office.	1		1.1	Identifying a particular goal state to be achieved
Prompt 5				

They would use it on an on call basis when they wanted to support a particular staff member or as a regular feature they might want a printout of the current status eg. who is on holiday or who is not or whose holidays are coming up.	3		3.1	Identification of the sequence of actions required to complete a task
There might be a disciplinary matter so any time you want to be able to simply bring up the current information on that staff member so they have got it literally at their fingertips.	1		1.1	Identifying the particular goal state to be achieved
Prompt 6				
They would have to be trained.	1		1.5	Specifying how a solution might be achieved
Prompt 7				
I would think it would have an impact on all staff.	1		1.7	Stating facts and beliefs pertinent to the problem
It would certainly provide managers with a better back up set of information about their staff and therefore it should make managers better managers and better support people so staff should get better feedback on that basis.	1		1.4	Stating the final ends served by the solution
We do have situations now where managers hardly ever see their staff and that is not the sort of model I would like to see in operation.	1		1.2	Comparing existing and desired states
Prompt 8				

I think the impact will be that not only will there be positive support for people getting their entitlements, eg. instead of a staff member having to request leave or if they don't request leave maybe it is forgotten, the manger could say "look I notice you haven't got your leave plan in and you are entitled to 24 days this year or 20 days or whatever it is, and I want to see a plan for that to ensure you get it". " I see you haven't had any financial support for staff development for the last three years. I'd like to see a proposal from you and I'll be looking to allocate some of the funding this year".	3		3.1	Identification of the sequence of actions required to complete a task
So that's where I believe that if things worked properly that enables managers to provide that support for their staff then staff should see that impact and if managers encourage and support rather than if you don't ask, you don't get, then I would expect that to impact on retention of staff and once it impacts on retention, it also impacts on recruitment and makes it a better place to work in.	1		1.1	Identifying the particular goal state to be achieved
Prompt 9				

Because the current system doesn't do that. Our current system depends very much on individual managers and the particular recording system they have and often requests to HR are enabled to be fulfilled, because they don't simply have the data, because of new staff they don't have the history, and they find it difficult to access the data or may not be able to access it all because it hasn't been recorded.	1		1.6	Identifying the causes of the problematic state
And for example it should be a very very simple process to find out exactly how much a person is earning and how many days leave they are entitled to, how many they've taken, all those sorts of things, yet that is not a simple request if you currently make it.	1		1.2	Comparing existing and desired states
Somebody has to go and locate all that information, often in different places and then bring it all together, so it becomes a minor exercise for a staff member and manager, when it should really be just a question of pressing a button.	1		1.2	Comparing existing and desired states
So the other area it would impact on is HR staff.	1		1.01	Organisational units
Prompt 10				
By staff not using the system, even though they have been shown, and by managers not using the system, that would be carried on the same.	1		1.3	Identifying factors inhibiting goal achievement

We have one area of the institute which I shant name where when we moved towards emails we had some staff members who had 1500 unread emails because they probably didn't have any confidence, they hadn't been shown etc. The emails just kept on coming and went into a black hole.	1		1.6	Identifying the causes of the problematic state
Prompt 11				
I think implementing the system at the start of the year is easier, with training at the end of the previous year, so it is basically up and running and effective from the start of the year.	1		1.5	Specifying how a solution might be achieved
Prompt 12				
Well, preferably the training would take place in each individual manager's office.	1		1.5	Specifying how a solution might be achieved
But that's not necessarily possible because there is a manpower issue for training but other than that the training should probably take place locally and off campus otherwise the managers are constantly back and forth from their office and they are contactable. It really depends on the length of the training.	1		1.3	Identifying factors inhibiting goal achievement
Prompt 13				
All managers need to. The managers at various levels need to	3		3.4	Individuals or departments who are charged with performing tasks

In terms of designing the system, managers at all levels, from the chief executive down should be asked what they need and what they would like and that would provide the basic parameters for the design.	2		2.2	Facts, rules, beliefs, and decisions required to perform a process
And then in terms of inputting data, that data will come from various places currently such as HR, currently payroll,	4		4.3	Data that must be entered into the system
and that data should be confirmed with managers.	4		4.8	Rules that govern the validity of data
Prompt 14				
First of all I think you need all the contractual obligations with the staff member,	4		4.3	Data that must be entered into the system
date of appointments,	4		4.3	Data that must be entered into the system
type of tenure,	4		4.3	Data that must be entered into the system
salary,	4		4.3	Data that must be entered into the system
holidays,	4		4.3	Data that must be entered into the system
any specific individualized agreements made in the contract,	4		4.3	Data that must be entered into the system
you need to know if and when any probation reports are due	4		4.1	Data to be presented to end-users
and you need some background details from the staff member as well such as qualifications, experience, that sort of thing.	4		4.3	Data that must be entered into the system
Other information that might impact such as health situations.	4		4.3	Data that must be entered into the system

Prompt 15				
Because if we don't have this information then we can't support the staff member in doing the best job that they can for the benefit of our students.	3		3.5	Explanation of why specific actions are to be taken
Prompt 16				
They would need to provide information once the framework of the particular system is established,	3		3.4	Individuals or departments who are charged with performing a task
and obviously prior to implementation for existing staff.	2		2.1	A series of steps or tasks designed to produce a product or service
Prompt 17				
In a format which is helpful to the people who have to put it into the computer.	3		3.1	Identification of the sequence of actions required to perform a task
But that in itself could create a challenge because people could be resistant to providing information they already had in one format into a different format	2		2.3	Factors that may prohibit process completion
and in that sense it would be an excellent PR exercise to spend a little bit more money for someone to transcribe that information rather than to require that managers reformat it.	1		1.5	Specifiying how a solution might be achieved
Prompt 18				
Once it is in the system? Well the monitoring would take place in HR with confirmation by managers.	3		3.4	Individuals or departments who are charged with performing tasks

Initially if there is some uncertainty as to how many days leave a person has taken or not, and there is some uncertainty around here, initially there would have to be a decision to accept that current situation which would have to be done with the staff members agreement.	4		4.8	Rules that govern the validity of data
Once you've basically got data in there which you believe is acceptable then reports that are provided to a manager they can subsequently refer to it.	1		1.4	Stating the final ends served by the solution
I don't think a system obviates the need for managers to keep their own records of some sort.	1		1.7	Stating facts and beliefs pertinent to the problem
The concept is that you don't need to, that you only have one set, and that's fine if that set is perfect but they rarely are, so you need some simple sort of checking mechanism to know that your central records are OK.	3		3.5	Explanation of why specific actions are to be taken
Total Count	49	Total Count	49	0
Count of Major Requirement: Goal (1)	20	Count of Generic Requirements: 1.1	3	
Count of Major Requirement: Process (2)	3	Count of Generic Requirements: 1.2	3	
Count of Major Requirement: Task (3)	9	Count of Generic Requirements: 1.3	2	
Count of Major Requirement: Information (4)	17	Count of Generic Requirements: 1.4	3	

	49	Count of Generic Requirements: 1.5	4	
		Count of Generic Requirements: 1.6	2	
		Count of Generic Requirements: 1.7	2	
		Count of Generic Requirements: 1.8	0	
		Count of Generic Requirements: 1.9	0	
		Count of Generic Requirements: 1.10	1	
		Count of Generic Requirements: 2.1	1	
		Count of Generic Requirements: 2.2	1	
		Count of Generic Requirements: 2.3	1	
		Count of Generic Requirements: 3.1	3	
		Count of Generic Requirements: 3.2	0	
		Count of Generic Requirements: 3.3	0	
		Count of Generic Requirements: 3.4	4	
		Count of Generic Requirements: 3.5	2	
		Count of Generic Requirements: 4.1	6	

		Count of Generic Requirements: 4.2	0	
		Count of Generic Requirements: 4.3	9	
		Count of Generic Requirements: 4.4	0	
		Count of Generic Requirements: 4.5	0	
		Count of Generic Requirements: 4.6	0	
		Count of Generic Requirements: 4.7	0	
		Count of Generic Requirements: 4.8	2	
		Count of Generic Requirements: 4.9	0	
			49	

Prompt 1	Requirement Level		Generic Requirement	Explanation
I notice that in here you are suggesting that the employees would use the system to look at their own stuff, I would say the HR staff,	3		3.4	Individuals or departments who are charged with performing tasks
the admin support staff, eg my campus administrator who does a lot of paper work for in relation to employing staff, or do variations to contracts,	3		3.4	Individuals or departments who are charged with performing tasks
again it could be individual staff to look at how much leave is owing to them, how much sick leave they have taken,	3		3.4	Individuals or departments who are charged with performing tasks
I imagine that payroll staff would access it – they would be inputting information into as well as regard to sick leave and annual leave.	4		4.3	Data that must be entered into the system
I would use it a lot to look up things like job descriptions,	4		4.1	Data to be presented to end-users
making appointments,	3		3.1	Identification of the sequence of actions required to complete a task
interview questions,	4		4.1	Data to be presented to end-users
professional development programmes,	4		4.1	Data to be presented to end-users
course co-ordinators, programme leaders would look at professional development available to their staff.	4		4.1	Data to be presented to end-users
I don't know if finance would use it – I'll pass on that.	1		1.8	Adopting an appropriate point of view on the situation
Our admin support staff would access it as directed by someone like myself or the campus co-ordinator.	3		3.4	Individuals or departments who are charged with performing tasks
Prompt 2				

They would use the system in order to go in a straight line to get their information rather than having to email HR as they do at the moment and then find that they need to be set on to payroll for example or vice versa for whatever information they might need.	3		3.1	Identification of the sequence of actions required to complete a task
Regular staff would be able to look up at a moments notice what staff development was available to them to participate in.	1		1.4	Stating the final ends served by the solution
And I imagine that the equivalent of all the public folders would be there too, so that when they needed to find out if there was a grievance for example, they would be able to look up and find out the information that at the moment is so unuser friendly as to be pointless in having – please note!	1		1.2	Comparing existing and desired states
Ease of access of information and most often for general and teaching staff it would be for their personal information.	1		1.1	Identifying the particular goal state to be achieved
I don't imagine that they would use it to look up their personal file eg. to see if there has been a complaint against me and to look back at the detail of it,	1		1.8	Adopting an appropriate point of view on the situation
but if that was possible and that the system worked so that it maintained your privacy, and that I couldn't look up your personal file for example, but I could access my own and the people that I am responsible for – then that would be an excellent thing, at the moment it is a very cumbersome matter,	1		1.2	Comparing existing and desired states

especially from a distance, to access all the personal files of all staff over at Wairarapa, so a very good reason if that was in place would mean that information could be centralised as it is for us, and not in Wairarapa, and yet it would be at the tap of a keyboard that we could access the files of everybody and the manner in which they have been appointed and so on. At the moment I have to ask for it to be faxed to me and then wait by the machine because of privacy issues, so that would be a wonderful solution.	1		1.2	Comparing existing and desired states
Prompt 3				
Balanced scorecards – presumably the annual commitment that each staff member is required to make could be recorded electronically for manager's perusals	3		3.1	Identification of the sequence of actions required to complete a task
but also for the staff members record so it could be updated and used in a much more effective way – at the moment we write down what we say we are going to do and then because everyone is so busy it's rare for us to at the end of the year to actually address and detail what in fact the staff member achieved, or did not achieve.	1		1.2	Comparing existing and desired states
So it would be a much more effective use of that requirement which most people find a negative experience at the moment I must say.	3		3.5	Explanation of why specific actions are to be taken

It seems as though it is designed for businesses, rather than education, but however, it is quite effective once you get over that emotional hurdle and make it personal to what you see as your area.	1		1.8	Adopting an appropriate point of view on the situation
To record the leave and sick leave and some way to facilitate the recording of casual people or people who need to fill in timesheets anyway, so that all of that paperwork could be streamlined and a member of staff could sit at a computer in the Wairarapa and say OK, I worked Monday to Friday, these are the hours and actually punch it into the system and there it is for payroll to then access and act upon it without the challenges that are in the way at them moment you know, the fax misses one of the sheets, or a person omits to put in their timesheet on time	3		3.1	Identification of the sequence of actions required to complete a task
– I think it would facilitate to make these things happen a lot more seamlessly.	1		1.4	Stating the final ends served by a solution
An update of the forthcoming professional development experience is available to all staff,	4		4.1	Data to be presented to the end-user
it would have an updating telephone directory,	4		4.1	Data to be presented to the end-user
I can see the potential for full time data entry people, to me it's got to be current.	1		1.7	Stating facts and beliefs pertinent to the problem

It might also have a kind of toolbox with a list of where are things available, so if I am a new member of staff and I haven't a clue about booking a meeting room or booking an overhead projector, if it was all in the system and very accessible, that would be excellent.	4		4.2	Language and formats used
Prompt 4				
Anywhere, if it's electronic. I'm assuming it's electronic and I am assuming that you would access through the intranet so if you at the home you could access it by entering the website.	1		1.1	Identifying the particular goal state to be achieved
But if at work, you would use it in the office.	1		1.1	Identifying the particular goal state to be achieved
Prompt 5				
Mostly during the course of the day. Day to day dealings, but however, if it was accessible during any time you could sit there at night, you could check how much annual leave left to plan a trip.	1		1.1	Identifying the particular goal state to be achieved
Also a record of your annual plan so if you were wanting to amend that you could look up to see what permission you had to do, and look up the documentation needed to change it. Mostly it would be access during the day.	1		1.1	Identifying the particular goal state to be achieved
Prompt 6				

I think they would have to have an introduction and a seminar and have it available in the way that other courses are available for learning how to use the internet or any of these things.	1		1.5	Specifying how a solution might be achieved
We hope that staff are constantly being encouraged to upskill technology wise and this would be just another tool that staff members would be taught to use.	3		3.5	Explanation of why specific actions are to be taken
Prompt 7				
All lecturing staff and administration staff.	1		1.7	Stating facts and beliefs pertinent to the problem
Academic advisors	1		1.7	Stating facts and beliefs pertinent to the problem
– everyone really.	1		1.7	Stating facts and beliefs pertinent to the problem
The greatest benefit would be for the HR staff themselves because one has the feeling that you can throw a million dollars worth of payroll at HR and still wont be enough, that you can always improve their systems to keep their records very carefully	1		1.7	Stating facts and beliefs pertinent to the problem
– they must do that, but if there was software that was appropriate to all the needs that they have that would be great.	1		1.4	Stating the final ends served by the solution
It would also be of great benefit to management and support staff. I don't see it as any benefit to students directly at all.	1		1.8	Adopting an appropriate point of view on the situation

Well, I mean you could have an area where students could access questions with regard to making a complaint, sexual harassment, how to access help from the Health Centre, there could be some kind of information site, but that is probably just as easily placed on the intranet.	1		1.5	Specifying how a solution might be achieved
Prompt 8				
To simplify the process,	1		1.4	Stating the final ends served by a solution
to improve accessibility for staff to records in order to complete whatever the task is that they are doing.	1		1.4	Stating the final ends served by a solution
Also reduce the requirement and pressure of HR staff to be all things to all people. At the moment they have huge amount of behind the scenes work to do to facilitate appointments and also have to do the day to day dialogue with people like myself when I need to request a piece of information or whatever my task is and I probably I would need them very rarely in that way if I could access it myself.	1		1.2	Comparing existing and desired states
Obviously one wouldn't want it that HR weren't approachable face to face or by telephone, but the pressure on them I think would mean that their jobs were simplified.	1		1.7	Stating facts and beliefs pertinent to the problem
Prompt 9				

It would demystify the concern that staff in general have about HR that there might be information held about them that may never have seen. Somebody may have written a report about them – it may be good or it might not be, but it wasn't open for them to view, so that would take away that mystery	1		1.4	Stating the final ends served by a solution
– I know that you can look at your own file whenever you want to but people simply don't unless a grievance is taken out about them or some crisis occurs that it means you can delve in there and see what their progress report was, what your manager said about you at a certain time, so it takes away the anxiety.	1		1.7	Stating facts and beliefs pertinent to the problem
There was a year or so ago that human resources were unapproachable and people made jokes about inhuman resources and I think that apart from any other reason they were just so overworked as to be available and positive and approachable, so that would be good.	1		1.2	Comparing existing and desired states

It's very important for people to get on with what they're doing by getting their questions answered quickly, so often one feels kind of stuck and paralyzed really because this one bit of information you need stops you completing the task and I often feel like that, not through any fault of anyone's, but if I could just get that information and sort it and get onto the next project – so that's why I think it would be a very positive thing.	1		1.2	Comparing existing and desired states
I'm trying to think of negative things, - can't think of any.	1		1.8	Adopting an appropriate point of view on a situation
Always need people in place as an extension of the system.	1		1.7	Stating facts and beliefs pertinent to the problem
Prompt 10				
If there is any change all affected staff should be informed and invited to discuss benefits and difficulties as they foresee such a new system, in order to get their understanding and buy in they should be invited to lessons to understand how to use it.	1		1.5	Specifying how a solution might be achieved
Obviously one would hope the software would be designed to be extremely friendly and not ala public folders so that it was a welcoming experience to get in there and use it.	4		4.2	Language and formats used
There should be a period of time and it may be forever you could access what hard copy in way of records to double safe check that the system works, for quite some time.	1		1.5	Specifying how a solution might be achieved

That means that the person who is not comfortable with using it, can still go to the real person and say, so what do I need to know, and in fact within HR there could be someone allocated to actually looking up the HR software on behalf of an employee for the information they need.	3		3.4	Individuals or departments who are charged with performing tasks
And an opportunity for staff to give feedback about how the system is working for them and things that could be added or amended to make more user friendly.	1		1.5	Specifying how a solution might be achieved
But the preparation and buy in before implementing it will be important.	2		2.1	A series of steps or tasks designed to produce a product or service
Prompt 11				
Towards the end of an academic year. In the last semester (last term of semester two) that people were invited to courses to learn how to use it before courses start up.	1		1.5	Specifying how a solution might be achieved
By the end of they year they would have had a taste of how it works and would be able to return to work at the start of the new academic year with the chance of using it before courses start again.	3		3.5	Explanation of why specific actions are to be taken
That is a period of year when managers use that information either to record what leave was and wasn't taken or to look up job descriptions, making advertisements, new positions, interviews, employing people, all that kind of thing.	3		3.5	Explanation of why specific actions are to be taken
Prompt 12				

Assuming that all sites are networked, could be done on site at each venue, now whether it could be done by distance is between you and elearning people, but my suggestion though is that it needs to be reinforced with a person or people on site in different campuses.	1		1.5	Specifying how a solution might be achieved
Prompt 13				
Mostly HR personnel,	3		3.4	Individuals or departments who are charged with performing tasks
payroll,	3		3.4	Individuals or departments who are charged with performing tasks
managers and programme leaders where they complete progress reports for example and probation reports.	3		3.4	Individuals or departments who are charged with performing tasks
It could be that it needs a centralised person whose role it is to receive all the information from different sources like managers, HR, finance and input it for us.	3		3.4	Individuals or departments who are charged with performing tasks
I don't know but some people may only have access to certain areas.	2		2.2	Facts, rules, algorithms required to perform a process
Prompt 14				
I can imagine that there is a file for each member of staff at Wairarapa, and inside of the file for John Smith, lecturer of computing, would be a record of interviews for his appointment,	4		4.3	Data that must be entered into the system
the conditions of his employment,	4		4.3	Data that must be entered into the system
a record of his probation report,	4		4.3	Data that must be entered into the system

his arrangement for salary,	4		4.3	Data that must be entered into the system
superannuation and	4		4.3	Data that must be entered into the system
his annual and sick leave	4		4.3	Data that must be entered into the system
and if I might have a meeting with him where he needs bereavement leave, and so I would write that report and copy it to him, but send a copy to the data person who would know to put it into John Smith's folder	4		4.3	Data that must be entered into the system
– ideally we could just put it into John Smith's folder, that would be much more preferable, but it could be that HR might want to screen what goes into their folder – my sense is that HR will own the system.	3		3.4	Individuals or departments that are charged with performing tasks
I'm not sure if that is a good idea or not, but there are such issues with regard to privacy and some things that are inappropriate and some things that are not, so that is why I imagine they would be responsible for what went in.	4		4.8	Rules that govern the validity of data
Prompt 15				
The basis of an HR department is to act in support and enhancement of staff members' development over the period of their employment.	1		1.1	Identifying the particular goal state to be achieved

Well, it is important to enable a much more accessible record of how a member of staff is doing so that people who are missing out on training of some sort to enable their teaching for example to improve, or their confidence in dealing with certain difficult students for example is assisted, then it is an easy way to track the development.	1		1.4	Stating the final ends served by a solution
I can imagine there are members of staff who are kind of lost in the institution and a system like this might keep tabs in a very positive and supportive way	1		1.8	Adopting an appropriate point of view on the situation
and by the way, somewhere in their could be a mentoring system to assist staff to find support.	1		1.1	Identifying the particular goal state to be achieved
It's quite an important one in a way – it could be that you could access as a staff member a pool of available mentors without going through anybody in order to do that, you wouldn't need to go to your programme leader to say, look I think I need some help, because you go write to someone in that role and say "I'm really having trouble with Max my colleague, and no-one else needs to know about that. The current system has a certain stigma.	1		1.2	Comparing existing and desired states
Prompt 16				

Ongoing – like to access when the need arose or know that have to set up interview questions – can do it immediately – don't have to contact HR to request them to send it.	1		1.1	Identifying the particular goal state to be achieved
Prompt 17				
Electronic without a doubt, what sort of software is another matter.	3		3.1	Identification of sequence of actions required to complete a task
It could be for payroll it might just not be a word document, it might be excel or whatever,	1		1.5	Specifying how a solution might be achieved
unless you get someone who is not computer literate,	1		1.6	Identifying the causes of the problematic state
in which case it would have to be processed by PL or HR.	3		3.4	Individuals or departments who are charged with performing tasks
Prompt 18				
Well that is the bit that I mentioned before – that is the challenge, because it would be much better for managers like myself to just plonk it into the file, but I can imagine the difficulties there, if I did that it would be a challenge that my senior manager got to sign off of something for example, when I do a progress report it has to go to the Chief Executive for sign off.	1		1.3	Identifying factors inhibiting goal achievement
I don't know what the best thing is for the institution. There has got to be an interim checking or change or approving before it goes into someone's file, so I would have to leave that to the experts.	4		4.8	Rules that govern the validity of data

Total Count	87	Total Count	87	0
Count of Major Requirement: Goal (1)	47	Count of Generic Requirements: 1.1	8	
Count of Major Requirement: Process (2)	2	Count of Generic Requirements: 1.2	8	
Count of Major Requirement: Task (3)	20	Count of Generic Requirements: 1.3	1	
Count of Major Requirement: Information (4)	18	Count of Generic Requirements: 1.4	7	
	87	Count of Generic Requirements: 1.5	8	
		Count of Generic Requirements: 1.6	1	
		Count of Generic Requirements: 1.7	8	
		Count of Generic Requirements: 1.8	6	
		Count of Generic Requirements: 1.9	0	
		Count of Generic Requirements: 1.10	0	
		Count of Generic Requirements: 2.1	1	
		Count of Generic Requirements: 2.2	1	
		Count of Generic Requirements: 2.3	0	

		Count of Generic Requirements: 3.1	5	
		Count of Generic Requirements: 3.2	0	
		Count of Generic Requirements: 3.3	0	
		Count of Generic Requirements: 3.4	11	
		Count of Generic Requirements: 3.5	4	
		Count of Generic Requirements: 4.1	6	
		Count of Generic Requirements: 4.2	2	
		Count of Generic Requirements: 4.3	8	
		Count of Generic Requirements: 4.4	0	
		Count of Generic Requirements: 4.5	0	
		Count of Generic Requirements: 4.6	0	
		Count of Generic Requirements: 4.7	0	
		Count of Generic Requirements: 4.8	2	
		Count of Generic Requirements: 4.9	0	
			87	