An investigation into the use of Summon at the Durban University of Technology

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Declaration of originality

This is to certify that the work is entirely my own and not of any other person, unless explicitly acknowledged (including citation of published and unpublished sources). The work has not previously been submitted in any form to the University of Pretoria or to any other institution for assessment or for any other purpose.

Signed _____

Date _____

Abstract

Web scale discovery services (WSDS) are becoming widely adopted by academic libraries for a number of reasons. These include, namely: to improve the experience of students when searching for information; to offer a single easy-to-use interface to the library comparable to that of Google; to increase the visibility of the library resources; and to boost the use of quality resources to advance learning and promote student success.

In 2012, the Durban University of Technology (DUT) implemented Summon, a discovery service from Serial Solutions, to support the strategic objectives of the library in pursuing seamless environments for access and delivery of library resources. Apart from the Summon usage statistics, vendor usage statistics for library databases, and library website statistics, there are no other measures in place to determine the extent of Summon use at DUT.

The literature is abundant with models and approaches to evaluate electronic information systems (EIS). This includes research on evaluating specific aspects of WSDS, for example, selection and implementation, collection use, usability and library instruction. The eVALUEd toolkit is purposely developed for evaluation of EIS, and is used as a framework for the evaluation of Summon. Using the themes and outcomes presented in the toolkit, and supported by contemporary methodologies, this study provides a holistic approach to evaluating Summon use among students, academics, and Subject Librarians at DUT.

A case study method was used to investigate, gather, describe and analyse data relevant to the research. The researcher used various survey methods to collect data from the participants, including the use of questionnaires and semi-structured interviews. The sample was drawn from first year students, academics responsible for coordination of library training, and Subject Librarians from the Faculty of Health Sciences.

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The findings provide comparative data on the information-seeking behavior of students, the general use of library resources, the impact of information literacy training on the use of Summon, the use of Summon for assignments and projects, and the factors that determine the use or non-use of Summon among the participants in the different courses. The study proposes new ways in which Summon can be used, as well as a model to improve the use of Summon at DUT.

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Chapter 1: Introduction and background

1.1 Introduction

The Durban University of Technology (DUT) Library faces constant scrutiny over its resource allocation, and should have better reporting systems in place to demonstrate the value of the library to the institution. *Ad hoc* approaches to evaluation is still practiced in the library despite attempts by Library Management to systematically collect data that can be used in decision making, and ultimately to improve library service.

The library has been in a fortunate position financially in recent years, and has been able to sustain current collections and also to grow the electronic collection significantly. The challenge for the library is that there has been a notable decrease in the usage of electronic resources, despite enhanced marketing and training efforts. This problem, however, is not unique to DUT; competing with easily accessible, fast, and friendly tools such as GOOGLE is a critical issue for academic libraries worldwide.

The Library Information Services (LIS) sector responded to this problem with the development, and implementation of Federated search tools, which was implemented at DUT in 2007 (Breeding 2005: 27). Unfortunately, there were several problems associated with the federated search engine, Metalib, and its related link resolver, SFX, namely:

- Subject librarians did not promote the tool due to linking errors and slow response rates; and
- Non-customisable elements meant that only a selection of resources could be searched at any given time.

Since 2010, the low usage of electronic resources was discussed at various library and institutional forums in an effort to stimulate the use of the electronic

resources among DUT library users. One of DUT Library's key strategic goals for the period 2010 to 2012 was to increase access to library resources, particularly electronic resources. A key component of this strategy was to investigate the latest technologies available in the marketplace, known as Web Scale Discovery Services (WSDS), and commonly referred to as discovery tools. Summon, one of the early entrants in the marketplace, was selected and implemented in January/February 2012. Summon facilitates seamless searching across the majority of library resources, including the library catalogue and the Institutional Repository, and delivers results fast, bringing relevant subscribed content to the fore.

The DUT library administrators have a vague knowledge of how Summon is used by the DUT library community. Without any deep analysis of Summon data, the following is gleaned from the library usage statistics for the period February 2013 to October 2013 (DUT Summon usage statistics 2013):

- Library users are using Summon, and there is an incremental increase in usage for the given period;

- Library users are accessing Summon via mobile devices;
- Usage of subscribed individual databases is declining; and
- Downloads of articles from specific databases has increased, especially from ProQuest databases.

At the same time, there has been a general concern raised by the stakeholders about the value of the Summon, namely:

- Documented observations by Subject Librarians teaching Information Literacy classes mention relevancy issues, access issues, and other technical issues;
- Library vendors have expressed concern over decreased usage of their library resources; and

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- Due to the availability of cheaper tools, library management required evidence that supported the renewal of the subscription to SUMMON.

A short Summon survey was carried out by the Library in 2012 to determine how Summon was being used, specifically to ascertain points of access, and the purpose of use. The results of the survey were satisfactory as they showed that students were accessing Summon mainly from the library, but unfortunately no significant data was collected regarding the use of Summon. A holistic study is necessary to collect valuable and usable data that can be used to demonstrate the impact of Summon on students' learning, and also to support decision making.

1.2 Background

This section will provide a brief overview of evaluation and models and approaches found in the literature that are pertinent to this study. The following models or approaches to evaluation will be discussed, namely: early evaluation models, evaluation of online systems, eVALUEd toolkit, holistic evaluation measures, and research on WSDS including SUMMON that was undertaken in academic libraries.

1.2.1 Early evaluation models

Until the 1960s, there was very limited research carried out in the evaluation of library services. Two highly cited authors from the 1970s were instrumental in providing useful frameworks that formed the basis of modern evaluation models in libraries. Orr, in Mathews (2007: 19), developed a model that focussed on demonstrating the impact or effect a set of resources had when organised and transformed to perform a set of services. Baker and Lancaster (1977), in their seminal work "The measurement and evaluation of libraries", provided a series of tools on evaluation of libraries. Of particular relevance to

this study is the effectiveness and cost effectiveness of studies that were performed.

1.2.2 Evaluation of Online Systems

As automation of library services developed in the early 1990s, new models were developed to evaluate online systems such as the library catalogue. The studies initially focussed on how users were interacting with the user interface, and on how users were searching for information, shifting from the quantitative measures that were widely used previously. With the evaluation of online library systems and library websites, data was usually gathered via surveys, observation, and transaction logs (Mathews 2007: 213). This data was used to develop user interface design, and/or measure the satisfaction of the users with the system.

SUMMON is considered to be an online library system, offering the user an interface to search for information. The overall performance of Summon is dependent on the usability of the interface. Although not the main focus of this study, questions on the use of Summon will highlight usability issues.

1.2.3 Holistic evaluation of library services

In order to provide a complete view of library services, the holistic approach to evaluation was developed. Researchers like Cronin, Griffiths and King (in Mathews (2007: 18)) developed evaluation matrixes that 'mashed' work carried out by other influential researchers and practitioners such as F.W. Lancaster. The Cronin Evaluation Matrix suggests that library evaluation efforts should focus on costs, benefits and effectiveness. These three measures are mapped against three perspectives, i.e. user, management and sponsor. These perspectives can be changed depending on the intended outcome of the evaluation.

A simplified matrix was developed by Nicholson in 2004. Nicholson combined the matrixes of a number of scholars to produce a matrix that looked at evaluation of library services holistically. The matrix employed a library focus (internal) and a customer focus (external) and also mapped the library or its use into the matrix. Four key measures, efficiency, effectiveness, benefits and quality, are used to formulate valuable comparisons. The matrix was developed after extensive research on evaluation models and techniques, and is an appropriate tool in the measurement and evaluation of academic libraries. This matrix s outside the scope of this research as it requires the measurement of too many variables.

1.2.4 Evaluation of Electronic Information Systems (EIS) using the eVALUEd Toolkit

The eVALUEd toolkit is designed to support information services staff in Higher Education Institutions with the evaluation of electronic information services (EIS). The toolkit has been developed by Evidence Based Research and Evaluation Services research team, based in the Library Services at Birmingham CITY University. The development has been funded by the Higher Education Funding Council for England (HEFCE) through its Fund for Good Management Practice. The toolkit uses four themes to evaluate an EIS; these are listed in figure 1.1.

Figure 1.1: The eVALUEd Toolkit

A. User Experience
- **1.1 Access**: Evaluate access to EIS in the library, on campus and elsewhere
- **1.2 User support**: Evaluate the effectiveness of the formal and informal support provided for EIS users
- **1.3 Promotion**: Evaluate the how effectively EIS is promoted to staff and students
- **1.4 Perceptions**: Evaluate student and staff perceptions and expectations of EIS

B. Planning
- **1.5 Outcomes Assessment**: Align EIS outcomes to institutional outcomes and strategies
- **1.6 Collaboration and integration**: Evaluate the success of collaboration between the library and academic departments and external bodies

C. Management
- **1.7 Usage**: Evaluate the amount of use and number of users of EIS
- **1.8 Personnel**: Evaluate the effectiveness of staffing arrangements for EIS
- **1.9 Budgeting**: Evaluate how efficiently the EIS budget is managed
- **1.10 Current Provision**: Evaluate the quality, quantity and range of EIS resources
- **1.11 Future provision**: Evaluate collection development opportunities
- **1.12 Technical Performance**: Evaluate EIS performance, interoperability and access management

D. Impact
- **1.13 Impact on learning & teaching**: Evaluate the impact of EIS on learning and teaching within subject areas.
- **1.14 Impact on graduate skills**: Evaluate the impact of EIS on information skills and other graduate skills
- **1.15 Impact on research**: Evaluate the impact of EIS on research and the production of scholarly works

This tool was purposely developed taking into account various perspectives relating to online systems. The use of this tool is not widely documented in the literature, but individual case studies are highlighted on the eVALUEd website.

This toolkit has particular relevance to this study as it was commissioned and developed for the purpose of evaluating EIS such as Summon. The four themes and the associated sub-themes described in figure 1.1 provide an overall evaluation of an online information system. The use of the toolkit in whole, or in part, will provide library administrators with evidence to promote

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the use of these tools as part of the learning process. For this study, the researcher has identified the following sub-themes that will be used in the evaluation of Summon, namely: 1.1, 1.3, 1.4, 1.6, 1.7, 1.13 (in Figure 1.1) as they relate to the aims of the study.

1.2.5. Research into the implementation and evaluation of Summon

There have been many Summon implementations since 2010. The researcher will discuss the following Summon implementations as they are relevant to the research, namely: University of Huddersfield and University of Northumbria, Grand State University, Edith Cowan University, and Oregon State University.

1.2.5.1 University of Huddersfield and University of Northumbria

An evaluation of Summon was done at the University of Huddersfield and University of Northumbria, the sites of one of first implementations of Summon. Thoburn *et. al.* (2010) provide a technical view of the implementation of Summon at both universities, which serves as a point of reference for other universities wanting to implement Summon.

1.2.5.2 Grand State University

Doug Way (2010) conducted research on the impact of Summon on library collections. A number of key statistics were gathered from COUNTER statistics of library databases and the Summon link resolver during a specified period. The findings of this research provide the evidence to support the implementation of WSDS. The use of library collections changed significantly with a decrease in the database statistics and an increase in the number of full-text articles downloaded.

1.2.5.3 Edith Cowan University

Gross and Sheridan (2010) undertook a usability study among students to ascertain how they used Summon. Results from the study were promising in terms of the navigation of the Summon, but highlighted major issues in terms of students' ability to understand the search results.

Howard and Wiebrands (2011) undertook a different study at Edith Cowan University to identify perceptions of information professionals post implementation of Summon. Results from the survey indicate that the perceptions of Summon changed over time, and also that information professionals were adopting Summon as part of their instruction.

1.2.5.4 Oregon State University

Buck and Mellinger (2011) surveyed instruction librarians' perceptions of Summon on instruction. Results from the survey found that Summons' search results are too broad and confusing, and instruction needed to focus on limiting and refining search results.

This section aimed to provide an overview of evaluation approaches and tools available to academic libraries such as the DUT Library. These evaluation tools will be explored in detail in chapter two.

1.3. Research Question and sub-questions

At DUT, it has already been established that Summon is being used by students, but the extent of the use of Summon as well as the purpose for which Summon is being used by students, academics and librarians is unknown. This section will introduce the questions and sub questions that will be used to gather information on the use of Summon.

1.3.1 Main research question:
How can the use of Summon be improved at the Durban University of Technology (DUT)?

1.3.2 Research sub-questions

To answer the above research question, four sub-questions have been developed:

1. What measures are used to evaluate electronic information services (such as WSDS) in academic libraries?
2. How is Summon used by staff and students at DUT?
3. What are the views of Subject Librarians on the use of Summon?
4. What are existing and new ways of using Summon at DUT?

1.4 Methodology

This section covers the research methodology that was used in the study.

1.4.1 Research methodology

The investigation will use a case study approach in a broadly qualitative paradigm, although there is also a quantitative component in this study that involves the use of a questionnaire. According to Babbie and Mouton (2001: 53), in a qualitative paradigm the researcher takes an "insider perspective" to "describe and understand human behaviour, rather than explain and predict". A qualitative approach will be appropriate for the analysing and interpreting the content from documents and Webpages relating to Summon.

A case study according to Browley in Maree (2010: 79) is a "systematic inquiry into an event or set of events to describe and explain the phenomena or event". According to Maree (2010: 76), the key advantage of case study approach is that the researcher is able to use "multiple sources and techniques in the data gathering process". This study will employ a mixed method approach that will involve a review of the literature, gathering data from library documents, administering a questionnaire to students, and interviewing academics and Subject Librarians.

To achieve the research objective, a review of the literature will be done to determine what measures are applicable to the evaluation of the services such as Summon. This review will also highlight best practices used in academic libraries for evaluation of EIS. The literature will also alert the researcher to data collection methods used in similar studies.

The first part of the data collection will be done through document analysis. Data from documents and vendor usage reports from Summon, Library Annual reports and other library documents of relevance to this study will be analysed using content analysis.

The second part of the data collection will be a questionnaire administered to students. A purposive sample or convenient sample will be drawn from the student population who underwent formal training in the use of Summon in 2013. The results from the questionnaire will provide rich data on usage of Summon by students in four (4) courses in the Faculty of Health Sciences, and will enable the researcher to draw comparisons on usage between the different courses. Data collected from the surveys will be analysed using statistical software SPSS version 21.

The third part of the data collection will involve the four (4) academics and two (2) Subject Librarians from the Faculty of Health Sciences. Semi-structured face to face interviews will be conducted with academics involved in the first year Faculty of Health Sciences programme and also with Subject Librarians who teach for information literacy for the same faculty. The Subject Librarians possess expert knowledge of SUMMON as they are involved in regular training interventions that include the use of SUMMON. The interviews will be used to gather data on perceptions of the use of SUMMON based on observations in information literacy classes, assessments of integrated assignments and projects and interactions with students.

The selection of students, academics and librarians from different courses provides the researcher with a useful comparison as the levels of library integration within the courses offered by the faculty differ significantly.

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The following table summarises the methodology that will be used:

Objective	Sub-objective	Source of data	Data collection instrument
How can the use of Summon be improved at the Durban University of Technology (DUT)?	What measures are used to evaluate electronic information services (such as WSDS) in academic libraries?	Library database/journals	A review of the literature
	How is Summon used by staff and students at DUT?	Documents, Students, academics	Document analysis, Survey of students and staff; semi-structured interviews face to face with academics
	What are the views of Subject Librarians on how the use of Summon can be improved?	Subject Librarians	Semi-structured face to face interviews
	What are existing and new ways of using Summon at the DUT		

Table 1.1: Research Methodology used in the study

1.5 Benefits and limitations of the study

The main benefits of the study are listed below.

1.5.1 Benefits of the study

This study has potential benefits to the library community:

- Discovery tools are relatively new in South African Academic Libraries. The majority of academic libraries have implemented some form of discovery service since 2012. However, there is no formal reporting of the success of these implementations known to the researcher.
- As DUT Library is the first institution to implement Summon in South Africa; a study of this nature will aid Library decision-makers at DUT and other institutions when investigating or evaluating discovery tools; and
- The study will offer insight into WSDS and their usage among students, academics and Subject Librarians.

This study measures one aspect of Summon, i.e. the use of Summon in an academic institution such as DUT. The results of this study will provide input for further studies on usage or on other aspects of Summon or other discovery tools carried out at DUT or other institutions. The immediate benefit to DUT is that it will provide library administrators with data to substantiate the value that Summon has to the DUT community, and will also provide useful data to improve the use of Summon among students and academics at DUT.

1.5.2 Limitations of the study

This study will be limited to the evaluation of SUMMON at the Durban University of Technology for the period February 2013 to June 2013. Due to time constraints and the breadth of this study, gathering of empirical evidence will be limited to:

- All first year students from the Faculty of Health Sciences who were trained in the use of Summon between February and June 2013;

- Academic staff from the Faculty of Health Sciences who were involved in the first year programme; and
- Subject Librarians from the Faculty of Health Sciences.

1.6 Clarification of key terms used in this study

The key terms used in the study are defined below. Definitions of other terms related to the study will be covered in chapter two.

1.6.1 Discovery tools/Service

Discovery tools are also referred to as Web-scale discovery tools or as web scale discovery services (WSDS). A discovery tool provides a "one stop shop" for library users where they can access the majority of library electronic resources. The tool has a 'Google-like interface' with a single search box. The value of discovery tools is that it is fast and boasts high relevancy ranking as compared to other databases.

1.6.2 Electronic Information Services (EIS)

EIS essentially refers to any database that can be searched by computers. This definition should now be expanded to include any device that can access a database. EIS in the library context refers to all library databases. This includes a single database such as the library catalogue to search discovery platforms such as SUMMON.

1.7. Division of Chapters

Chapter one provides a background for this study, highlights the research questions and sub-questions, the benefits of the study and the limitations of the study

Chapter two provides a detailed literature review on evaluation in academic libraries, to provide a theoretical framework for the study and relevant theories of evaluation will be covered. Different models and approaches in academic libraries will also be highlighted. The specific measures or tools that will be used for this study will conclude this chapter.

Chapter three discusses the research methodology used in this study.

Chapter four discusses the data analysis and interpretation of the results. Data from the document analysis, questionnaire and semi-structured interviews will be analysed.

Chapter five proposes a model to improve the use of Summon among students, academics and Subject Librarians.

Chapter six provides finding, recommendations and conclusions, and also highlights areas for further research.

1.8 Summary

This chapter provides a background to the research covered in this study. The research problem that was studied is highlighted, as well as the research questions, and sub-questions. Also, covered briefly, is the methodology that used in the study, as well as the benefits the study has on the library community. The next chapter will provide a detailed overview of literature used in this study.

Chapter Two: Review of the literature

2.1 Introduction

The research reported in this chapter is informed by a bibliographic review into the evaluation of electronic information services (EIS), such as web-scale discovery services. It is not possible to review all the literature on this topic, or include all the aspects of evaluation in this research. While the research will look at conceptual frameworks, toolkits, models and other approaches to evaluation of online systems, only the aspects that pertain to the use of online information systems such as WSDS in academic libraries will be included. The information-seeking behaviour of students has an impact on the use of library technologies, and research pertaining to this will be included in this study. While the focus of this research is on the use of the Summon by students, academics and librarians, an analysis of the usage of electronic resources is a documented method to determine the success of web scale discovery tools (Way, 2010), and will therefore be included in the discussion.

2.2 Theory, approaches and models used in evaluation

Wallace (2001:5) explains that "evaluation is usually undertaken to resolve some kind of problem or understand a situation better; these problems are related to "anomalous states of dissatisfaction, concern or uncertainty". Wallace (2001:3) describes key characteristics of evaluation which are critical for those undertaking evaluation; namely: evaluation results from design, not by accident; evaluation has a purpose; evaluation is about quality; evaluation is more than just measurement; evaluation does not have to be big; and finally, there is no one right way to evaluation. These characteristics demonstrate and affirm the flexible nature of evaluation, and the potential benefits it has for academic libraries at different stages of electronic development or e-evolution. Further, Shuffelbeam and Shinkfield (2007:4) describe evaluation as

"ubiquitous, permeating all aspects of scholarship, production, and service", and essential to improving all areas of interest to society".

The terminology used in evaluation can become confusing to both the library practitioner and the researcher. This section will first clarify key definitions used in library evaluation, then briefly discuss the role of theory in evaluation research, and finally discuss early and contemporary approaches used in the evaluation of academic libraries.

2.2.1 Evaluation terminology

According to Shuffelbeam and Shinkfield (2007:7), there have been so many approaches to evaluation over the years, that the "definitions of the term evaluation have themselves differed". A seminal author on evaluation in libraries, F. W. Lancaster (1998: 1) describes evaluation as "assessing the value of some activity or object". Other authors on the subject of evaluation provide more precise definitions. Some claim evaluation is a branch of research – the application of the scientific methods to determine, for e.g. how well a programme performs. Others stress its role in decision making, for e.g. the evaluation gathers data needed to determine which of several alternate strategies appears more likely to achieve desired results. Finally, some authors look upon evaluation as an essential component of management. These viewpoints, of course, are quite compatible. They all emphasise the practical nature of evaluation. Given these different approaches to evaluation, many authors introduced new terminology, namely: measurement, assessment, effectiveness, goodness, performance measurement, impact and outcomes.

A major influence on library evaluation came from the application of models and approaches from other disciplines, particularly management. These include benchmarking, Total Quality Management (TQM) and the Balanced

Scorecard. Subsequently, this has contributed to terms associated with evaluation to be used loosely and interchangeably. Markless and Streatfield (2006:1) support the view that there is too much inconsistency in the terms dealing with evaluation, and that new models for evaluation that are evidenced-based are now needed. For the purposes of the study, although meaningful distinctions could perhaps be made, evaluation theory is closely connected to evaluation models and to the way the term "evaluation approach" is sometimes used.

2.2.2 Evaluation theory

The foundations of evaluation theory began with program evaluation, dating back to the 1930s (Shuffelbeam & Shinkfield 2007: 35).Through the years, many evaluation studies have been undertaken both by academics (mostly responsible for the theories in evaluation) and librarians (practitioners), contributing to a wealth of information on the topic. However, for many librarians, understanding the foundations of evaluation and evaluation theory is not helpful in evaluative practices. This, according to Shadish, Cook and Leviton (1991: 2), could be because evaluation is a practice-driven field, or because evaluation theory is not very interesting. Although many of the studies do not make reference to any evaluation theory, one must keep in mind that the evaluation approaches and models share the same set of ideas. This raises the question, does one need to know about evaluation theory to undertake appropriate evaluation? Perhaps, we should begin by defining what evaluation theory is.

Chen (in Shaw *et. al.* 2006: 59) describes a theory as a frame of reference that helps humans understand their world and how they function within it. Shadish, Cook and Leviton (1991: 9) argue that without evaluation theory, "evaluation practice is little more than a collection of methods and techniques without guiding principles for their application". Mark (2005: 1) describes evaluation

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theory as follows: "without knowing relevant theory is a bit like learning what to do without knowing why or when". Of course knowing about evaluation theory does not mean methods or choices can be made automatically. Theories can be either too theoretical, or highly impractical for the application required.

Alkin in (Shaw *et. al.* 2013: 59) affirms this by describing evaluation theories as largely prescriptive that offer a "set of rules, prescriptions, prohibitions, and guiding frameworks that specify what a good or proper evaluation is and how evaluation should be done".

Aside from the potential for confusion with the many interchangeable terms in the evaluation landscape, the nature and role of theory in evaluation is often a contentious matter. Distinguished evaluator Michael Scriven in Shaw *et. al.* (2006: 58) asserted that there is little need for theory, or at least, some forms of theory, in evaluation. Scriven in Shaw *et. al.* (2006: 58) further claims that "it's possible to do very good evaluation without getting into evaluation theory, but (Mark. 2005: 2) cautions that "evaluators who are unknowledgeable about theory are "doomed to repeat past mistakes and equally debilitating, will fail to sustain and build on past successes"

Shadish *et. al.* (1991: 34) divide the history of evaluation into three stages. Stage one emphasizes the discovery of truth, stage two describes the way evaluation is used, and stage three, the integration of inquiry and utility. Alkin and Christie (2004) develop this further with their evaluation theory tree that traces the roots of modern of evaluation practice. (Alkin in Shaw *et. al.* 2013: 60).

2.2.2.1 The Evaluation Theory Tree

The evaluation tree was first introduced by Alkin and Christie in 2004. It is made up of three branches, namely: use, methods, and valuing. Evaluation theorists are placed in specific branches according to their main contributions

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to evaluation. The evaluation tree helps evaluators understand the "fundamental differences and points of connection among the most common theories and evaluation practice, and also demonstrates the change in views of theorists over time in light of experiences in evaluation practice (Shaw *et. al.* 2013: 60). This is affirmed by Christie and Alkin (2008:133) in their production of the third version of the evaluation theory tree where further developments are proposed to the tree. A subsequent international version produced by Carden, and Alkin in 2012 is illustrated figure 2.1.

Figure 2.1: Alkin's Tree of Evaluation Theorists
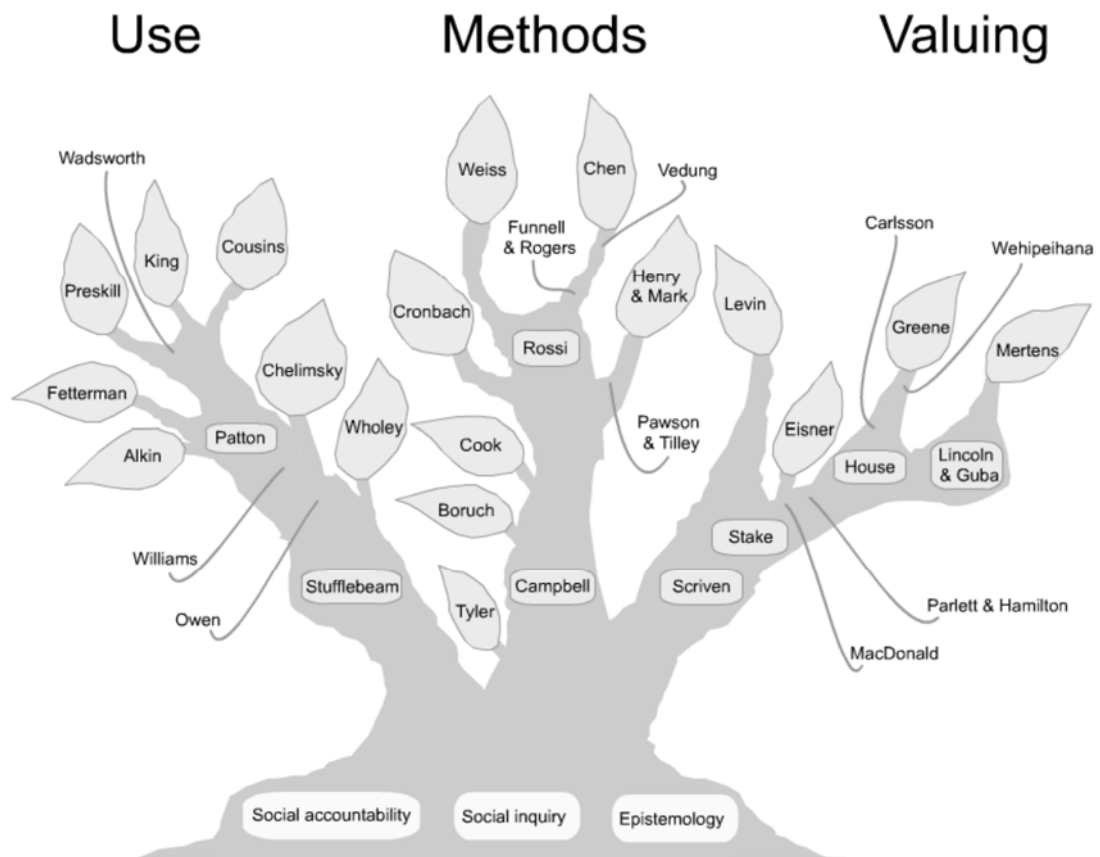
The researcher has chosen one theorist from each of the branches whose work has relevance to the study. The work of theorists Scriven, Campbell, and Patton will be discussed briefly.

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2.2.2.1.1 Michael Scriven (VALUE)

Michael Scriven has contributed extensively to the growth of evaluation theory and the evaluation profession. Scriven has sharply criticised evaluation ideologies that focus on achieving a developer's objectives rather than on meeting consumer needs (Shuffelbeam & Shinkfield 2007:367). Scriven has identified the key methods of evaluations as "scoring, ranking, grading, and apportioning and has noted that the logic of evaluation involves gathering and summarizing facts; collecting, clarifying, and verifying relevant values and standards, and synthesing evidence and values into evaluative conclusions" (Shuffelbeam & Shinkfield 2007: 368). Scriven has been credited for his conceptual contributions to evaluation, prominently for formative and summative evaluation practices that are used widely in educational assessments. "Evaluation in its formative application is an integral part of the development of a product or service. It provides continuous feedback to assist in planning, developing and delivering a program or service. In the summative role, evaluation searches for all aspects of the product or service and examines them against the assessed needs of the relevant consumers. IT compares the cost of product or service against "critical competitors" that usually offer less expensive or equally effective alternatives. This type of evaluation provides judgements about the extent to which the goals of a product or service validly reflect assessed needs (Shuffelbeam & Shinkfield 2007: 367).

2.2.2.1.2 Donald Campbell (METHODS)

Donald Campbell was one of the pioneers of the case study methods in the 1970s. This approach is suitable for programme evaluation as it looks at programmes in their naturally settings. Case studies attempt to solve accuracy issues by "triangulating multiple perspectives, methods, and information

sources" and look at programmes "holistically, and in-depth" within relevant contexts (Shuffelbeam & Shinkfield (2007:182).

2.2.2.1.3 Michael Patton (USE)

Michael Patton is credited for his extensive work on Utilisation–Focussed Evaluation (UFE), which he developed in the 1970s. According to Patton, in Shuffelbeam and Shinkfield (2007:434), UFE is a type of evaluation done for and with "specific intended primary users for specific, intended uses". Patton stresses that evaluation must be "judged by its use" and that the evaluator must focus on "its intended use by those will use the outcome of the evaluation" (Shuffelbeam & Shinkfield 2007: 434). The approach by Patton ensures that primary users are part of the evaluation process from the beginning, helping design the evaluation to ensure wider participation and ownership of the evaluation process, its findings and recommendations (Shuffelbeam & Shinkfield 2007: 444).

This section provided an overview of evaluation theory and also of the role theory plays in modern evaluation practices. The work of theorists Scriven (formative and summative evaluation), Campbell (case study) and Patton (user approach to evaluation) inform the evaluation approach used in this study. The next section looks at approaches to evaluation in libraries.

2.2.3 Approaches to evaluation in libraries

This section will look at early models by Baker and Lancaster (1977), William Orr (1973), a Conceptual framework for library metrics, Nicholson's evaluation matrix, return on investment, digital library evaluation, and evaluation of electronic information systems (EIS), including the eVALUEd toolkit.

2.2.3.1 Effectiveness, cost effectiveness and cost benefit

Baker and Lancaster (1977) proposed three levels to evaluation, which at the time applied to a distinctly print based library. However, much of their research provides the foundation for contemporary evaluation practices. Effectiveness deals with how well the service satisfies demands placed by the library user. Cost effectiveness considers the internal efficiency of the environment and how well this is meeting user needs. The cost benefit analyses whether there is demonstrable worth.

There are direct costs to the user; these include ease of interrogating the system and the format of output that is required by the library user. An important consideration as noted by Baker and Lancaster (1977: 141) is that the costs to the user should be measured in terms of the effort the user must expend to use the system and learn how to use the system, interpreting the form of output provided by the system, and in obtaining the actual documents referred to by the system. The quality of the results obtained by the user can be evaluated by looking at the coverage (recall, precision, novelty) and the completeness and accuracy of data.

Baker and Lancaster's work on evaluation has had an influence on modern evaluation approaches, and on the development of online systems for libraries. Lancaster had foresight into online systems in the 1970s when online systems were not common in libraries. Lancaster proposed that 'end users' could be responsible for their own searching, instead of being guided by intermediaries (Tenopir 2008: 823). Lancaster and Fayen in (Tenopir 2008: 824) predicted that future online systems should be user-orientated, should permit the ranking of output, should require less effort to use, should adapt to the user rather than the user having to adapt to the system.

2.2.3.2 Outcomes model

Richard Orr, in Mathews (2006: 19), is one of the oldest frequently cited evaluation models. Orr (1973) proposed an input, processes, output and outcomes or effect model. A set of resources (inputs) are organised and directed for purpose, and they become transformed and have capability to provide a set of services, in this case a new web scale discovery service. Once used, the services could have potential impact on the university community. The measurement of this impact or effect or outcome is critical for online systems.

2.2.3.3 Conceptual framework for library metrics

Combining the work of Orr and Donald King and Boyce in Mathews (2007: 19) provides a conceptual framework for library metrics that looks at evaluation from four different perspectives, namely: library, user, organisation, and community served. Two perspectives have relevance to the study, the user and the organisation. In terms of user, the following factors are considered, namely: what amounts to use or non-use; what are the factors affecting use; what is the purpose of use, the importance of the satisfaction of attributes of use, available alternatives and awareness of use. From an organisation perspective, the following outcomes are proposed, namely: has there been a time saving, improved learning or improved quality of work.

2.2.3.4 Nicholson's holistic evaluation matrix

In order to get a complete view of library services, the holistic approach to evaluation was developed. Researchers like Cronin, Griffiths and King, in Mathews (2007: 18), developed evaluation matrixes that 'mashed' work carried out by other influential researchers and practitioners such as F.W. Lancaster.

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The Cronin Evaluation Matrix suggests that library evaluation efforts should focus on costs, benefits and effectiveness. These three measures are mapped against three perspectives: user, management and sponsor. These perspectives can be changed depending on the intended outcome of the evaluation.

A simplified matrix was developed by Nicholson in 2004. Nicholson combined the matrixes of a number of scholars to produce a matrix that looked at evaluation of library services holistically. The matrix employed a library focus (internal) and a customer focus (external) and also mapped the library or its use into the matrix. Four key measures i.e. efficiency, effectiveness, benefits and quality are used to formulate valuable comparisons. The matrix was developed after extensive research on evaluation models and techniques, and is an appropriate tool in the measurement and evaluation of academic libraries. This matrix has many variables to be measured, and while it can be used for online systems, it offers greater value when evaluating the entire library service.

2.2.3.5 Return on Investment

Tenopir (2009: 1) highlights an important issue in the library environment; as practitioners, there are many assumptions we make in terms of the value of the library to academics and students. Tenopir (2009: 1) recommends that each "library devise their own strategies to assess and measure the value to their own faculty, students, and administrators because library collections are diverse and also libraries change from time to time as new services or collections are added". The author promotes the use of surveys among faculties and students to get "purpose of use, to record use of material others than e-collection and gather explicit measures of value" (Tenopir 2009: 10).

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2.2.3.6 Digital Library Evaluation

Saracevic, in (Zhang 2010: 88), groups evaluation criteria from the literature into six levels, namely: content, technology, interface, service, user and context. Zhang (2010: 107) proposes a new model for digital library evaluation that builds on the above criteria. The holistic model outlines specific criteria that should be used for "multifaceted, and multilevel" digital library evaluations. Of relevance to the study are the factors that are relate to the accessibility, to content and the service (ease of use, effort needed), to performance (usefulness, efficiency, and successfulness of task completion), and finally, to indirect outcomes (behaviour change).

2.2.3.7 Evaluation of electronic information system (EIS)

As automation of library services developed in the early 1990's, new models were developed to evaluate online systems such as the library catalogue. The studies initially focussed on how users were interacting with the user interface, and on how users were searching for information, shifting from the quantitative measures that were widely used before. With the evaluation of online library systems and library websites, data is usually gathered via surveys, observation, and transaction logs (Mathews 2007: 213). This data is used to develop user interface design, and/or measure the satisfaction of the user. There has been constant progress into developing suitable measures for libraries with authors referencing concepts from other fields including Science and Education to build more realistic evaluation measures for libraries in the context of the academic value that library systems and technologies offer to users.

2.2.3.7.1 Performance measures for electronic services

Bertot and McClure (1998), provide a two dimensional framework for the development of electronic statistics and performance measures. The model

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suggests that there are numerous components to electronic measures. These include: technical infrastructure (hardware and software), informational context (type of information), information services (face to face instruction, reference queries, and electronic services such as WSDS), support (service support and training, and management (budget, advisory boards).

2.2.3.7.2 Evaluation of search engines

Froehlich, in Wallace and Van Fleet (2001: 192), proposes a number of criteria to evaluate search engines, namely: speed, customisation, visual clarity, navigation, linking, and subject browsing. These are important considerations that can impact on the use of Summon, but fall under usability testing which is not the focus of this study.

2.2.3.7.3 The Justeis and Jubilee Projects

A number of projects originated in the United Kingdom to develop measures for library electronic services or EIS. The Justeis project was a sector wide study that aimed to "profile user behaviours and identify trends" of EIS use (Urquhart *et. al.* 2005: 349). The study found that students used Internet, OPAC and email while the use of e-journals was very low (Crawford 2006: 138).

The Jubilee project was a longitudinal study to understand "EIS barriers and facilitators to the effective use of EIS" (Urquhart *et. al.* 2005: 349). Findings from Jubilee Project produced a number of issues that are pertinent to EIS evaluation, namely: insufficient PCs for access, extent of integration of EIS into curriculum, ICT skills in relation to age of user, insufficient technical support, users' ability to evaluate EIS, discipline at different evolutionary stages, and

usage statistics from publishers were of limited value (Crawford 2006: 139). These issues are relevant to the evaluation of Summon use at the DUT.

2.2.3.7.4: The eVALUEd Toolkit

The eVALUEd toolkit is an evaluation approach that was specifically designed to support information services staff in Higher Education Institutions with the evaluation of electronic information services (EIS). eVALUEd is an acronym for "an evaluation model for electronic library developments" (Thebridge 2004: 72). The toolkit has been developed by the Evidence Based Research and Evaluation Services research team, based in the Library Services at Birmingham CITY University. The development has been funded by the Higher Education Funding Council for England (HEFCE) through its Fund for Good Management Practice. The toolkit was developed from evidence based research and is divided into four (4) sections, namely: how to evaluate EIS, EIS evaluation themes, tool archives, and custom tools (Crawford 2006: 63). Together, these sections provide evaluators with a step-by-step guide to planning and conducting an evaluation, with tools such as questionnaires and interview questions, and also allow the evaluator to create customised tools for specific purposes. The EIS evaluation sections are split into four themes to evaluate EIS, namely: user experience, management, planning, and impact. These themes are summarised below:

User experience: This deals with issues of access to the system from the library, on campus and elsewhere; how effective is the support provided for users of the system; how effectively the system is promoted to staff and students, and the perceptions of staff and students and expectations of the system.

Management: This aspect of the toolkit deals with the amount of use and number of users of the system; the effectiveness of the staffing arrangements

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for the system; how efficiently the budget is managed; the quality, quantity and range of resources available through the system, and finally, the system performance, interoperability and access management of the system.

Planning: The third aspect of the toolkit is used to check if the system outcomes are aligned to institutional outcomes and strategies, and also to evaluate the success of the collaboration between the library and academic departments and other external bodies.

Impact: The last aspect of the toolkit is the most crucial, but also the most difficult to evaluate. The impact of the system on learning and teaching within subject areas, the impact of the system on information skills and other graduate skills, and the impact of EIS on research and the production of scholarly works are high impact areas for further research. Thebridge (2004: 78) highlights two critical areas of the toolkit that have been developed to understand the impact of electronic services on learning and teaching. Table 2.1 and table 2.2 highlight the impact of electronic information services on learning and teaching, respectively. Also included in the tables are examples of demonstrable evidence to support learning and teaching outcomes, and the data collection methods that can be used.

Table 2.1 Support for learning – adapted from Thebridge (2004: 78)

How EIS supports learning	Evidence to support	Data collection
Encourages the use of new types of	Information skills	Student questionnaire
Encourages experimentation with	Skills sessions	References in course
Improves access to resources	Off campus	Number of new users
Help to improve learning skills	Information literacy	Training/ help
	ICT Skills	Student questionnaire

Table 2.2 Support for teaching – adapted from Thebridge (2004: 78)

How EIS supports teaching	Evidence to support outcomes	Data collection methods
Supports the planning of teaching	Development of new teaching resources	Questions for lecturers
	Identification of news teaching resources	Questions for library staff
	Information seeking tools which aid the finding of resources for courses	Questions for library staff
Supports the delivery of courses	Incorporated into new teaching materials	Statistics
	Embedding information skills sessions	Questions for library staff
	Joint assignments between library and academic departments	Questions for library staff
Supports assessment	Assignments encourage use of EIS	Statistics
Provides support for individual learners	Helping find resources	Questions for lecturers
	Develop information skills	Questions for library staff
	Design of tutorials	Questions for library staff
	Enabling self help	Questions for library staff

This tool is carefully developed taking into account various perspectives relating to online systems. The use of this tool is not widely documented in the literature, but individual case studies are highlighted on the eVALUEd website.

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. According to Covey in Thebridge (2004:76), the toolkit was not designed to be a 'one size fits all' kit, but to provide a subset of measures to give practitioners a starting point in the evaluation process.

This toolkit has particular relevance to this study as it was commissioned and developed for the purpose of evaluating electronic information systems and can be used to evaluate Summon. The toolkit is an online resource, and continued research is being undertaken to develop the toolkit which makes the toolkit a reflection of current practices in higher education libraries. The four themes provide an overall evaluation of an online system, providing evidence on the extent to which the library collection is being found by Summon, to understand how Summon is being used by library users, to identify and implement support services that improve the use of Summon, and also to establish the impact Summon has on teaching and learning.

This section covered the relevant evaluation theories and approaches to evaluation. Theories on evaluation provide the foundation for evaluation practice in libraries, and as such provide useful reference for this study, and future studies on WSDS. The other methods available to evaluate electronic services are also explored. The researcher proposes the use of the eVALUEd toolkit in this study as it provides holistic measures to evaluate electronic information services such as Summon. The next section will explore the literature available on WSDS in academic libraries, including research into Summon implementations.

2.2.4 Web Scale Discovery Service (WSDS)

This section will cover the implementation of WSDS. The researcher has included research into other discovery tools to provide a comparative view of Summon, one of the early entrants into the WSDS marketplace. Because web scale discovery is a relatively new phenomenon in academic libraries, not much literature exists that is able to provide a longitudinal view of the

implementation of these tools, and the impact these tools have had in institutions. However, WSDS has grown tremendously over the past three years with academic libraries across the continent implementing one of many proprietary or open source WSDS. This researcher has gathered the available literature on WSDS, and for the study arranged the material into themes, namely: Choosing a discovery tool, WSDS and its impact on library collections, WSDS and Usability Studies, studies into the use of WSDS, and WSDS and its impact on teaching and learning.

2.2.4.1 Development of WSDS for libraries

Teets (2009) in Johns-Smith (2012: 17) describe Web scale as "highly available, reliable, transparent, high performance, scalable, accessible, secure, usable, and inexpensive". NFAIS (2011) in John - Smiths (2012:18) describe Web scale discovery as the "link between information users, the platforms on which information resides ... in providing a single search box interface to pre-indexed metadata and/or full text ... intended to provide users with a simple, fast, and easy 'Google-like' search experience; to provide librarians with increased usage and awareness of holdings". Vaughan (2009:3) describes WSDS simply as flexible services that provide quick and seamless discovery, delivery, and relevancy ranking capabilities across a huge repository of content. Web scale discovery solutions are able to index a variety of content, whether hosted locally or remotely. Content can include library catalogue records, digital collections, institutional repository content, and content from databases and journals hosted. This definition highlights the many facets to discovery services that need to be explored when evaluating WSDS. The users, the platform, and the librarian, play critical roles in the use of WSD; this will be highlighted in the next section.

Breeding, in Way (2010: 215), made a call for a centralized search model similar tool similar to Google Scholar, as the then current federated searching

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tools could not compete with the "speed and power" of Google Scholar. Breeding (2010:34), in his influential work on discovery tools, called on librarians to "adopt and evaluate these new discovery tools" in the marketplace. The author further stresses that "through the experience of library users ... these products will either prove themselves or not" Breeding (2010: 34).

2.2.4.2 Choice of discovery tool

There is adequate literature on case studies that focus on choosing a WSDS. Two cases will be discussed in this section that have relevance to the study. John-Smith (2012) describes the process of selecting a discovery tool for the Kansas Library Association, these included the following processes, namely: an assessment of the external content providers and their ability to deliver quality metadata content to the discovery tool; an assessment of the integration with existing library systems, products, and services; and an assessment of discovery tool vendors and the value added services they provide.

Vaughan (2009: 2) relates a similar experience at the University of Nevada Library. The library considered an "internal perspective" ensuring widespread staff participation in the 'discovery conversation". A discovery task team was formed to identify, research, evaluate, and recommend a potential service to purchase. Initially, staff were provided the opportunity to share ideas on an aspect of discovery that should be included in further discussions. Staff were also involved in two surveys to collect specific information about discovery tools. The research undertaken at University of Nevada Libraries serves as framework for libraries considering purchasing WSDS.

At the site of the study, a discovery task team was instituted to identify, evaluate, and select a discovery tool for the DUT Library. The task team

considered the literature available at the time, and whilst, not as detailed as described by Vaughan (2010), the library followed a similar process of identifying and shortlisting of discovery services, communicating and collecting feedback from library staff, and finally, choosing and implementing a discovery service. The following factors were used in the evaluation of the discovery tools, namely: the breadth of the central harvested database, the functionality and user-friendliness of the tool, and the integration of the tool into the current library systems. In this case study, Summon was considered as the service that best suited the needs of students at DUT (DUT Summon Implementation documentation, 2011).

2.2.4.3 WSDS and its impact on library collections

One of the earliest implementations of a WSDS took place at the Grand State University in 2009. The study focussed on the impact of Summon on the use of library collections (Way 2010). A number of key statistics were drawn from COUNTER statistics and from the link resolver for a specified period. This study demonstrates interesting statistics post implementation; database statistics indicated decreased for the period while there was a dramatic increase in full text downloads via the link resolver, implying an impact on user behaviour and the use of library collections. This is evident at the site of this study. According to the statistics in the DUT Annual Report of 2012 and 2013, there has been an increase in the number of full text downloads of articles, and a decrease in the use of individual databases subscribed to by the library. Whilst this implies that Summon is being used by DUT library users, however, understanding the users of Summon, and the purpose Summon was used for, cannot be determined solely by undertaking a collection usage analysis.

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2.2.4.4 WSDS and Usability Studies

The research into WSDS changed focus from collection use to usability of WSDS. SUMMON is considered to be an online system, offering the user an interface to search for information. The overall performance of Summon is dependent on the usability of the interface. Jacob Neilson (1994) In Mathews (2007: 213) suggests that there are five attributes of a usable interface: it is easy to learn, it is efficient to use, it is easy to remember, it causes few errors, and it is pleasant to use.

The usability of the system is critical to the user. When accessing library resources, the user might sacrifice information quality for accessibility (fast, easy to use, single box searching, for example, Google), thereby contributing to the decline in the use of library resources. The following usability studies conducted at academic libraries will be discussed, namely: University Huddersfield and University of Northumbria, Edith Cowan University, Memorial University, James Madison University, and Illinois State University. The researcher has selected these case studies as they cover other types of WSDS beside Summon, and generic principles in usability testing. Conclusions from these case studies will inform the methodologies used in this research.

An evaluation of Summon was done at the University of Huddersfield and University of Northumbria, the sites of one of first implementations of Summon. Primary data was collected from library staff and students using surveys and focus groups. Thoburn (2010) provides a technical view of the implementation of Summon at both universities, which serves as a point of reference for other universities wanting to implement Summon. According to Thoburn (2010: 2), the results of the online survey and focus groups were positive, with students finding the Summon interface easy to use; the results from the focus groups corresponded with that of the online survey. Library staff, however, identified several issues, namely: full – text linking issues, coverage of databases, and loss of subject databases. Stone (2010: 44) identified further issues, namely:

staff training and marketing of Summon. Library staff, especially Subject Librarians, needed to be confident in the product to be able to train others to become ambassadors for its use.

Gross and Sheridan (2010) undertook a usability study at the Edith Cowan University to determine how first year undergraduate students used their new discovery tool, Summon. Summon was implemented in the first semester of 2010, to help students who were struggling with the "complex interfaces and myriad of choices" that the library website provides. The results of the usability testing were promising especially in terms of navigation, one of the primary objectives of the study. However, an alarming observation made by the authors was the reaction by students to the complexity of the content retrieved from their searches. This corresponds with other research by Combes (2008: 15), whose research reported that "first year students [are] unsophisticated and their lack of understanding of how the web works coupled with high levels of confidence, means that they will fail to realise that they do not know or if they can't find it on the web, it does not exist". The students demonstrated confidence in searching and finding results, but could not assess the difference between the formats of information found. The authors conclude that the simplicity of the interface may be "double edged" – on the one hand, students may have the confidence to search easily for information, but may not have "great understanding of information seeking or evaluation of resources" (Gross and Sheridan 2010: 245). The research covered a small cohort of first year students; this raises questions to whether the research findings will be different with a larger and different cohort of students.

A complex usability study took place at the Memorial University. Fahey *et. al.*, (2011:1) report on findings of a usability study of undergraduate students from two different faculties. The study focussed on the use of the Classic Catalogue, the library's online catalogue, and World Cat Local (WCL), a discovery service introduced at the institution in 2010. The students in the different faculties

displayed similar results in the use of both the catalogue and WCL, implying that the 'existing difficulties' experienced by library catalogues cannot be solved by introducing discovery services Fahey *et. al.*, (2011:13). There are barriers to information seeking that still need to be resolved through information literacy training.

A study by Fagan *et. al.* (2012) describes a usability study on the Ebsco Discovery Service (EDS) that took place at the James Madison University. The study included both students and Faculty who were taken through a series of tasks on EDS. The study found that users generally were able to navigate through the EDS interface and complete tasks successfully. However, the study also produced similar results to Fahey *et. al.* (2011). Tasks that were found challenging in other traditional interfaces, such as discriminating between source types, continued to be a challenge in the discovery tool interface.

Foster and MacDonald (2013) compare the usability of Summon and EDS at the University of Illinois. The goals of the study were to identify user behaviour while using discovery systems search features, and also to compare user experiences with Summon and EDS. Whilst the study highlighted differences in the interface and the availability of full text, the study found that there was a need for instruction on the discovery system at the point of need, and that the use of the in-depth features that were developed to improve searching was underutilised and needed to be included in further training. One of the observations from this study was the importance of understanding end users who will be using the discovery system. According to Foster and MacDonald (2013: 17) only when a 'library understands the expectations and demands of its users' will the choice of system and intended use be realised.

Fyn *et. al.* (2012) focussed their study on the preferences of students regarding the customisable features of Summon. The study highlighted the importance

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of understanding the user population through surveys and usability testing, and not making assumptions about search behaviour when using a new product. The findings from this research have particular relevance to the study as the default user interface was implemented at the site of the study, which, if not found useful to the intended users, could impact on use of Summon.

In summary, from the usability studies the following issues are raised which have relevance to the study, namely: despite easy to use interfaces of WSDS, there was still a need formal training or instruction; training needs to focus on evaluation of results and explanations of the different sources; there was a strong motivation to understand the need of the intended users of WSDS, and there are barriers to information seeking that cannot be resolved by new technology.

2.2.4.5 Studies on use of WSDS

Chapman *et. al.* in Popp and Dallis (2012: 194) used a user-centred research method when selecting and implementing the WSDS at the Michigan University in 2010. The authors used a combination of techniques to determine if the new WSDS was meeting the needs of the students. The authors promulgated the use of personas, guerrilla testing and unmoderated usability testing as part of the initial research. This was followed by user satisfaction and usability evaluation; results from these evaluations were positive. However, a number of 'linking' issues was highlighted which was expected from a newly implemented service. A post implementation evaluation of the Summon service was conducted six (6) months later to formally measure the effect of Summon had on research habits and perceptions of the library users. Data was drawn from two sources: a Web-based survey of library users, and usage data from some of the library's databases. The results from the usage analysis of databases demonstrated similar results to Way's (2010) research, where there was a significant usage of full-text resources after Summon was

implemented. The Web-0based survey produced interesting results: 36% of the users were choosing to start their research with Summon all or most of the time. In the survey, when asked which resources were used for specific tasks, students preferred Google Scholar when searching for journals, but used Summon for full text articles, advanced searches, and for reliable resources (Chapman *et. al.* in Popp and Dallis (2012: 207)).

Asher *et. al.* (2013) was aware of the complexity of the different search tools available for students, and undertook research into comparing the search effectiveness of a number of tools available to students at two universities, namely: Bucknell University, and Illinois Wesleyan University. The tools compared were Ebsco Discovery Service, Summon, Google Scholar, and conventional library resources. The aim of the research was to identify students' needs and instructional requirements using a holistic and user-centred understanding. The main findings from the research indicate that EDS outperformed Summon in most categories, and results from EDS were judged as having an average higher quality than other search tools. However, the research also highlights that there was a 'need for training regardless of the search tool implemented or adopted' (Asher *et. al.* 2013: 476). Critically, the authors found that "well prepared students could use a variety of tools effectively, while poorly prepared students are likely to struggle even with the best designed tools" (Asher *et. al.et. al.* 2013: 476). The authors conclude that libraries considering implementing and evaluating a discovery tool should focus not only on the quantitative measures of a search tools efficacy, but also on how the search tool fits "qualitatively into a student's search practices and workflows, and how much a tool contributes positively (or negatively) to a student's overall search experience" (Asher *et. al.* 2013: 476).

Mussell and Croft (2012) in their review of online search habits of distant students, surveyed students to understand their search habits when searching for information, and also analysed Summon usage data to determine if

Summon was being used, and if it had an impact on library database usage. Results from the survey found that 79% of students used library research resources, of which 66% of students used Summon. When searching for information for assignments from the library website where Summon was embedded, 61% of students commented that Summon improved their research abilities, and 28% of students had not used Summon. This corresponds to research at University of Southern California Libraries where pre- and post- Summon implementation usability testing was done. Results from the study indicated that basic tasks carried out by students improved after Summon became the default search box on the library home page (Palsson, in Popp & Dallis 2012: 303).

2.2.4.6 WSDS and its impact on teaching and learning

The research reported above points to the need for information literacy training or instruction for students. While discovery tools are simple and easy to use, students required training to use the tools effectively. In particular, students needed to be able to limit and evaluate the information that they found. The following case studies that highlight research on the WSDS and its impact on library instruction or information literacy training will be discussed, namely: Howard and Wiebrands (2011), Cardwell *et. al.* (2012), Buck and Mellinger (2011) and Cmor and Li (2012).

Howard and Wiebrands (2011) presented findings of a survey carried out with information professionals at the Edith Cowan University to identify the issues they experienced post implementation of Summon. The results from the survey indicated a shift in the perceptions of the information professionals over time. However, not all of these were positive perceptions. While the user community uptake of Summon was overwhelmingly positive, the information professionals had issues about the efficacy of Summon in finding full-text articles. The research stresses the importance of change management processes, and

including sufficient time for instructional redesign in the library, especially when a revolutionary product or service such as Summon is introduced. Li, in Howard and Wiebrands (2011: 9), suggests that "libraries [and information professionals] need to work hard to create positive first impressions of a new system and generate high levels of trust with users before they interact with the system". The authors elaborate on the role information professionals play as early adopters of new technology; librarians' confidence in the product will drive its use.

Cardwell *et. al.* (2012: 344) provides suggestions on how to improve the perceptions of librarians of a new product such as Summon. Librarians involved in the implementation and instruction underwent a 'reflective practice' as a means to improve teaching abilities. The librarians reflected on Summon teaching strategies post implementation by capturing answers to each of the following questions, namely: what worked well, what didn't work well, and what would be done differently in the next session. This continuous reflection and sharing of practice among the librarians had many benefits, namely: Summon instruction is based on practice, and not on premise, and that through this activity, librarians had a "sophisticated understanding of its [Summon's] capabilities and limitations" Cardwell *et. al.* (2012: 346).

Buck and Mellinger (2011) surveyed instruction librarians' perceptions of Summon's impact on instruction and students' information literacy skills at the Oregon State University. The survey was carried out immediately after implementation. The uptake of Summon by librarians was slow due to a number of factors. Firstly, respondents noted that there was an "inherent tension between research tools that are complex but effective (such as traditional library databases), and easy tools that pull up irrelevant results made it difficult for them to accept and integrate these tools into their instruction" (Buck and Mellinger: 23). According to the respondents, the discovery tool should meet the expectations of the students and the librarians

who deal with information literacy training. The librarians' responses in terms of Summon's impact on information literacy training was diverse, with 23% of respondents finding Summon had a negative impact on library training. Some respondents found that Summon search was "broad and confusing" for students, and that students were not "learning basic search skills" (Buck and Mellinger: 16). A few respondents found that training needed to focus on limiting and refining search results. The research concludes that librarians need to adjust library instruction as students' search habits change, and when search tools change. Some respondents were concerned that Summon may inflate students' perceptions of their own information literacy skills, and that teaching methods should be adjusted accordingly – "teaching them what they looking for" was critical to the information literacy training (Buck and Mellinger: 22). The research conducted by Buck and Mellinger (2011) has particular relevance to the study as it provides the context to understand the perceptions of Subject Librarians in terms of impact of Summon on information literacy training for first year students. The interview schedules for the Subject Librarians were adapted from the survey instrument used by Buck and Mellinger (2011).

Cmor and Li (2012) provide a useful framework for information literacy integration at the Hong Kong Baptist University. Post Summon implementation, the librarians changed the focus of information literacy training from "explanations and procedurals" to "understanding and evaluating information – how information is produced, types of information, how to evaluate quality and relevance of information based on different types and needs" (Cmor and Li 2012: 7). As part of the training programme, students are given the opportunity to compare the search results of Google and Summon, allowing for hands on exploration and practice.

The research reported in this section focussed on the development of WSDS, its impact on collection use and information literacy training. The next section

briefly explores information seeking behaviour of students or online search habits, an important determinant of WSDS use and adoption among Generation X or millennials.

2.2.5 Information seeking behaviour / online search habits

Libraries have continuously developed and implemented new technologies to improve the student's search experience with the expectation that students will use new technologies. The actual use of these technologies, however, is determined by the students' individual practices used to find information for leisure, study, and research purposes. This section explores the Generation X students' or Millennials' information searching habits, and the impact of this on technology development and adoption, and use of library resources.

Holman (2010: 19) discusses the crossroads that librarians as developers face in the wake of modern easy to use interfaces that millennials use when searching for information. Students entering university have grown up with 'simpler interfaces' that use natural language searching (instead of controlled vocabulary) as a default. The challenge, according to Holman (2010:19), lies in meeting the needs of students with new interfaces, algorithms and methods of instruction. Mussell and Croft (2012:1) argues that huge investments are made into constructing websites to improve access to library resources, however, evidence in the literature suggests that students still prefer to start their research using Google or some form of search engine (Mizrachi 2010: 573). The 2010 *OCLC Perceptions of Libraries* study found that 83% of college students started their research at a search engine as search engines are considered faster, more convenient and easy to use (OCLC 2011: 32). An earlier study by Lippincott in Mussell and Croft (2012:2) found that students' preference for Google is tied to its "simplistic and responsive design" as compared to traditional library resources which are "difficult to figure out". How

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students interact with technology has a huge impact on use, training, and implementation of further technologies in libraries.

A study by Mizrachi (2010: 571) examines and describes students' academic information and library behaviours. The findings from the study correlates with research carried out by Cardwell *et. al.* (2012) and Asher *et. al.* (2013) that conclude that librarians tend to make stereotypical assumptions about students and their searching behaviours, and base training and instruction on these assumptions. The author notes that, contrary to the vast reports on "digital natives and their multi-tasking, multi-connecting and always online lifestyles", and embracement of new technologies, students surveyed displayed a 'hybrid approach to searching for information that included high tech and traditional tools and methods (Mizrachi 2010: 579). The research found that despite outreach information literacy programs, students still preferred using a public search engine, and that future training should focus on highlighting the "rich alternate sources that the library offers", and how using these resources will improve learning, and not on 'discouraging the use of Google'. Research by Brophy and Bawden (2005: 510) provides support for incorporating Google into library training by demonstrating that Google is superior in terms of coverage and accessibility, while library databases were superior for quality of results. Griffiths and Brophy, in Brophy and Bawden (2005: 510), argues that while "accessibility is likely to be favoured over quality as a determinant of choice by students", librarians as facilitators of information literacy can play a vital role in changing this perception by "helping users appreciate the limitations of all available systems, and [suggesting] strategies to overcome them".

While libraries focus their strategies on changing library instruction to develop skills to use any search engine, an understanding of how millennials (librarians) adopt new technologies through the diffusion of innovations process will provide valuable support for the use and integration of these

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technologies into the library (Blackburn 2011: 663). The research is based on the premise that new technology is not adopted as quickly in the library as in other sectors, and that the new generation of librarians entering the workforce who "match the search habits" of a new generation of students (Blackburn 2011: 664) are likely to integrate these technologies earlier into the library. Libraries making decisions to adopt new technologies must get the buy-in from the librarians as lack of awareness or communication about the new technology is likely to lead to lower adoption rates. Blackburn (2011: 670) propounds a program for continued learning to increase the adoption rates among librarians. One of the challenges for adoption highlighted by Blackburn (2011: 670) was that it was difficult to assess new technologies especially when there are no benchmarks available when technology is newly implemented.

Based on Rogers "five adopter" categories, namely: innovators, early adopters, early majority, later majority, and laggards, Blackburn (2011: 670) classified Millennials as innovators and early adopters. "Millennials tune into what is cutting edge, whether it is technology, patron trend or new methodologies", and through their "technology-driven characteristics and personality traits, they are likely to serve as change agents as part of innovation process" (Blackburn 2011: 675). As innovators, they provide the organisation with knowledge about new technologies, and are able to implement and assess its benefits easily (Blackburn 2011: 676).

This section briefly looked at information seeking behaviour of millennials and highlighted important considerations for librarians when designing information literacy training. The personal adoption of new technologies by Millennial librarians impacts on the deployment of new technologies in libraries. Millennials' understanding of online search habits can contribute to a positive information literacy learning experience for students and also provides Millennials with customised technologies that meets their needs.

2.4 Findings

- WSDS is still new to the marketplace, its adoption, especially in developing countries, is low. DUT was the first institution in the South Africa (SA) to implement Summon, and the research on the use of Summon at DUT will be the first conducted in a South African academic library;

- From the literature, there is an abundance of research on WSDS implementations in the UK and US;

- There is a lack of standard measures available to evaluate WSDS. This is a growing field of research, with many academic libraries using single measures to evaluate WSDS;

- The research into the impact of WSDS on teaching and learning needs to be developed further, with only a limited number of studies exploring the impact of WSDS on learning;

- There are many barriers to the use of WSDS, these include access to technology, ICT skills, information literacy skills and difficulties in using WSDS; and

- No resource discovery tool covers the full range of online resources. In some cases, a resource discovery tool can mislead patrons by giving the false impression that all resources can be found.

2.5 Conclusions with relevance for proposed research

The following aspects from the literature have relevance for the study, and will be included in the study:

- Research into why and how patrons are using Summon;

- How easily Summon is meeting the needs of the users especially in relation to other sophisticated library databases.

- The relationship between students' approach to search tasks and the library information literacy training they receive (Gross and Sheridan 2010).

- Research into specific groups of users (Chapman *et. al.* in Popp and Dallis 2012).
- Research that includes a larger cohort of students from different disciplines (Gross and Sheridan 2010).
- Perceptions of librarians on the impact of Summon on information literacy (Buck and Mellinger 2011).
- Holistic measures such as the eVALUEd toolkit needed to evaluate Summon as many factors contribute to use of Summon.

2.6 Summary

This section reviewed the literature on evaluation theories, approaches and models that are used in the measurement of library services, specifically the use of electronic information services such as Summon. Other approaches to evaluation were also covered, namely: performance metrics for electronic services, digital library evaluation, return on investment, Nicholson's holistic evaluation matrix, and the eVALUEd toolkit. The impact of WSDS on collections, and also on information literacy was also highlighted; so too was the students' information seeking behaviour, as this contributes to student use of technologies. Finally, the research proposes relevant methods that will be used in this study. The eVALUEd toolkit, and the work of Buck and Mellinger (2010) and Chapman *et. al.* in Popp and Dallis (2012) will inform the methodology used in this study.

Chapter Three: Research Methodology

3.1 Introduction

This chapter covers the methodology used in this study. The following key aspects form part of this chapter: the research approach, the research design, the target group and site of the study, the data collection instruments, the data analysis and interpretation, issues of reliability and validity, ethical considerations, and the limitations of the methodology.

3.2 Short overview and goal of study

This study will focus on the use of the Summon by first year students, academics, and Subject Librarians of the Faculty of Health Sciences at the Durban University of Technology.

3.3 Research Paradigm

This investigation used a case study method within a broadly qualitative paradigm, although there is also a quantitative component in this study which will be elaborated on in the section on data collection techniques. Qualitative research is an approach that takes the "insider perspective" as the point of departure with the primary goal of "describing and understanding rather than explaining human behaviour" (Babbie & Mouton 2001: 270). Maree (2010: 4) describes qualitative research as "research that attempts to collect descriptive data of a particular phenomenon or context with the intention of developing an understanding of what is being observed or studied". A qualitative approach is also appropriate for analysing and interpreting both primary sources such as websites and reports and secondary sources such as surveys and interviews. This approach is appropriate as the techniques used in this study include a literature review, survey and semi-structured interviews.

Babbie & Mouton (2001: 270) distinguish qualitative research from other types of research by identifying unique features of qualitative research. These include:

- "Research is conducted in the natural setting of the actors" where participants experience the issue or problem under study;

- "The actor's perspective (insider view) is emphasized to understand social action in terms of its specific context";

- "The primary aim is in-depth descriptions and understanding of actions or events by collecting multiple forms of data such as documents, observation, and interviews other than relying on a single data source";

- "The research process is inductive in its approach" and involves interpretive theory in that researchers make interpretations of what they see, hear and understand; and
- "The qualitative researcher is seen as the main instrument in the research process", and collect data themselves through examining documents, observing behavior, or interviewing participants.

Gillham (2000: 11) sums up qualitative research as "getting under the 'skin' of a group or organisation to find out what really happens". In this case study, there are available statistics that describe the frequency of use, but do not indicate who is using Summon and how they are using Summon for academic purposes.

The researcher will use various survey methods to collect data from the participants in this case study. For this research, using the quantitative approach, the researcher used a self-administered questionnaire where mainly quantitative data was required from the largest group in the case study, namely the students. This approach allowed the researcher to easily make comparisons of the different variables as well as "aggregating and summarizing the data" (Bless *et. al.* 2006:43; Babbie 2013: 25).

According to Maree (2010: 157), the group administration of a questionnaire where the researcher is present to immediately clarify issues in the

questionnaire does optimise the responses from participants. The researcher was present at three of the four sessions where the questionnaires were administered. Due to the nature of the Radiology course, the researcher could not easily access a lecture period where all the students from the target group were available. The academic co-ordinator for Radiology was briefed on the content of the questionnaire, and administered the questionnaires on behalf of the researcher.

3.4 Research Design

A case study method was used to investigate, gather, describe and analyse data relevant to the research topic. Gillham (2000: 1) defines a case study as an investigation to answer "specific research questions" using a range of "different kinds of evidence" that is collated to get the best possible answers. A more detailed definition is provided by Bromley in Maree (2010:75), who describes case study research as a "systematic inquiry into an event or a set of related events that aims to describe and explain phenomenon of interest". Maree (2010:75) extends this description by adding that case study research offers a "multi-perspective analysis" taking into account the 'voices' and views of relevant groups, and the interaction between them".

Case studies are used to provide an in-depth view of a particular phenomenon in a defined setting. Denscombe (2007: 38) outlines some of its uses:

- "To describe what is happening in a particular study;

- To explore the key issues in a particular case study; and

- To explain the causes of events, processes or relationships within a setting".

Case study research offers many advantages**.** Maree (2010: 76) lists the following advantages of case studies:

- "It focuses on a system of action, rather than individuals or group of individuals. It can focus on one or two issues that are fundamental to understanding of the system being examined;

- It can use multiple sources and techniques in the data gathering process; and

- Complex relationships can be dealt with a case study".

There are also a number of disadvantages of the case study approach. Denscombe (2007: 62) highlights critical issues that face researchers who undertake case study research. These include:

- Credibility of generalizations made from findings of the research;

- Research lacking the degree of rigour expected from social science research;

- Difficulty in defining the boundaries of a case study; deciding which data to include or exclude;

- Negotiating access to a case study setting; and

- Dealing with the "observer effect".

Taking into account the above advantages and disadvantages, the case study research design suits this investigation because of the following:

- The study takes place in the natural setting of the participants;
- It is based on purposive sampling as students, academics and Subject Librarians are best suited to provide the relevant data;
- Multiple sources of data can be collected give a better understanding of a phenomenon or context; and
- The researcher was involved in the implementation of the Summon and has a deep understanding of the technical infrastructure, user interface, and training interventions for Summon.

3.4.1 Site of Study

The study will be conducted at the Durban University of Technology, a medium size university with approximately 23 000 students, and 2 500 academic and support staff. The university attracts mainly students from disadvantaged backgrounds, and has a large number of students who are funded by the National Student Financial Aid Scheme (DUT Management Information Systems 2013). The University's strategic focus has been on creating a student-centered environment that supports all aspects relating to learning in the institution. The university is made up of six faculties, namely: Arts and Design, Accounting and Informatics, Applied Sciences, Engineering and Built Environment, Health Sciences, and Management Sciences.

DUT Library supports the teaching, learning, and research needs of the university by providing comprehensive library resources, information literacy training, and postgraduate support and development. The library offers a decentralized service across six sites that mainly support faculty based training, and initiatives. A central Library Information Technology division is responsible for the IT infrastructure and technologies. The library has 80 staff members, of which approximately 33% are professional. The Subject Librarians have been offering integrated information literacy (IL) training that included the use of Summon for departments within the different faculties.

Summon, a Web-based discovery tool was implemented by the library in 2011, and Subject Librarians have been offering training on the use of Summon to the students, academics, and researchers. The study focuses on the use of Summon by students, academics and librarians.

3.4.2 Target groups

The target groups for the case study were students, academics, and Subject Librarians.

3.4.2.1 Students

The selected students attended Summon training between February and June 2013. These students were selected as per the class registers for information literacy training kept by the Subject Librarians for library records and student IL assessment.

3.4.2.2 Academics

Four (4) academics from the Faculty of Health Sciences who are responsible for the students identified in 3.5.1.2 will also be included in this study.

3.4.2.3 Subject Librarians

The two (2) Health Sciences librarians who undertake training for the Faculty of Health Sciences will also be included in this study.

3.4.3 Sampling

Sampling refers to the process used to select a portion of the population for the study. In qualitative research, non-probability sampling or purposive sampling techniques are used to select participants with "defining characteristics" or to select those who "hold data" needed for the study (Maree 2010: 79). Bless *et. al.* (2006: 106) argues that this method of sampling relies heavily on the knowledge of the researcher of the population under study. In this study, the researcher has knowledge of the target groups, and is able to make a judgement on the characteristics of a representative sample.

Purposive sampling was used in this study according to the following pre-determined criteria:

- All students who had attended training on Summon in the given period;

- The faculty that had the most Summon training completed in the given period;

- The department that recorded the highest number of students that attended Summon training;

- The academics responsible for these departments; and

- The Subject Librarians who conducted the training in these departments.

3.5 Data collection techniques

The study involved the use of primary sources to provide relevant information to the research. Empirical data was collected from students, academics and Subject Librarians. The mixed methods strategy used for collecting data combined the following specific techniques:

3.5.1 Documentation Analysis

An analysis of key documents that provide background information and input for analysis and interpretation for the study was completed. These documents include:

3.5.1.1 DUT Strategic Plan 2010-2012

The DUT Library Strategic Plan 2010-2012 makes specific reference to the implementation of new technologies such as the Summon Discovery Service that will enable seamless searching of all library resources.

3.5.1.2 Summon Implementation Project documentation

The project documentation contains important information about the implementation of the project, the design of the interface, and the training programme for students and academics.

3.5.1.3 Summon statistics for the period February 2012 to June 2013

The DUT library keeps detailed statistics of the use of Summon. Statistics on use is system-generated, and can be viewed weekly, and monthly.

3.5.1.4 Information Literacy Quarterly Reports

Statistics on the number of Summon training sessions held by Subject Librarians for departments is captured in the library quarterly reports. Data from these reports was drawn to identify which Subject Librarians had completed Summon training in the defined period.

3.5.1.5 Attendance registers of Summon training

Subject librarians keep printed registers of students who attended classes for verification purposes. These registers were used to identify the students that had attended Summon training.

3.5.1.6 DUT Library Annual Report 2012 and 2013

The Library Annual Report contains year-on-year data about the library's achievements. It contains important statistical information on the use of Summon, detailed statistics on training sessions that took place in the year, and also highlights challenges faced by librarians in the delivery of information literacy and Summon training.

3.5.2 Questionnaires

Questionnaires were used to gather data from students who attended Summon training in the given period. The use of questionnaire is a quantitative approach to research that involves the use of mainly closed-ended questions to collect empirical data from respondents. As discussed earlier, the quantitative data collected "opens up the opportunities for statistical analysis ranging from simple averages to more complex formulas" (Babbie 2013: 25).

The questionnaire administered to students contained a series of closed questions, and a limited number of open-ended questions. Questionnaires are particularly useful to elicit information for analysis from a large group of participants, and in this study, students were given the questionnaires in the classroom to complete, ensuring a higher response rate. The questionnaire included the following aspects, namely: gender, course, level of study, perceived level of computer literacy, use of library resources for assignment,

Summon training attendance, what Summon is being used for, problems when using Summon, and ideas on how Summon can be improved. The researcher included the gender variable in the questionnaire to compare the computer literacy skills, and information searching habits, and Summon use among males and female students in the different courses. **See Appendix B for the student questionnaire**.

3.5.3 Semi-structured interviews

Interviewing is essentially a method to collect information from participants. According to Kumar (2014: 176), interviewing involves "face to face interaction between two or more individuals with a specific purpose in mind".

3.5.3.1 Academics

A semi-structured interview schedule was used to interview the academics from the four departments in the Faculty of Health Sciences.

The semi-structured interview allowed the researcher to "explore intensively and extensively into a situation" to understand the role the academics plays in students' information literacy and Summon training, and in the use of Summon. The interview schedule covered the following aspects, namely: course, information seeking behaviour, perceived literacy levels of students, awareness and use of Summon, integration of the use of resources into assignments, requests for information literacy and Summon training, barriers to use of Summon, and suggestions for improvement to Summon**. See Appendix C for interview schedule.**

3.5.3.2 Subject Librarians

A semi-structured interview was used to capture information from the two (2) Subject Librarians that carried out the Summon training in the four departments of the Faculty of Health Sciences. As the two Subject Librarians had varying levels of involvement in the training of Summon, the semi-structured interview allowed the researcher to dig deeper to understand the impact of the liaison role played by librarians, and the subsequent impact on

training delivered. Subject librarians were asked similar questions to academics, but included the following unique questions, namely: courses, level of integration, extent of training, problems identified when training on Summon, and using Summon for information services. **See Appendix D for interview schedule.**

The tools used to collect data from the participants in this study were highlighted above. The next section briefly describes the data analysis techniques that were used in this study.

3.6 Data analysis and interpretation

According to (Denscombe 2006: 235), the purpose of analysing data is to get a better understanding of the data to "describe its elements, explain how it works, or interpret what it means". Interpreting data involves looking for "patterns and regularities in the data to explain how and why things happen".

The data collected from the questionnaire will be analysed using SPSS, a statistical analysis package. The open-ended questions will be analysed to extract themes which will be input into SPSS. SPSS allows the researcher to determine the frequency of data and events easily and to effectively report on this data.

Data from the semi-structured interviews for Subject Librarians and academics will be input into SPSS. Data from the open-ended questions will be extracted as themes, and then entered into SPSS. This allows the researcher to make cross comparisons with data from the students.

3.7 Reliability and Validity

In research the issue of quality in research can be addressed by verifying and ensuring that results are both reliable and valid. Reliability and validity are the technical terms that refer to the objectivity and credibility of research.

3.7.1 Reliability

Reliability in research implies that the results of the research will remain consistent when obtained on "different occasions or by different forms of the same assessment or measuring mechanism" Maree (2010: 37). According to Babbie (2013: 195), "creating specific reliable measures diminishes the richness of meaning, and the best solution is to use several different measures, tapping into different aspects of each concept". Reliability in this study will be achieved by triangulating data from three (3) sources, namely: data from student questionnaires, Subject Librarian interviews, and academic interviews will be analysed.

3.7.2 Validity

Broadly, validity means that the data collected and the methods used to collect the data are right (Denscombe 2006: 328), or that we are "measuring what we say we are measuring" (Babbie 2013: 191). In qualitative research, it is not possible to replicate the research and get the same results. Therefore, it is necessary to ensure that the data collected is valid. The researcher has ensured internal validity by identifying experts in the library to review the questionnaire and interview schedules.

3.8 Limitations of methodology

The two (2) main limitations of the methodology used in this study are listed below.

3.8.1 Determining accurately the number of sessions attended by students

Due to the nature of the extended and mainstream curriculum in some courses, registers for students who attended training on Summon did not accurately reflect student attendance. The researcher has made provision to include all mainstream students who attended a training session, despite not being captured on the class registers.

3.8.2 Access to academics responsible for the courses

Due to the multiple levels of coordination in the academic departments, selecting an academic interviewee can be a challenge. There are instances where the coordination of library training, and teaching is done by different lecturers, posing a challenge as to which of two academics hold the data required for the study. The researcher interviewed the four (4) academics responsible for the coordination of library training as they have an understanding of the contents of the training and are in constant communication with the Subject Librarian during the year.

3.9 Ethical considerations

Various ethical considerations were dealt with by the researcher. Issues relating to the confidentiality of personal information collected from participants were dealt with by seeking consent from each participant before they completed the questionnaire, and before starting the interview process. **See Appendix A for the informed consent form**. In terms of the sensitive data, although collected for recording purposes, no names or student numbers collected were used in the analysis and presentation of the data.

3.10 Summary

This section explained the methodology used in this study. This included the research paradigm, research design, issues of reliability and validity, limitations of the methodology used, and the ethical considerations for this study. The next section will present, analyse and interpret the data collected from the students, academics, and librarians.

Chapter Four: Data Analysis and Interpretation

4.1 Introduction

Summon is designed to be a simple tool to use. Summon is described as a 'Google like' library tool that is fast, and able to find relevant results that meet student needs. In this section, the data collected from students, academics, and Subject Librarians will be analysed, and reported on using tables and graphs. Tables and graphs represent the data in a simplified and understandable format for the reader.

The researcher will also interpret the data collected in relation to the issues raised in Chapter Two about the usage of Summon. In particular, due to the emerging nature of research into Summon, and other discovery tools, Gross and Sheridan (2010: 236) found that studies on the usage of Summon were too limited, and focused on understanding broad issues about Summon, such as usability studies, general student population usage studies, and measures of library resource usage. They found that discipline-specific research, such as this study, was essential to be able to get deeper insight into the usage of Summon. This research provides a holistic view of usage among students by gathering and analysing data from two important discipline-based role players that influence usage of Summon among students.

4.2 Response Rates

The response rate was high in this study as the researcher undertook a collective administration of the questionnaire and was available in the classroom to clarify issues relating to the questionnaire for the majority of the courses. The academic coordinator from Radiography served as a proxy for the researcher to administer and collect the questionnaires from Radiography students. The collective administration of a questionnaire increased the number of responses received from students.

4.2.1 Questionnaire: first year students from the Faculty of Health Sciences

Subject librarians for the Faculty of Health Sciences provided class registers of those students who attended mainstream curriculum IL training in the specified courses during February and June 2013. Academics responsible for these courses made provision in their classes for the filling out of the questionnaire, and the immediate collection afterwards. This contributed to a 100% response rate for the all the courses. However, the rollover of ECP students into the first year mainstream courses for Dental Technology and Radiography meant that students who formed part of the ECP group also filled out questionnaires. To ensure that the sample correctly represented the target group, the researcher excluded twelve (12) questionnaires from Dental Technology, and sixteen (16) questionnaires from Radiography.

To accommodate for questionnaires that were not completed fully, the researcher will use the valid percentage of the results, instead of the actual percentage calculated for each question. The valid percentage excludes those questions not answered by all students, so it does not report the 'missing' responses. This will ensure consistent and factual reporting of results. The student questionnaire responses were captured using SPSS version 22, a statistical reporting tool. Open-ended questions were subject to content analysis; themes were derived from the responses received and input into SPSS for analysis.

4.2.2 Interview: Academics from the Faculty of Health Sciences

Four (4) academics were interviewed by the researcher. These academics were purposively selected as they were involved with the first year students in the respective courses. For Dental Technology and Child and Youth Studies, the academics that were responsible for the courses in the specified period were not available for an interview due to staff movements, and the current incumbents for these two courses were interviewed. The researcher used a semi-structured interview schedule to conduct the interview, and the interview

transcripts were analysed. The quantitative data collected was captured using SPSS, and content analysis of the qualitative data was completed to expose the main themes.

4.2.3 Interview of Subject Librarians from the Faculty of Health Sciences

Two Subject Librarians were interviewed. A semi-structured interview schedule was used to conduct the interview, and the interview transcripts were used to analyse the responses. The data was entered into SPSS. All qualitative data was analysed using content analysis, and main themes were extracted.

4.3 Data analysis and interpretation of results

This section provides an analysis of the data collected from the student questionnaire and the semi-structured interviews held with academics and Subject Librarians. The section is divided into four sub-sections, namely: student questionnaire results, results from interviews with academics, results from interviews with Subject Librarians, and finally, comparison of results among students, academics and Subject Librarians.

4.3.1 Student questionnaire results

The researcher has presented the results of the questionnaire mainly using graphs and tables. The researcher has made cross comparisons between variables to highlight relationships and patterns in the data that support the objectives of the study.

4.3.1.1 Profile of respondents

The number of females is more than two times the number of males in the sample. As seen in the Table 4.1, 68.6% of students in the sample were females. This is not unusual for courses in the Health Sciences, especially Radiography, and Child and Youth Studies. This is also representative of the

student population in the Faculty of Health Sciences where the ratio of male to female is 1:2 (Management Information System, 2013). Table 4.2 breaks down the gender ratio in the different courses. With the exception of Chiropractic, all other courses had a majority of females in the course. The researcher included the gender variable in the questionnaire to compare the computer literacy skills, and information searching habits, and Summon use among males and female students in the different courses. However, due to the skewed representation in the different courses, only comparisons for computer literacy skills were included in the analysis.

Table 4.1: Gender representation in the sample (n = 86)

	Frequency	**Percentage**	**Valid Percentage**
Male	27	31.4	31.4
Female	59	68.6	68.6
Total	86	100.0	100.0

Table 4.2: Gender representation in the specified courses (n = 86)

Relationship between Gender and Course of Study					
	Courses/s of study				Total
	Child & Youth	Chiropractic	Dental	Radiography	
Male	1	16	3	7	27
Female	20	17	2	20	59
Total	21	33	5	27	86

A study completed in Naidoo (2012) titled "Impact of the digital divide on information literacy training of Extended Curriculum Programme students at

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the Durban University of Technology" highlighted major computer skills deficiencies among Extended Curriculum Programme students in the Faculty of Health Sciences. To successfully attend library training, students need a basic level of computer literacy. Table 4.3 demonstrates the perceived levels of computer literacy of students in the sample. Only a small percentage of students (9.3%) perceived their computer literacy skills as being weak.

Table 4.3: Perceived level of computer literacy skills (n = 85)

	Frequency	Percentage	Valid Percentage
Excellent	20	23.3	23.5
Good	57	66.3	67.1
Weak	8	9.3	9.4
Total	85	98.8	100.0

Table 4.4 breaks down the computer literacy levels by course. A third (1/3) of Chiropractic students rate their computer literacy skills as excellent, and 57% as good. This could be attributed to higher admission requirements for this course.

Table 4.4: Contingency table: course vs computer literacy levels (n = 85)

		Rate computer skills to find info			Total
		Excellent	Good	Weak	
Courses/s of study	Child and Youth	2	18	1	21
	Chiropractic	11	19	3	33
	Dental	2	2	1	5
	Radiography	5	18	3	26
Total		20	57	8	85

In the table below (Table 4.5), 61% of females reported a perceived computer literacy level of good and excellent, and 29% of male students show the same computer literacy levels.

Table 4.5: Contingency table: Gender vs computer literacy levels (n = 85)

		Rate computer skills to find info			Total
		Excellent	Good	Weak	
Gender	Male	5	20	1	26
	Female	15	37	7	59
Total		20	57	8	85

In summary, there are more males than females in the sample, with females representatively higher in each of the courses, except Dental Technology. Female students perceive their computer literacy skills higher than those of males. The next section will focus on the training attended by students.

4.3.1.2 Training interventions, and aspects for further training (n=84)

This section covers the number of sessions attended by students, aspects of the training they found useful, and also aspects for which they needed additional training. Table 4.6 details the number of sessions attended by students in each course. Two students did not complete this question. Seventeen (17) students from CYC were exposed to more than two training sessions, while the majority of students (26 of 33) students from Chiropractic attended at least one training session. All Radiography students, with the exception of one, attended a training session.

Table 4.6: Number of training sessions attended where Summon was taught by course (n = 84)

	Training sessions attended on Summon			Total
	One session	Two sessions	More than two sessions	
Child and Youth	2	2	17	21
Chiropractic	26	1	6	33
Dental	3	0	1	4
Radiography	25	0	1	26
	56	3	25	84

4.3.1.2.1 Number of training sessions

In terms of Summon training, students from CYC, in particular, attended more than two sessions on Summon. No significant deductions can be made from the number of sessions attended and the use of Summon. The Subject librarians, however, agree that in the absence of any computer literacy

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intervention by the Faculty early in the first term, a minimum of two sessions should be allocated for Summon training – see table 4.4.1. Library training sessions are mandatory, but some students do not attend. A record of attendance is kept by the Subject Librarian and shared with the academic, however, punitive measures for non-attendance, if any exist, are unknown. Compulsory attendance of a computer literacy training session will ensure increased use and less time wasted during library training to teach computer skills.

From the years of experience of teaching IL, Subject Librarians found that students tend to focus on training if they see an immediate benefit. In cases where it is possible to integrate IL training using class assignments, Subject Librarians are easily able to direct student searching behaviour to using Summon. This embedding or integration is key to successful training interventions, and encouraging the use of Summon and library resources.

To give credibility to training interventions, attendance by the academics is advocated by the Subject Librarian. Only the academic from Chiropractic attended a library session on Summon – see Table 4.27. The academic's attendance should have had a positive influence on the use of Summon by students. However, as demonstrated in table 4.17, the Chiropractic students were lowest users of Summon with 36% of students using Summon post training.

In Table 4.6, 84 students indicated that they attended at least one training session on Summon. When prompted if further training was needed, 44 of these students required further training. The remaining 40 of these students did not require additional training. 16 of the 21 CYC students needed additional training, while only 14 of the 33 Chiropractic students requiring additional training – see table 4.8.

To ascertain whether the training was effective, students were asked which aspects of the training they found most useful or least useful. Table 4.7 maps out the aspects that were considered most useful or least useful. Students

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were allowed to choose more than one option for this question. 37 of the 53 students who responded to the demonstration of full-text searching found it most useful. A significant number of students found the advanced searching most useful (45 of 60). An average of 19% of the students remained neutral in their response.

Table 4.7: Aspects of the training found most useful (n = 54)

	Demo of full-text	Limiting search	Advanced search	Email results
Most useful	37	31	45	24
Least useful	7	13	7	16
N/A	9	11	8	14
Total	53	55	60	54

Table 4.8: Perceived need for additional training by course (n = 84)

		Require additional training on Summon to use effectively		Total
		Yes	No	
Course of study	Child and Youth	16	5	21
	Chiropractic	14	19	33
	Dental	2	2	4
	Radiography	12	14	26
Total		44	40	84

Table 4.9 maps out the relationship between the perceived levels of computer literacy of students to the need for additional training. Generally, as demonstrated in the work of Naidoo (2012), students who have a higher level

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of computer literacy are able to use library tools more easily. Thirty-two (32) students who perceived their computer literacy skills as 'good' required additional training.

Table 4.9: Relationship between perceived computer literacy level and the need for additional training (n = 83)

		Require additional training on Summon to use effectively		Total
		Yes	No	
Rate computer skills to find info	Excellent	9	11	20
	Good	32	24	56
	Weak	3	4	7
Total		44	39	83

This section covered the training sessions held for students. With the exception of the two students who did not attend training, the rest of the students attended at least one training session. From the responses in the questionnaire to the students, it was identified that students required additional training. Table 4.10 provides a summary of the results. For this question, students were given more than one option. Understanding the different formats of information is ranked the highest with 24 students needing additional training for this aspect. 20 students required advanced training aspects to be covered in additional training.

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Table 4.10: Aspects identified for further training

	Frequency
Evaluation of search results	10
Understanding the different formats of information	24
Limiting searches	11
Advanced searching	20
Full text linking options	14
Emailing results	12
Total	91

4.3.1.3 Student use of library resources

Information seeking behaviour is described by Wilson (2010:1) as the "totality of human behaviour in relation to sources and channels of information, including both active and passive information-seeking". To understand how students used DUT resources, students were asked a series of questions to understand how they searched for information needed for assignments and projects. These included: how often they accessed the library; where they accessed the library from; the starting point for research; and whether Summon was used as a tool for searching. Table 4.11 is encouraging as it shows that 33% of students used the library resources more than once a week, in relation to the 50% of students who access the Internet more than once a week for other activities in Table 4.12.

Table 4.11: Use of the Internet for library resources (n = 85)

	Frequency	%	Valid%
Daily	7	8.1	8.2
More than once a week	29	33.7	34.1
Less than once a week	41	47.7	48.2
I never access anything from DUT libraries online	8	9.3	9.4
Total	85	98.8	100.0

Table 4.12: Accessing the Internet for other activities (n = 85)

How often students access Internet		
	Frequency	Percentage
Daily	20	23.3
More than once a week	43	50.0
Once a week	21	24.4
I never access anything on the Internet	1	1.2
Total	85	100.0

Table 4.13 describes the frequency of use of library resources by students in the different courses. Chiropractic students accessed library resources more frequently than other courses with 18 of the 21 students using the library resources at least once a week. This could be attributed to the level of IL integration in this course or the nature of assignments and projects.

Table 4.13: Course and use of library resources (n = 85)

	How often access DUT library resources				Total
	Daily	More than once a week	Once a week	I never access anything from DUT libraries online	
Child and Youth	2	10	8	1	21
Chiropractic	2	10	18	3	33
Dental	0	2	3	0	5
Radiography	3	7	12	4	26
	7	29	41	8	85

In order to ascertain the use of Summon, the starting point for searching for information needs to be determined. Table 4.14 summarizes the different resources the students would choose as a starting point to find information. Interestingly, only a small percentage of students started their research at a library resource. Only 14% of students indicated that they used Summon, and a further 8% used a library database. Over 75% of students used either Google or Google Scholar as a starting point for searching. There was no significant difference between starting points for searching between male and female students. In Table 4.15, 65% of female students used Google, as compared to 70% of male students. The low use of Summon (14%) and Google Scholar (11%) as starting points for information seeking, and the extremely high use of Google is characteristic of searching habits of the Generation X student. This correlates with research completed by Mizrachi (2010: 579) where the majority of students started their research on a public search engine, and also with research conducted by OCLC (2011: 32) that found that 83% of college students started their research at a search engine, as search engines are considered faster, more convenient and easy to use.

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Table 4.14: Starting point for information searching (n = 84)

	Frequency	Percentage
Summon	12	14.0
Library databases	7	8.1
Google	56	65.1
Google Scholar	9	10.5
Total	84	98.0

Table 4.15: Gender and the starting point of research (n = 84)

	Where you start searching for information				Total
	Summon	Library databases	Google	Google Scholar	
Male	5	1	19	2	27
Female	7	6	37	7	57
Total	12	7	56	9	84

Only a small percentage of students used Summon as the starting point of research. However, when asked what library resources were consulted three months after Summon training, 47.7% (41) of the students indicated that they used Summon, while 40.7% (35) of students accessed other library resources as well; this included the library catalogue (20%), library databases (26%), Subject Librarians (20%), eBooks (41%). 11.6% (10) of students never accessed library resources for assignments and projects (Table 4.16).

Table 4.16: Use of the library resources in the past three months (post-training) (n = 86)

Use	Frequency	Percentage
Summon	41	47.7
Other library resources	35	40.7
Did not use library resources	10	11.6
Total	86	100.0

The table below demonstrates the relationship between the course and the use of Summon by students in the course. More than 50% (11) of CYC students used Summon, while a smaller number of students (36%) from Chiropractic used Summon. There was no significant difference in the use of Summon by Radiography and Dental Technology students, scoring 56% and 60% respectively. The low use of Summon by Chiropractic students could be attributed to their high levels of computer literacy skills (perceived), or their ability to find information they require using other methods.

Table 4.17: Relationship between the course and use of Summon (n = 41)

		Resources used	Total
		Summon	
Courses/s of study	Child and Youth	11	11
	Chiropractic	12	12
	Dental	3	3
	Radiography	15	15
Total		41	41

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Further questions regarding use of Summon focused on use of Summon for the completion of assignments and projects. Results in Table 4.18 are promising as 64% (55 of 81) of the students indicated that they used Summon for this purpose. For assignments and projects, the first choice for full-text information came from Google and Google Scholar (combined 50%), and as a second choice, Summon was used by 10.5% of the students. As a tool of first choice, Summon was used by 17% of the students, as compared to Google and Google Scholar which dropped to 30% see table 4.14

Table 4.18: Use of Summon to complete assignments and projects (n = 81)

	Frequency	Percentage	Valid Percentage
Yes	55	64.0	67.9
No	26	30.2	32.1
Total	81	94.2	100.0

Twenty-one (21) responses were received from students about non-use of Summon for assignments and projects; these responses are summarized in Table 4.19. Six (6) of the 21 students used Google, while it never occurred to three (3) students to use Summon. Interestingly, five (5) students who attended training had forgotten how to use it, and lastly, two (2) students found Summon difficult to use.

Table 4.19: Non-use of Summon to complete assignments and research projects (n = 21)

Themes	Frequency
Forgot how to use Summon	5
Use Google	6
Didn't think about using Summon	3
Summon difficult to use	2
No need to use Summon	2
Use of other resources	1
Use own methods to find information	1
Not applicable	1
Total	21

Although students were using Summon as seen in Table 4.19, the appropriateness of Summon as a tool to find relevant information for assignments and complete projects needed to be ascertained. Table 4.20 shows the percentage of students who found Summon an appropriate tool to find relevant information. 47 of the 84 students who completed this question responded that using Summon led them to relevant information. A small number of students (12) replied that it did not improve their ability to find information. Of particular concern is the large number of students (30%) who were unsure about whether Summon improved their abilities to find relevant information. Table 4.21 outlines the comments received from students about why they felt Summon helped them find relevant sources of information. Of the 46 comments, 41% (19) of the students found Summon to provide accurate and relevant information. Six (6) students found Summon provided information faster, and was easier to use. An alarming 26% (12) of the students still did

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not know to use Summon, despite the majority of the students having attended a session on Summon. Also, as seen in Table 4.19, Table 4.21, and Table 4.22, students find Summon difficult to use. This could indicate that more training is required or that the method in which training is carried out needs to be evaluated.

Table 4:20: Has Summon improved ability of finding relevant sources for assignments (n = 84)

	Frequency	Percentage	Valid Percentage
Yes	47	54.7	56.0
No	12	14.0	14.3
Unsure	25	29.1	29.8

Table 4.21: Reasons students found/did not find relevant sources using Summon (n=43)

	Frequency
Faster access to information sources	6
Accurate and relevant content found	19
Use Summon always	3
Don't know how to use Summon	12
Difficult to use Summon	3
Cannot find relevant information	3

Table 4.22 summarizes the factors that students perceive as influencing the use of Summon. The responses have been grouped in themes positively or negatively influence the use of Summon.

Table 4.22: Factors that influence use of Summon (n = 62)

Themes		Frequency
Positive	Ease of access	9
	Meets information need	9
	Time saving	5
	Lecturer influence	2
Negative		
	Technical issues	2
	Difficult to use	10
	Lack of library resources	2
	Lack of skills	11
	Lack of technology	1
Neutral	Do not use Summon	3
	Not applicable	9
Total		62

One of the determinants of use is the accessibility of Summon to the student population. As the library's primary resource, Summon is available on- and off-campus 24/7, and is also mobile compliant, making accessibility easier for students with mobile devices. With all DUT libraries, and large parts of DUT campuses having dedicated WIFI, accessibility is greatly enhanced. A single sign-in (username/password) also facilitates easy access to the library's vast collection. Table 4.23 highlights the main access points/devices used to search Summon. Students were prompted to choose more than one option for this question. Students also indicated non-access from the different

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locations; this is evident in the number of responses displayed in row one (0 times accessed) of table 4.23.

Table 4.23: Access to Summon from different locations

No. of times accessed	Library Computer	Smart Phone on campus	Smart Phone off campus	Personal laptop on campus	Personal laptop/ pc from home	Internet Cafe
0	16	36	32	36	29	38
1 - 2	21	9	7	7	8	3
3 - 4	15	5	1	2	4	4
5 - 6	6	2	3	3	4	0
> 6	18	5	10	6	10	4
Total	76	57	53	54	55	49

The use of library computers to access Summon is rated the highest with 21 of the 76 students who completed this question accessed Summon more than once from the Library. 18 students accessed Summon more than six (6) times using the library computers. The key selling point to Summon is in its ability to deliver the library content to users 'anywhere, anytime'. With Summon being mobile-compliant, many students having access to Smart Phones, and the availability of Wi-Fi in the libraries, and other strategic areas on campus, access via these devices is surprisingly low. Nine (9) students accessed Summon more than once, and only five (5) students more than six (6) via Smart Phones. The use of Summon from off-campus (more than once) is promising; ten (10) students gained access from home using a laptop/pc more than six (6) times. The use of Summon from an Internet café is satisfactory considering the cost implications for access, with 11 students having accessed Summon more than one (1) time from this type of location.

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Students were asked to rate their experience with Summon as a tool to find information. 50% of the students were either satisfied or very satisfied with Summon as a tool to find information. 25% of students chose to remain neutral when responding to this question.

Figure 4.1: Experience using Summon as a tool to find information
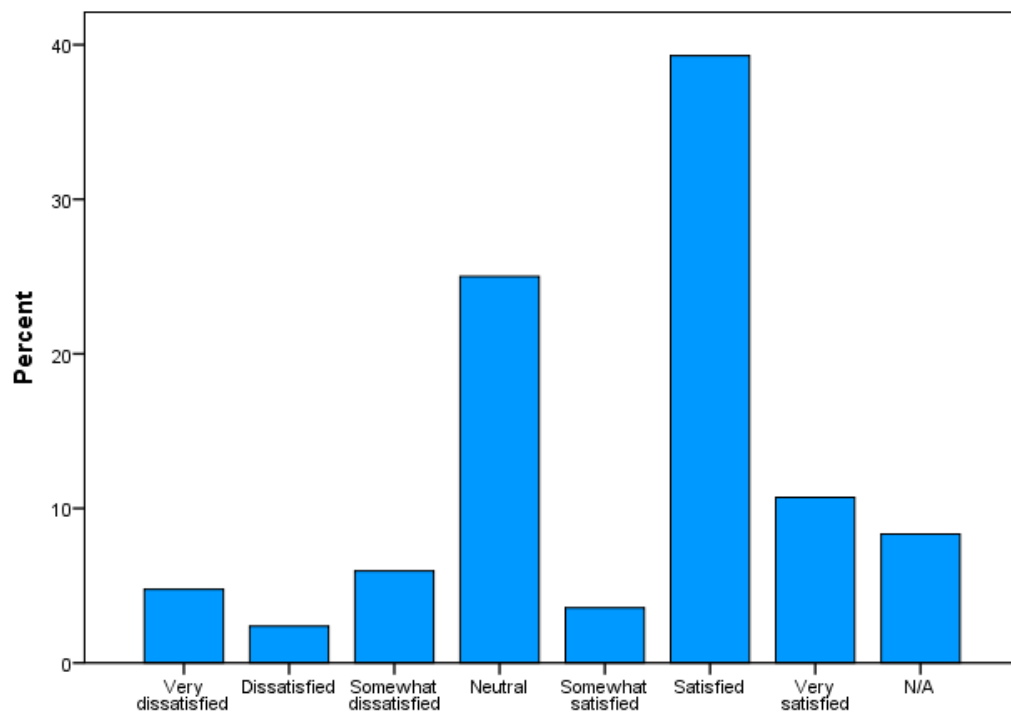
To summarize, this section looked at the use of library resources, in particular the use and non-use of Summon by students in the sample. The access points from which Summon was used was also explored. The next section deals with the recommendations from students on how to get fellow students to use Summon.

4.3.1.4 Suggestions to improve the use of Summon

The majority of students (65%) responded that they would recommend Summon to fellow students. 27% of students were unsure of whether they would recommend the use of Summon to fellow students, as shown in Table 4.24. 38 responses were received from students for the open-ended question, where students were asked for suggestions on how to get students to use Summon as a first tool of choice. The responses have been grouped into themes as indicated in Table 4.25. Numerous ideas were received to promote Summon to students, as well as suggestions for future training sessions.

Table 4.24: Recommendation of Summon to a friend (n = 83)

		Frequency	Percentage	Valid Percentage
Valid	Yes	54	62.8	65.1
	No	7	8.1	8.4
	Unsure	22	25.6	26.5
	Total	83	96.5	100.0

Table 4.25: Students' suggestions on how to get fellow students to use Summon

Themes identified	Suggestions
Marketing and promotion	Visual guides; tutorials; detailed instructions for use; landing page on computers; direct links to Summon; emailing students the links; informing every student
Walk in assistance	Consult library issue desk; speak to Subject Librarians; use subject advisor to inform about Summon
Training	Attend regular training; Summon training should be compulsory; Summon should be taught earlier in the year; more training needed for students from rural areas Training needs to be clear; introduce at school level; differentiate between Google and Summon
Students' knowledge	Know what you searching for; get others informed about Summon
User-friendliness	Make it user-friendly; make it as popular as Google; make it look interesting and engaging
Resources needed	More computers and faster Internet

4.3.1.5 Summary: student questionnaire

Gender, computer literacy levels, and course type level were identified as possible indicators of use. As noted in table 4.1, gender, in particular, cannot be used as a variable for consideration. The number of females in the sample, and, generally in Faculty of Health Sciences are twice the number of males, so no significant deductions can be made using this variable.

Computer literacy levels have an impact on use of Summon by students. 50% of the students who rated perceived computer literacy skills as excellent or good used Summon three months after the training. However, this does not correlate to the need for additional training identified by students. About 50% of the students, as noted in table 4.9, who perceived either excellent or good computer literacy skills required additional training on Summon.

The course was also considered as an indicator of usage in this study. Students in courses such as Chiropractic, Radiography, and Dental essentially attract the better students from schools by having higher admission criteria for their programs. Subject librarians found that students from Chiropractic, generally, had higher computer literacy levels, and coped easily in information literacy training. From the analysis, however, students in all courses had perceived higher computer literacy levels.

Summon is used by students from all courses in the sample. As a general indicator, less than 50% of students used Summon for their assignments or research projects. Use for specific courses is slightly higher, ranging from 36% to 60%, with Chiropractic students displaying the lowest use among the four courses, and Dental students the highest. The majority of the academics in the sample used Summon for their curriculum and research needs.

Non-users were identified as those students and academics that used alternative tools to find information. This includes the use of Google and Google Scholar, and also the use of physical books and journals in the library. While the preference for using these tools was noted, the use of Summon is not abdicated. Issues pertaining to training, usability, and course relevancy were highlighted by non-users.

4.3.2 Results from interviews with Academics

The researcher has analysed the content of the semi-structured interviews and has presented the findings using tables and graphs.

4.3.2.1 Profile of Academics

Four (4) academics from the Faculty of Health Sciences were interviewed. Table 4.26 shows the courses that the academics represent. These academics are current or former First Year Module Coordinators, making them critical not only for access to these students, but also in that they are in a unique position to pass on critical skills to students. These academics also were involved in teaching other courses within the Faculty. These included: Applied Development, Nuclear Medicine, Applied Science, Psychodynamics, and Maternal Science. This would expose them to students outside the sample group, and they would have broader knowledge about student information searching behaviour in general.

Table 4.26: Profile of academics (n = 4)

	Frequency	Valid Percentage
Child and Youth	1	25.0
Chiropractic	1	25.0
Dental	1	25.0
Radiography	1	25.0
Total	4	100.0

4.3.2.2 Academics' use of library resources, including Summon

The extent to which academics use the library resources is not formally documented at DUT. This section will highlight the information searching behaviour of academics in the Faculty of Health Sciences. As there are only four (4) academics in the sample, these results cannot be generalized to all academics in the faculty. Table 4.27 shows the frequency of time spent per week using the Internet for lectures or research. Two academics used the Internet daily for lectures or research, and only (1) of those academics used

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the Internet to access library resources daily for lectures or research information as highlighted in Table 4.28.

Table 4.27: Time spent per week using the Internet for lectures/ research (n = 4)

	Frequency
More than once a week	2
Daily	2
Total	4

Table 4.28: Use of Internet for library resources (n = 4)

	Frequency
Less than once a week	1
More than once a week	2
Daily	1
Total	4

As in the case of students, academics were probed in terms of their starting point to finding information. Table 4.29 shows that Summon is the main starting point among the academics. Only one (1) academic used Google Scholar as a starting point. In terms of accessing full-text information (Table 4.30), the four (4) academics used the library website links to full-text and Summon equally, as a first choice, while three (3) academics used Google (1), and Google Scholar (2) as a second choice to find full-text information.

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Table 4.29: Starting point for research (n = 4)

	Frequency
Summon	3
Google Scholar	1
Total	4

Table 4.30: Main route to full text information (n = 4)

	First Choice	Second Choice
Library website links to e-resources	2	0
A Summon search from the Library website	2	0
Google	0	1
Google Scholar	0	2

The use of the Summon search via the library website is confirmed in Table 4.31. Academics were asked which of the library resources they used (in the past three months). They were allowed to choose more than one option for this question. Two (2) used Summon and the Library Catalogue, while three (3) academics used library databases (directly) and Subject Librarians equally.

Table 4.31: What library resources used in the past three (3) months (n=4)

Library Resource	Frequency
Summon	2
Library Catalogue	2
Library Databases	3
Subject Librarians	3
eBooks	1

The academics rated their expertise in the use of Summon in Figure 4.2. Three (3) of the four (4) academics rated the expertise level in using Summon as average, while the one academic affirmed that they did not use Summon (see table 4.29). The majority of the academics accessed Summon on campus using their personal laptop; this is indicated in Table 4.32.

Figure 4.2: Level of expertise using Summon
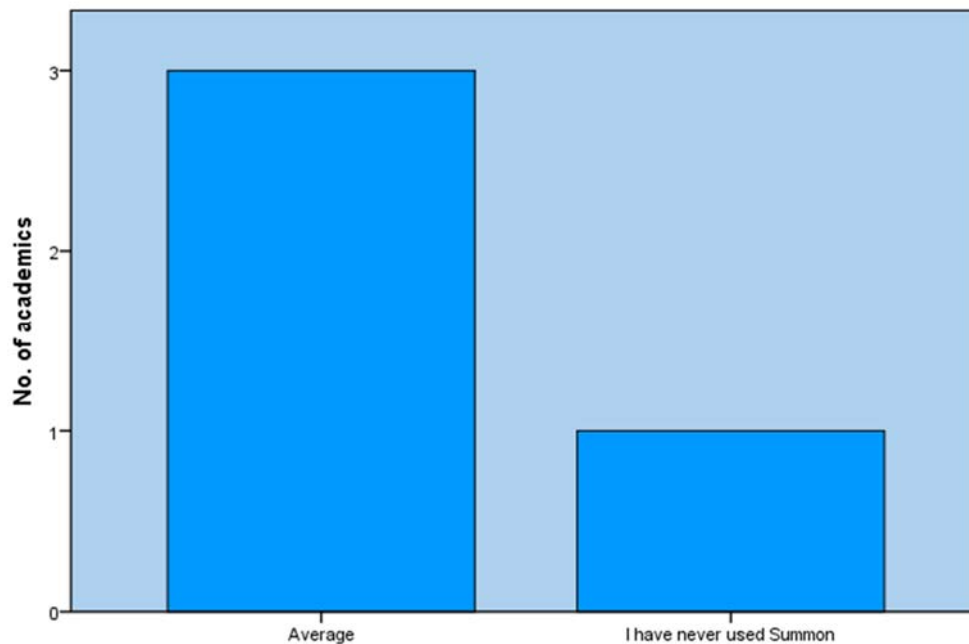
Table 4.32: Access points where Summon is searched (n=4)

No of times accessed	Library Computers	Smart Phone on campus	Smart Phone off campus	Personal laptop on campus	Personal laptop/ pc from home	Internet Cafe
> 6	0	0	0	3	0	0

4.3.2.3 Impact of IL training and use of library resources by students

To assess whether academics promoted the use of library resources and Summon among students, academics were asked a series of questions about the level of integration with the library information literacy course, the number of training sessions arranged by them, and whether after training, there was an improvement in the use of library resources by students. The level of integration of IL into the courses is dependent on the nature of the course, and the knowledge of the impact of IL by individual academics. There is also an incremental approach, with advanced training of IL taking place in the third year, and BTECH levels. In first year CYC, students attend IL training for more than one session. For second and third year CYC students, a single IL session is held during the course of the year. Chiropractic students are expected to use library resources as part of their assignment. This also applies to Dental Technology students who also focus on referencing in the first year. Radiography students attend an IL session in first year, and as part of the assignments they are expected to use library resources.

If lecturers adopted Summon, and promoted Summon effectively, more students will likely use Summon. The integration of Summon into lecture notes, and classroom presentations will have an impact on use. All academics always gave students assignments that involved the use of library resources. However as seen in table 4.33, only the Chiropractic academic introduced Summon as part of the lecture. This does not assist in the promotion and use of Summon as noted in table 4.27 as Chiropractic students were ranked as the lowest users of Summon in the sample.

Table 4.33: Introducing Summon to students (n = 4)

		Part lecture/notes, introduce Summon to 1st year students
	Yes	No
Child and Youth	0	1
Chiropractic	1	0
Dental	0	1
Radiography	0	1

Table 4.34 elaborates on the promotion of library resources by lecturers. Three (3) of the academics included reference lists as part of assignments for first year students. Radiography students are expected to submit reference lists that use various formats of information sources, of which half must be peer reviewed articles, and reference lists must include the use of five (5) books. All lecturers insisted on the use of relevant websites and the majority of academics expected students to use library databases.

Table 4.34: Mandatory use of referencing and websites by students (n=4)

	Reference Lists	Relevant websites	Library Databases
Yes	3	4	3
No	1	0	1

Table 4.35 and 4.36 focuses on the Summon training arranged by academics for their students. These academics work closely with the library to ensure that students in their courses are information literate. This view is supported by results in Table 4.31, three (3) of the academics used the services of a Subject

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librarian in the specified period.   In table 4.36, only the academic from Chiropractic attended the training session with students.

Table 4.35: No. of Summon classes as part of IL training per course between Feb – June 2013 (n=4)

	How often librarian teaches a class on Summon	
	1-5 times	More than 5 times
Child and Youth	0	1
Chiropractic	1	0
Dental	0	1
Radiography	1	0

Table 4.36: Summon training: attendance by academics (n = 4)

	Frequency
Yes	1
No	3

Earlier in the discussion (see **4.3.2.3)**, it was noted that all of the academics insisted on the use of library resources for the assignments and research projects. Table 4.37 summarizes the comments from the academics. The Dental Technology academic found that there was no improvement in the quality of assignments. Both the CYC and Radiography academics noticed an improvement in the use of resources in assignments. The academic from Chiropractic commented that students are able to find resources, but not able to evaluate the resources that they find.

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Table 4.37: Improvements in assignments and projects since Summon training (n=4)

Child and Youth Studies	Better use of resources in the second assignment. According to the lecturer, this could be attributed to training.
Chiropractic	Students are able to find resources, but unable to differentiate between the value, and use of each resource
Dental Technology	There was a satisfactory use of resources. Students have used eBooks. The attitude of students impacts on use of resources.
Radiography	Students use appropriate content, they know how to use peer review articles, know how to evaluate websites, and use appropriate search engines

The discussion above focused on how academics promote Summon to students, the no. of training interventions arranged for students, and finally, the impact of training on assignments and projects.

4.3.2.4 Recommendations to improve the use of Summon among students and academics

Table 4.38 summarizes the views of academics on the use of Summon can be improved among academics and students. Many of suggestions highlight the need for training, both for academics and students. The library's IL program should focus on developing student skills, and academic staff training should take place regularly, and not on an ad-hoc basis.

Table 4.38: How the use of Summon can be improved

Academics	Students
• Increase awareness of Summon • Library orientation for academic staff • Academic staff should attend training with students. • Improve knowledge of Summon • need to explain how it is different from other library tools/ tools that Summon replaced • Teacher training, involving the Academic Development Unit • High staff turnover, so regular interventions necessary • Use Librarian who is the advocate for Summon • Use Faculty Board to create awareness.	• Should form part of Academic Literacy course • Include Summon links / explanations in study guides • Use opportunity of orientation for first year students to demonstrate Summon. Lecturers should spend some time in class to introduce Summon. • Improve computer literacy of students. • Use service departments to integrate Summon training. • Look at quality of search results • Need to make students aware of differences between Summon and other search tools.

4.3.2.5 Summary: Academics

For individual courses, the relationship between the Subject Librarian and the academic is a major determinant of Summon use. The extent of liaison activities between the librarian and the academic is also influenced by the culture of library use in Faculties, and also, importantly, the nature of the course. According to the Subject Librarians, library use among academics in the Faculty of Health Sciences is generally high, and academics are supportive of library training programs; this on varying levels. The academics in the sample used the library personally and rated library use for their courses as critical for answering assignments and projects. The nature of courses selected in the sample lends itself to practical implementation of information literacy interventions, and integration with assignments, hence stronger relationships were forged with the Subject Librarian to ensure that their students were information literate.

All of the academics indicated that they insisted on students using reference lists, relevant websites, and the general use of Library resources in the completion of assignments. To take it a step further, other strategies are employed to get students to use library resources. These include: prescribing to the students the number of books, journal articles, and websites that can be used in a reference list; allowing Subject Librarians to mark reference lists for assignments; and giving feedback to Subject Librarians on training programs and the use of library resources.

4.3.3 Subject Librarians

The two Subject Librarians responsible for the Faculty of Health Sciences have been training students to use Summon from January 2013. The IL program was changed in late 2012 to ensure that all undergraduate training interventions focused on Summon as a starting point for information searching. The characteristics of the Subject librarians and level of experience, and relationship with Faculty influence the level of integration of IL training, and use among academics and students.

4.3.3.1 Teaching profile of Subject Librarians

The Subject Librarians teach IL in a number of courses in the Faculty of Health Sciences. These four courses reported in this study were selected as the Subject Librarians had established relationships with academics in these departments. Table 4.39 describes the courses taught by each of the Subject Librarians.

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Table 4.39: Courses taught by Subject Librarians (n=2)

	Courses where IL is taught
Subject librarian 1	Chiropractic; Radiography
Subject Librarian 2	Child and Youth Studies; Dental Technology

4.3.3.2 Perceived level of skills of students, and impact on training

As in the case of the students, Subject Librarians were asked for their perception of computer literacy levels of students in their courses. The majority of IL classes take place in the first term (Feb – Apr), so students are likely to attend an IL class before attending any computer literacy intervention as part of the curriculum. Subject librarians are therefore in a good position to assess the computer literacy skills of Health Science students. There is a difference in the perception of computer literacy skills when a comparing the views of Subject Librarians and students. Subject librarians had different perceptions of the level of computer literacy skills amongst students, with one Subject librarian rating computer literacy skills as weak, and the other good; this is highlighted is table 4.40. The Subject Librarian for Radiography and Chiropractic, for e.g. indicated that between 50% and 75% of students had weak computer literacy skills, and this made training very unstructured, as much of the lesson time was spent on teaching students' basic computer skills, a pre-requisite for IL training. This view from the Subject Librarian differs considerably from the perceived level of computer skills stated by these students. Only 9.4% of students reported that their computer literacy skills were weak, with approximately a quarter of students stating their skills as excellent.

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At course level, 57% of Chiropractic students rated their computer literacy skills as excellent; this could be due to high admission criteria for this particular course – see table 4.4. The educational and socio-economic background of the students was given as possible reasons for low computer literacy levels.

Table 4.40 provides a comprehensive view of the level of computer literacy, and its impact on IL training.

Librarian	Rate skills	Percentage with this skills level	Skills level impact on training
CYC and Dental Technology	Good	50% - 75%	• Skills good, do not spend much time on skills training. • Cannot follow structured program
Chiropractic and Radiography	Weak	50% - 75%	• Not ready keyboard, mouse skills-pre- intervention required • Training time not sufficient-to be adequately trained • Two sessions minimally needed to accommodate for lack of computers skills. • Peer teaching of skills possible

4.3.3.3 Training sessions and impact of Summon on training content and the work of Subject Librarians

This section will elaborate on the number of training sessions held for these courses, as well as the impact of Summon on the content and delivery of IL training. Table 4.41 outlines the number of sessions held for each of the courses. For Chiropractic and Radiology students, between 5-6 sessions were held, with one (1) session focused on teaching of Summon. Students from CYC and Radiography attended more than 11 sessions, and more than two (2) sessions included training on the use of Summon**.**

Table 4.41: Number of IL classes, including Summon (n=2)

Course Name	How many IL classes did you teach between Feb and June 2013	On average how may sessions do you spend teaching Summon on specific course
Chiropractic & Radiography	5 - 6	1
Child and Youth & Dental Technology	11 +	More than 2

With the implementation of Summon, the revised IL program focused on Summon as being the starting point for training. In the past, a number of training sessions was devoted to teaching the use of the library catalogue. Subject Librarians were asked to reflect on training since they started teaching Summon, and comment on the time spent on other important aspects of the IL program. Table 4.42 outlines these responses.

Table 4.42: Amount of time spent by Subject Librarians teaching other skills/ resources post Summon implementation in the IL program (n=2)

	More time	Same time	Less time	Total
Boolean searching skills			2	2
Broadening/ narrowing results		1	1	2
Citing resources	1	1		2
Evaluating resources	1		1	2
Locating keywords			2	2
Plagiarism			2	2

Search strategy			2	2
Library Catalogue		1	1	2
Online databases			2	2

Apart from liaising with academics to arrange training and delivering the training, both Subject Librarians actively promote the use of Summon to academics and students. This is done by direct interventions with academics, or by using the library website, handbooks, and tutorials. Figures 4.3 and 4.4 outline some of the methods used to promote Summon.

Figure 4.3: Strategies to promote Summon to Faculty

Faculty presentations - Deans are present

Departmental meetings

One on one consultations

Academic Roadshows

Departmental newsletters, handbooks

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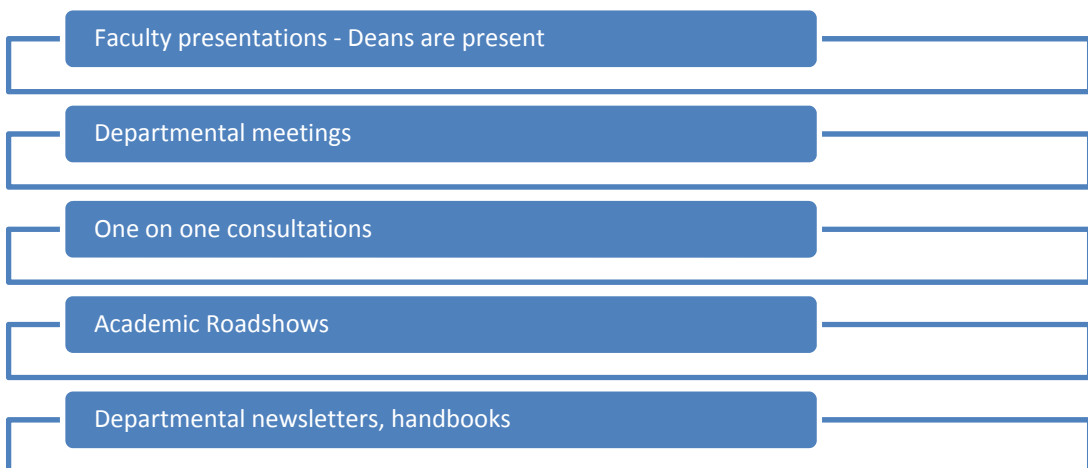
Figure 4.4: Strategies to promote Summon to students

Summon starting point of all training

Hands -on training for Summon

Library webpage defaults to Summon

Hiighlight availaibiliy of Summon via Mobile

Links from library guides, handbooks, e-learning platforms
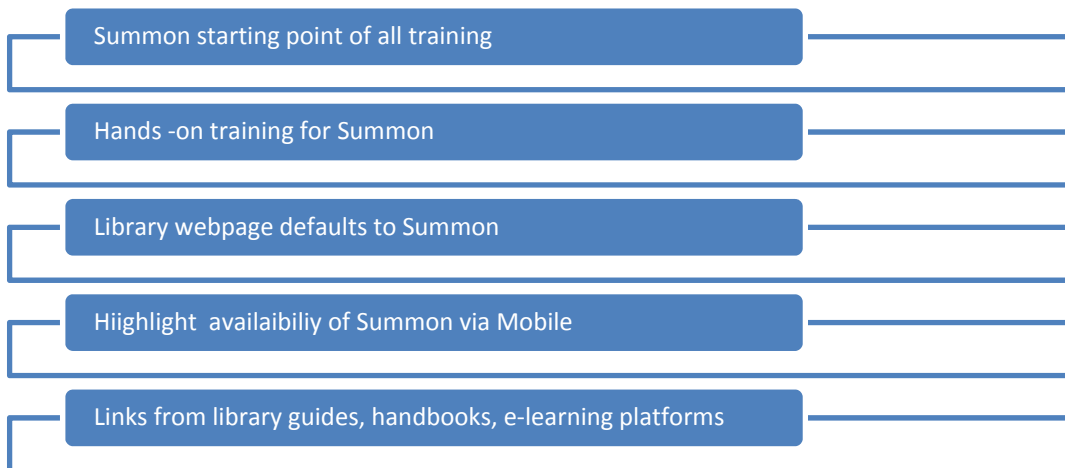
The level of IL program differs in the Faculty of Health Sciences. In Radiography, the Subject Librarian is responsible for marking the referencing elements of an assignment. In Chiropractic an IL examination is set and marked by the Subject Librarian. Therefore, the Subject Librarian is in unique position to evaluate whether IL training (that includes Summon) has an impact on students use of Summon. Both Subject Librarians agreed that Summon has had an impact on Subject Librarian work. Figure 4.4 lists the comments from Subject Librarians on the impact of Summon.

Figure 4.5: Impact of Summon on the work of Subject librarians

Drop in number of queries

Technical issues, especially access from off -campus increasing

Areas for further training; , results need explaining

Feedback to lecturers on poor use of resources in assignments

Time now available to focus on collection development

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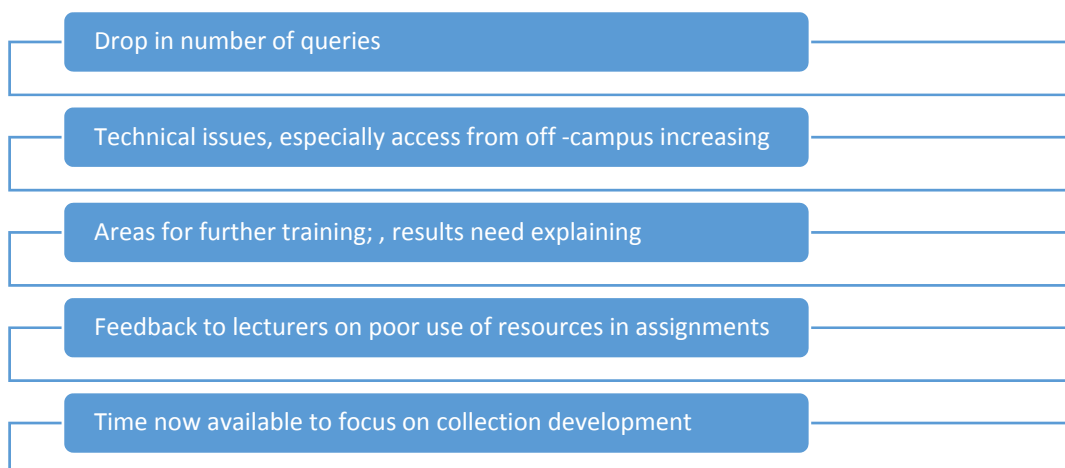
4.3.3.3 Reaction to Summon, and ways to improve the use of Summon

Table 4.43 outlines the Subject Librarian's perception of the reaction of students, academics and fellow librarians to the use of Summon.

Table 4.43: Reaction of students, academics, and other librarians to Summon (n = 2)

	Students	Academics	Librarians
Somewhat satisfied	1	1	0
Satisfied	1	1	2

Finally, Subject Librarians were asked how the use of Summon can be improved among students, academics, and fellow Subject Librarians. The responses are detailed in table 4.44. For students, Subject Librarians noted that Summon needed to be central to IL training and that integration of IL into assignments was critical to the use of Summon, and other resources.

Subject librarians stressed the need for high levels of advocacy among Deans and Heads of Programmes to increase opportunities for library training, to highlight the benefits of Summon training, and to promote the use of library resources in assignments more widely. Subject librarians are already using Summon, but needed greater confidence about Summons' capabilities as a discovery tool; a review is suggested so that technical and other issues are resolved.

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Table 4.44: Recommendations to improve Summon use by students, academics, and fellow librarians

Students	Academics	Librarians
Walk in sessions	Open faculty sessions	Sort out technical issues, so confidence in Summon will increase
Point of need integration	Academics do not always take part in library activities, invite academics to the library for individual or group consultations	Revisit priority ranking of databases
Summon promotional items	Academic roadshows	Peer teaching
First session of orientation must be Summon	Higher level advocacy, possibility Deans and Head of Department	
Advertise on DUT student portal	Nature of assignments must advocate use of Summon	

4.3.4 Summary: Subject Librarians

One of the main tasks of the Subject Librarian is to provide IL training that includes Summon to students. A number of factors influences the training programme for a course. The extent of liaison between the Subject Librarian and the academic determines the number of IL sessions and the level of integration of Summon training into the course. The academic's knowledge and understanding of Summon, and the library are major determinants in the

use of Summon. The computer literacy levels of students' impact on the training, and affect the number of sessions required for training. After training, the use of Summon by students has changed the type of queries, and training Subject Librarians are dealing with, providing more time for further training on problem areas, and consultation. The next section draws from the analysis in the preceding sections, and reports on important themes that have emerged in this study.

4.4 Comparison of results: Students, academics, and Subject Librarians

This section draws on the analysis in the previous section and compares the results from each of the participants to determine relationships that impact on the use of Summon by students.

4.4.1 Computer literacy levels and the impact on training

Students and librarians were asked about levels of computer literacy. As demonstrated in table 4.40, students' perception of computer literacy courses did not match the perceived view of the computer literacy as experienced by the Subject librarian. From a training perspective, the Subject Librarians found the levels of computer literacy in the courses had an impact on the training of Summon. 41 of the 83 students who rated their computer literacy levels as good or excellent still required additional training on Summon. At the course level, over 90% of the Chiropractic students had rated their computer literacy skills as good or excellent, however, over 42% of students perceived the need for additional training on Summon – see tables 4.4 and 4.9.

4.4.2 Information seeking behaviour and the use of Summon

The students and the academics were asked about the starting point of research when looking for information for research. For the majority of academics Summon is the starting point of research and used the library website as the main route to full text information – see table 4.29, and 4.30. Only 14% of students used Summon as the starting point for information searching (table 4.14). The remainder of the students depended on Google and Google Scholar for information. Interestingly, after the Summon training intervention, 48% of students used Summon for information searching (table 4.16).

For individual courses, with the exception of Chiropractic students, more than half of the students accessed Summon post training attendance. These figures are significantly high if you take into account the generally low use of library resource. Only 50% of students indicated that they accessed the Internet more than once a week. However, of this number, only 34% of those students accessed the Internet to use a library resource more than once a week. Table 4.19 highlights reasons as to why students have not used Summon, namely: 29% prefer Google, 23% forgot how to use Summon, 38% of the students used other resources to find information, and 10% of students found Summon difficult to use.

Despite these challenges, students found relevant information for assignments and projects. 56% of students found that Summon led them to relevant information, and 41% found that Summon was faster, and 13% found that Summon provides accurate and relevant information.

4.4.3 Level of integration, adoption, and impact

A number of factors impact on the level of integration of IL training at a course level. The Subject Librarian and academic are critical role players in promoting the use of Summon at course level.

4.4.3.1 The Subject Librarian as the liaison

There is a professional relationship between the Subject Librarian and the academic responsible for IL training in the Faculty. There are two interrelated factors that contribute to the level and extent of IL integration within a course. Firstly, the design of a course does provide the academic and the Subject Librarian the chance to find points of integration. Secondly, there is a high dependence on the academic to understand the role that IL plays at the course level, and based on this, there is a high probability of the academic making provision for training session/s in the timetable.

For a successful integration, the Subject Librarians require an understanding of the course, knowledge of appropriate library resources for the course, and technical skills to train students with diverse information and computer literacy abilities. The Subject Librarian plays a critical role in increasing the visibility of Summon on the library webpage, in guides and student handbooks, and e-learning platforms.

4.4.3.2 The academic as the adopter and implementer

The awareness of Summon by the academic plays a role in promoting the use of Summon. Only the academic from Chiropractic used Summon as a starting point for research and lectures, introduced Summon as part of the course lecture, and attended the session with the students. However, all of the

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academics made provision in the timetable for a minimum of one session for IL training.

To promote the use of library resources, three (3) academics included reference lists as part of assignments for first year students. The use of relevant websites was advocated by all academics, and the use of library databases by three of the four academics – see table 4.34. Table 4.45 describes the extent to which IL and Summon is integrated in courses.

Table 4.45 Integration of IL and Summon into courses

Academics comments	Frequency
All 1st year students' assignments	1
Use of Summon as part of assignments	1
Resource lists limited to library resources, Referencing and Summon use	1
References – compulsory use of articles and books	1

4.4.3.3 Impact of Summon training on students

The students, academics and librarians were asked about the impact of Summon training on assignments. 68% of the students used Summon for the assignments, and 56% found that Summon improved their ability to find relevant sources for assignments – see tables 4.18 and 4.20. The majority of academics has seen improvement in assignments and projects, citing better use of resources in assignments since Summon training. Subject librarians who are responsible for marking the reference sections of assignments also found that students were making use of more appropriate resources in assignments. The Subject Librarians also provide feedback to the lecturers on the use of resources in assignments. Reference queries of Subject Librarians

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have also dropped after Summon training as students are finding resources easier via Summon – see figure 4.4.

The discussion above focused on how academics promote Summon to students, the number of training interventions arranged for students, and finally, the impact of training on assignments and projects.

4.4.4 Summon training, and needs for further training

Students identified further aspects for training. 24 of the students cited understanding the different formats of information as needed, and 10 of the student's required additional training in evaluation of information – see table 4.10. These requirements for training correlate with the views of Subject Librarians who are spending more time on training involving citing and evaluating after Summon training, and less time on searching the catalogue, developing a search strategy, and using Boolean searching.

4.4.5 Accessibility and Usability of Summon

Access and usability of Summon is critical to the use of Summon. Access to Summon is enhanced due to access on- and off-campus 24/7. Usability of Summon can impact on the use of Summon. These two issues will be discussed below.

4.4.5.1 Accessibility of Summon

In the specified period, students accessed Summon from different locations. Students preferred accessing Summon via library computers - 18 students accessed Summon via library computers more than six times, and 18 students used personal laptops on campus more than once. Significant is the use of Summon from mobile devices on and off campus. 21 students used Summon via a smartphone on and off campus more than once – see table 4.23.

Academics primarily accessed Summon from personal laptops on campus (table 4.33).

4.4.5.2 Usability of Summon

Students and Subject Librarians had different experiences with regard to the usability issues. From a student perspective, of the 62 students who responded to factors that affected their use of Summon, 37% found Summon easy to use and indicated that they had saved time by using Summon. 42% of students experienced challenges in using Summon that included technical issues, difficulty in using Summon and lack of technology to access Summon – see table 4.22. Table 4.19 also highlights reasons for non-use of Summon. 2 of the 21 students responded that they found Summon difficult to use.

Subject Librarians found that students were requiring further training in Summon. The issues raised point to usability issues of Summon. While there was a decrease in the number of reference queries, Subject Librarians highlighted technical issues increasing, and increased demand on explanation of results from Summon – see figure 4.4

This section covered the main themes that emerged from the data. The computer literacy skills and individual characteristics of students, the information seeking behaviour of students and academics, the adoption and promotion of Summon by academics and Subject Librarians, rollout of Summon training, and accessibility and usability of Summon have an impact on students' performance in assignments, usage of Summon, and the role of the Subject Librarian in supporting student learning.

4.5 Summary

This chapter presented the analysis and interpretation of the data collected from students, academics, and Subject Librarians. The analysis and interpretation highlighted significant themes that will be used to propose a model for integrated Summon training, and use by students and academics in Chapter Five.

Chapter Five: Proposed model to improve the use of Summon

5.1 Introduction

The previous chapter highlighted a number of factors that affected the use of Summon by academics, students and librarians. The general use of library resources, the accessibility and usability of Summon, training attendance, course requirements, course integration, adoption and promotion of Summon by academics and Subject Librarians are factors that can positively contribute to the increased use of Summon. The researcher proposes a model that will improve the use of Summon by academics, students and librarians.

5.2 Model to improve the use of Summon by students, academics and Subject Librarians

The researcher proposes a model to improve the use of Summon by using the analysis of the data from the previous chapter. The researcher acknowledges that the model is a representation of the interactions in four courses, and that when applying this model not all the levels of influence need to exist, or will necessary take place in a particular order.

In developing the model, the researcher has included themes discussed in Chapter Two, namely: the adoption of new technologies, and user-centered design principles that impact on the use of Summon. A model for Summon training and use by academics and students is presented below.

Figure 5.1: Model for improved use of Summon at DUT
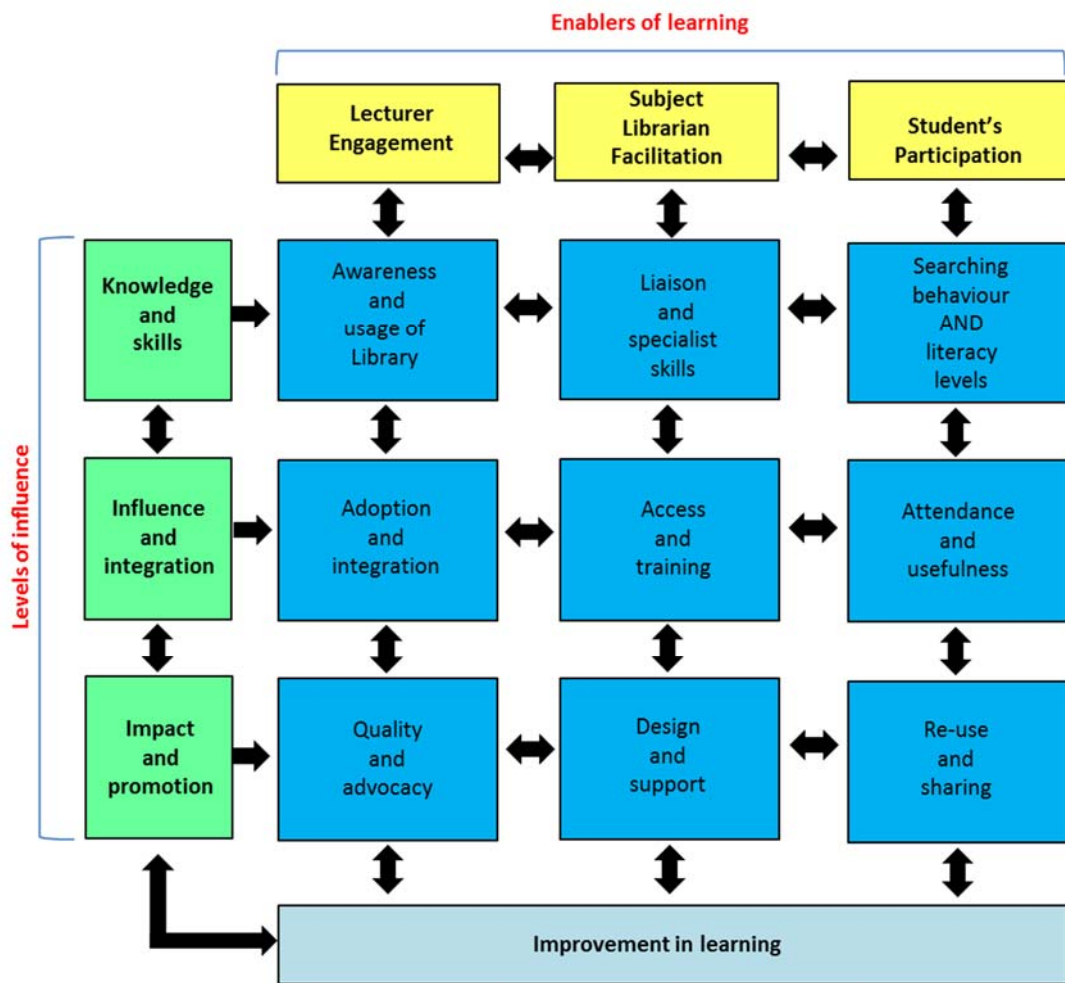
The model proposes that there are interdependent relationships among the students, academics and Subject Librarians that influence the student's information literacy skills, and use of appropriate resources for learning. The students, academics, and Subject Librarians are responsible for learning, and are referred to as **enablers of student learning.** The extent of the engagement of the lecturer with the library, the effectiveness of the course facilitation of the Subject Librarian, and the level of participation of the student in their own learning are primary determinants of the improved use of Summon in a course.

There are also three **levels of influence**, namely: knowledge and skills; influence and integration; and impact and use that can affect the use of

Summon. These three levels work together in improving the use of Summon, and ultimately, to bring about an improvement in learning.

The model will be explained in detail below. To easily understand the model, it should be read from left to right, and top to bottom, explaining each of the *levels of influence* in relation to each of the *enablers of learning*.

5.2.1 Knowledge and skills

The awareness and usage of library resources by academics, the knowledge and skills of the Subject Librarian Subject Librarian, and student's information and computer literacy levels influence the use of Summon by students.

5.2.1.1 Awareness and usage of library resources by academics

Tables 4.28 and 4.29 describe the use of the library resources (including Summon) by academics. Academics use the library resources more than once a week for lecture preparation or research and, of all library resources, Summon was also used as a starting point for research for the majority of the academics. Table 4.31 demonstrates the use of Summon where academics rated Summon as one of the resources consulted in the specified period. The use of Summon by the academics led to successful integration of Summon in the course, with a high level of integration at the assignment level. The academics rated their expertise in using Summon as average (Figure 4.2). ***The awareness and use of Summon by academics is a contributing factor in the improving the use of Summon by students***.

5.2.1.2 Liaison and promotion by Subject Librarians

There are many factors that influence the extent of interactions between the Subject Librarian and the academic. The general promotion of IL in the faculty and department level depends on the knowledge and skills of the librarian, as well as established partnerships that have been developed with the Subject

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Librarian to conduct IL training. Some courses offer opportunities for high level integration into assignments, and in-depth knowledge of the course by the Subject Librarian creates the platform for negotiation in terms of integration and training.

The Subject Librarian's perception of computer literacy skills of students also has an impact on training requirements, and the Subject Librarian should take this into account in the negotiation process.

The promotion of IL and Summon in the Faculty academic training and presentations at Faculty boards further influence the use and adoption of Summon in the Faculty. The Subject Librarians were seen as a key resource that academics consulted in the specified period – see table 4.31. The final planning and rollout of training would have taken place in this period.

Increased knowledge and better skills at liaising and promoting by the Subject Librarian will improve Summon use.

5.2.1.3 Searching behavior, and computer literacy skills of students

A key ingredient in student learning is the student him or herself. The searching behavior of students as well as the level of students' computer literacy skills impacts on the use of Summon. Students used the Internet to access Google and Google Scholar instead of library resources to search for information. Only a small number of students used Summon prior to any library training.

The higher the computer literacy skills of students, the more responsive students are to Summon training. Low computer literacy skills impact on training outcomes for a course. However, this is not true of all students. In table 4.9, students that rated their computer literacy skills as good or excellent still required further training to use Summon. This supports the views of Subject Librarians who advocate a minimum of two sessions on Summon to

accommodate the low literacy levels in some courses. Significantly, as described in table 4.16, of the students who attended Summon training, more than half used Summon as their starting point for assignments and research projects.

In summary, the use of the library resources and Summon by academics has a positive influence on the use of Summon by students. The academic's awareness of Summon and its potential benefits leads to a positive experience for the librarian who proposes library training to improve the student's learning. *A close relationship between the academic and librarian is essential to integrate Summon training into the course. This liaison leads to integrated information literacy training for students, which improves the use of Summon by students*.

5.2.2. Influence and adoption

The personal adoption of Summon by the academics, the provision of training by the Subject Librarian, student attendance and perceived usefulness of Summon will be covered in this section.

5.2.2.1 Adoption and integration

The personal adoption of Summon by academics will have an impact on the improved use of Summon by students. The level of integration of Summon into the IL programme is dependent on the extent of the course level knowledge of the Subject Librarian, and an understanding of the potential benefits of the training by the academic.

One of academics attended a Summon session with students, and also introduced Summon as part of the lecture to ensure that Summon is used by students – see table 4.36 and 4.33, respectively. The number of sessions planned, as well as the use of library resources in assignments and projects, and the assessment thereof, depends on the academic's understanding of the

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benefits of IL training for students. Table 4.6 and 4.35 illustrate the number of sessions attended by students; this is made possible by the involvement of the academic in the planning of IL training. ***The level of involvement of the academic in planning Summon training has an impact on the improved use of Summon.***

5.2.2.2 Access and training

The Subject Librarian plays a critical role student learning. The Subject Librarian is the interface between the library and the students, and the library and the academic. Subject Librarians have to ensure that students are using the appropriate tools for information discovery to find relevant resources for study purposes - this is achieved mainly though IL training, which includes Summon training. Subject Librarians are also responsible for ensuring that the tools used to find this information, in this case Summon, are accessible and usable. The Subject Librarian is responsible for positioning Summon at strategic points where students are. Figure 4.4 lists some of the strategies used by Subject Librarians to achieve this; these include student handbooks, subject websites, and the eLearning platform.

The number of training sessions and the assessment of training are dependent on the course, and on the commitment of the academic to ensure that students are accessing appropriate resources for assignments.

5.2.2.3 Attendance and usefulness

Student attendance at Summon training is dependent on a structured training programme, which is timetabled and decided jointly by the librarian and academic. For students, it is compulsory to attend IL classes, and a register is kept for all classes. However, not all students attend training. The use of formal tests and examinations for IL not only promotes attendance, but also the use of the library resources. Table 4.18 demonstrates that students did benefit from

Summon training, and used Summon for assignments and projects. Over 50% of the students were either satisfied or very satisfied with Summon – see figure 4.1. Students also found particular aspects of Summon training useful, and identified challenges in using Summon.

In summary, Summon use by students is influenced by the adoption of Summon by the lecturer, the level of integration of Summon into the course, and students attending Summon training.

5.2.3 Impact and promotion

The quality of assignments and projects, support by the Subject Librarian after training, and the re-use of Summon by students will promote the use of Summon to others.

5.2.3.1 Quality and advocacy

The academics in all the courses noted the improvement in assignments after students attended Summon training – see table 4.38. In the integrated training approach, Subject Librarians assess assignments, and provide feedback to lecturers in terms of the use of proper referencing, and appropriate resources. The academic who has recognized the benefits of Summon training is the best advocate to increase the use of Summon among other academics and students in the courses they teach.

5.2.3.2 Design and support

The Subject Librarian constantly reviews the usability and accessibility of Summon, as well as the training programme to make improvements based on student feedback and use. Students have highlighted difficulties in using Summon, and also provided information as to why they do not use Summon; these are summarized in tables 4.19 and 4.22. These are useful indicators to

improve Summon as a tool of choice for students. These recommendations will be discussed in Chapter Six.

The nature of the work of the Subject Librarian has also changed after Summon training. Students posed different types of queries after attending Summon training. The Subject Librarian focus has changed from having to help students search for information to helping students to understand search results, cite resources, and evaluate resources. Tables 4.10 and 4.42 provide evidence for this change from both the student's and the Subject Librarian's points of view.

5.2.3.3 Re-use and sharing

Students are also promoters of Summon. If students found Summon useful, they were likely to re-use Summon for assignments. 56% of students found that Summon helped them to complete assignments. If students perceive Summon as useful, they are likely to share information about Summon with fellow students. 65% of the students indicated that they would recommend Summon to fellow students – see tables 4.18 and 4.24.

In summary, this level of influence focusses on the impact of training interventions. The higher the integration of Summon training into the course, the greater the opportunities for improved assignments and research projects, and re-use by students.

5.3 Summary

This chapter presented the proposed model to improve the use of Summon among students and academics. The model proposes three enablers of learning, and three levels of influence. The enablers and levels of influence are interdependent, which implies that in order to improve learning there has to be strong engagement between the librarian and the academic in order to integrate the use of Summon into the course. This engagement should not be

isolated from the individual characteristics of the students in a course, the course content, and the provision of lecture time for the library training in the curriculum.

The design of the training programme has to take into account the levels of literacy in the course, and also the student's participation rate. Students who attended Summon training noted the improvement in assignments. The academics and Subject Librarians affirmed this, as they noticed an improved use of relevant resources in assignments. The stronger the level of integration into assignments, and the greater the attendance of Summon training, the higher the probability that Summon will be used to find information.

The librarian, students, and academics are seen as promoters at different stages in the model. The initial marketing of Summon to academics has an impact on their adoption, and its use by their students. The academics play a crucial role as Summon champions in the Faculty, and students are also advocates of Summon if they recognize the benefits of using Summon. The next chapter will discuss the findings, recommendations, and conclusions of this study.

Chapter Six: Findings, recommendations, and conclusion

This chapter provides the findings, recommendations from the study and also shares areas of further research.

6.1 Research questions

The research questions outlined in the study will be discussed individually to demonstrate whether these were achieved in the study**.** The four research sub-questions will be discussed first, followed by the main research question.

6.1.1 What measures are used to evaluate electronic information services (such as WSDS) in academic libraries?

From the literature, a number of models and approaches to evaluating electronic online systems such as Summon were explored in Chapter Two. These included holistic approaches to evaluation such as Nicholson's Evaluation matrix and the eVALUEd Toolkit. Also, contemporary research on the evaluation WSDS, including research specifically where Summon was implemented, was discussed. The researcher used the eVALUEd toolkit, which provides a holistic view of Summon from four dimensions, namely: the user and how the user interacts with Summon; the library resources available for training and the access and usability of Summon; the liaison between the academics and Subject Librarians for training and promotion of Summon; and the impact of Summon on information skills and graduate skills. In addition to the measures available in the eVALUEd toolkit, the researcher used the methodologies presented by Buck and Mellinger (2011) and Chapman *et. al.* in Popp and Dallis (2012) in Chapter Two to develop the research instruments used in this study.

6.1.2 How is Summon being used by staff and students at the DUT?

The following was found on the use of Summon by staff and students at the DUT.

6.1.2.1 Students

Summon is not the first search tool of choice for students when finding information. As established in tables 4.14 and 4.15, Google and Google Scholar are rated highly amongst students, with a low number of students using Summon as the starting point of their research. The use of Summon improved after the Summon training intervention. Summon was used by students to find information for assignments and projects primarily using a library computer on campus, via personal mobile devices on campus, and also from an Internet café during the specified period.

Some students expressed concerns about the usability of Summon, and found Summon difficult to use. A related concern is that when using Summon the student's ability to find appropriate resources to complete assignments did not improve. Some students did not use Summon for the following reasons: they did not think of using Summon; no need to use Summon; forgot how to use Summon; and a preference for Google.

Students stated a number of factors that influence the use of Summon, namely: ease of access, information needs are met, time saving and lecturer influence positively affect the use of Summon. Factors that negatively affect the use of Summon include: technical issues accessing Summon; difficulty to use Summon; lack of skills needed to use Summon; and lack of technological knowledge to access Summon. Overall, from those students who used Summon, the experience was positive with the majority of students satisfied with Summon as a searching tool; this is highlighted in figure 4.1.

6.1.2.2 Academics

The majority of the academics used Summon as the starting point for research or lecture preparation. Academics accessed Summon from library computers, via a smartphone on and off campus, and more than six (6) times from a personal laptop on campus. Only one of the academics did not use Summon, while the remaining academics rated their level of skills in using Summon as average.

As users of Summon, the academics played a major role in encouraging the use of Summon by students. The liaising with the Subject Librarian to set up integrated assignments and projects that involve the use of Summon and library resources. The academic is able to attribute the improvement of appropriate use of library resources in assignments and projects to the Summon training. Tables 4.37 and figure 4.5 elaborates on the different methods to assess this improvement. Formal assessment of assignments, tests and examinations (for referencing and use of library resources) is done by either the academic or Subject Librarian, and also informal feedback on the use of library resources by students is shared with the academic by the Subject Librarian for the course.

6.1.3 What are the views of Subject Librarians on the use of Summon, and can it be improved?

Subject librarians play a crucial role in facilitating access to information through information literacy training, and general promotion of library resources. Apart from library training, Subject Librarians are available in the library for individual or small group reference queries. Subject librarians are also the main promoters of Summon in the faculty, through academic training and promotion.

Subject librarians are users of Summon, and responsible for training students and academics in the use of Summon and other library resources. Through academic awareness, the use of Summon is promoted for academics' personal use, and also to increase the awareness of Summon in lectures. The integration of Summon training into the courses improves the use of Summon as well as increases the use of library resources. The extent to which Summon is covered in information literacy training for a course depends on the level of integration into the assignment, and the number of lessons that are assigned. Subject Librarians delivered over five (5) IL classes per course in the specified period with a minimum of one lesson focused on Summon training.

A number of factors affect the Summon training. Firstly, regular attendance of IL classes is essential to successful use of library resources in the assignments. Secondly, for the integrated assignment the Subject Librarians not only train students on using Summon, but also direct them to quality library resources using the assignment topic as the starting point. Finally, the Subject librarians expressed concern over the computer literacy levels of students. Although the Subject Librarian's perceptions of computer literacy skills differ among students in the courses, low computer literacy skills impacted on the training outcomes of the course.

Subject Librarians noted an improvement in the use of library resources by students after they had attended Summon training. Subject Librarians involved in formal assessment of assignments and projects found that students used appropriate library resources. Also, as a result of Summon training, Subject Librarians have seen a shift in the types of queries they handle. This change in the tasks and workflows of Subject Librarians is evident in Tables 4.42 and figure 4.5, respectively. Firstly, there is a drop in the number of reference queries from students in the courses they are responsible for. Secondly, the Subject librarians are now spending less time training students searching strategies, and more time on evaluating results and citing resources. Also, more time is spent on handling technical issues related to access to Summon

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from on and off campus. Overall, Subject Librarians found that students, staff, and fellow Subject Librarians were satisfied with Summon.

Subject librarians note that the use of Summon can be improved through library marketing and promotion strategies. There should be a greater focus on getting all academics to understand the potential benefits of IL training, and Summon use for personal, and students' academic needs. The integration of IL into the course should be encouraged, and attendance of training should be compulsory. Promotion should take place at various levels in the Faculty by Subject Librarians. Summon should be promoted at faculty presentations, departmental meetings, and via academic roadshows where Subject Librarians visit faculties promoting a wide a range of resources and services. The inclusion of Summon information in departmental handbooks and newsletters is also a strategy to improve the use of Summon among academics.

Improving the use of Summon to students requires a multi-dimensional approach. The first approach is dependent on the academic and librarian to arrange compulsory training sessions. From the library training perspective, Summon should be the starting point for all training. Hands-on training should be encouraged and a minimum of two sessions is required to effectively train students in Summon to accommodate for the low computer literacy levels in some courses. Subject librarians recommend the peer teaching approach in the training to help and guide students with low computer literacy levels.

Secondly, various technical issues relating to Summon need to be addressed to improve confidence in the use of Summon by students and academics. The technical issues identified related mainly to access and usability issues. As users access Summon from off campus and by using smartphones, Subject Librarians propose that the mobile version of Summon be enhanced.

Thirdly, the positioning of Summon on the library webpage needs improvement, and Summon should be integrated into electronic library guides, faculty handbooks, and e-learning platforms.

Finally, Subject Librarians suggest that the availability of the Subject Librarian for walk-in sessions should be encouraged, as students tend to seek assistance at their point of need.

6.1.4 What are existing and new ways of using Summon at the DUT?

The existing ways on how Summon is being used by students, academics and Subject Librarians has been discussed in detail in 6.1.3 and 6.1.4. The new ways that Summon can be used at DUT is discussed in this section.

6.1.4.1 Peer teaching of Summon in the libraries

The use of students during orientation sessions to help new students learn about the library and its resources is already in place. The use of students to teach fellow students in the classroom, and in the library will ensure greater participation and interest from students.

6.1.4.2 Access from anywhere, anytime

Summon is mobile compliant, however, not many students and staff are aware that Summon can be accessed from anywhere, anytime. Integrating Summon into the DUT mobile app will improve access to students.

6.1.4.3 Summon is not a competitor with Google

The library training programme should focus on the benefits of Summon to students. The differences in searching for information in Summon and Google should be highlighted.

6.1.4.4 Compulsory and integrated Summon training

Summon training should be compulsory in all courses. An integrated assignment will ensure that students use Summon as the tool of choice. An opportunity exists for integrating Summon in Service departments in DUT where a higher number of students will be exposed to Summon.

6.1.4.5 Summon as the default point of search for all research

Currently, Summon has been promoted mainly as a tool for undergraduate students. The use of Summon should be encouraged by all students, and researchers. Summon has many advanced features that will be of benefit to senior students, and researchers.

6.1.4.6 A usable and user-friendly tool

The issues regarding usability and accessibility needs to be addressed to improve the confidence of students and academics who use Summon, and also, potential users of Summon.

6.1.5 How can the use of Summon be improved at the Durban University of Technology (DUT)?

Students, academics and Subject Librarians provided suggestions on how to improve the use of Summon at the DUT. The researcher has summarized the suggestions provided in tables 4.25, 4.29, and 4.44 into three parts, namely: how the use of Summon can be improved among students from the view of students, academics and Subject Librarians; how the use of Summon can be improved by academics from the view of academics and Subject Librarians; and finally how the use of Summon can be improved by fellow Subject librarians from the view of Subject Librarians.

6.1.5.1 Improving the use of Summon among students

Students' use of Summon can be improved can be achieved by enhanced marketing and promotion of Summon, regular and compulsory training interventions, appropriate support for Summon queries, and increasing the user-friendliness of Summon.

Enhanced marketing and promotion of Summon: Students' use of Summon can be improved through the provision of marketing detailed library tutorials and guides, direct links to Summon from both library and other student websites in the university, the introduction of Summon at first year students' orientation and in the classroom by the academic, and the use of promotional materials by the Subject Librarians during training sessions.

Regular, compulsory, integrated training: The following aspects pertaining to Summon training should be considered, namely:

- Students' attendance to training should be compulsory;
- As a best practice, training should be integrated into an academic literacy or service department course, and at the 'point of need';
- Training should also be completed earlier in the academic year;
- Further training should be given to student from rural areas;
- Training should also focus on differences between Google and Summon; and
- Training should incorporate computer literacy skills

Appropriate Support for Summon: The library support processes for Summon needs to be more explicit, and known to all students. Student support via walk-in sessions with the Subject Librarian should be encouraged as some students may require still require help with Summon post training. In terms of infrastructural support, more computers to access the library and faster Internet access was recommended by students.

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User-friendliness of Summon: The interface of Summon needs to be user-friendly, allowing easy access to Summon from anywhere. The Summon search experience should be "interesting and engaging", with the expectation of high quality search results when performing a search.

6.1.5.2 Improving the use of Summon among academics

The use of Summon by academics can be improved by training and awareness programmes, these include:

- Library orientation for academic staff that should include Summon and why Summon is different from other library tools
- Increasing awareness of Summon in Faculty Board presentations and Academic Roadshows
- Including Summon training as part of the Academic Development Programme
- Advocating that academics attend Summon sessions with students
- Higher level advocacy, possibility with Deans and Heads of Departments

6.1.5.3 Improving the use of Summon among Subject Librarians

The use of Summon among the Subject Librarians can be improved by ensuring the following aspects of Summon are effective, namely:

- To increase confidence among Subject Librarians, the technical issues related to access, and linking to full-text resources needs to be improved;
- The ranking of results needs to be reviewed to improve relevancy and access to a wider range of library resources

This section provided suggestions on how the use of Summon can be improved among students, academics and Subject Librarians. Generally, there

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is a strong motivation for greater marketing and promotion of Summon at all levels of the university, and for an integrative approach to Summon training, and use among students, academics and Subject Librarians.

6.1.6 Summary

The section above provided answers to the research questions posed in this study. The eVALUEd toolkit was used a framework for the evaluation of Summon, and was supported by contemporary methodologies available in the literature dealing with the evaluation of WSDS. The research highlights the ways Summon is being used, and the new ways Summon can be used by academics, students, and academics. Finally, suggestions were provided on how to improve the use of Summon by students, academics and Subject Librarians. These suggestions inform areas for further research which is discussed in the next section.

6.2 Recommendations for further research

There are several areas for further research. These are discussed in detail below.

6.2.1 Expansion of study to all students in the Faculty of Health Sciences

The researcher notes that Summon training has been implemented for a number of years since the start of the study, implying that awareness and use of Summon among current students should differ from students who participated in the study. The individual characteristics of students in the courses under study will also differ from other students in the Faculty. Undertaking research in the entire Faculty will provide useful information about the search behavior of all students.

6.2.2 A comparative study of students across the Faculty of Health Sciences and Faculty of Management Sciences

A future study should examine the use of Summon across the two Faculties. The researcher proposes these two faculties as the level of the library integration in the Faculties is similar. However, the different ways in which students and academics from these faculties use library resources and services should provide interesting comparative data.

6.2.3 An impact model for Summon training and use

The researcher proposes that further research is required to measure the impact of Summon training on the student. Whilst this is implied in this study, a method to measure this effectively needs to be established to determine whether and how training or other variables contribute to an improvement in learning.

6.2.4 Adoption of new technologies

A key aspect that was highlighted in this study was the adoption of Summon by students and academics. As a University of Technology Library, DUT Library deploys various technologies regularly. Understanding the adoption rate of new technologies by students and academics is critical to the use of such technologies. As Summon is still considered an innovation, the researcher proposes research into Summon adoption by students and academics across the institution using Everett Roger's Diffusion of Innovations Theory (Blackburn 2011).

6.3 Summary and conclusion

This study focused on understanding how students, academics, and Subject Librarians were using Summon, and how the use of Summon can be improved at the DUT. The researcher reviewed the literature on the evaluation of online tools such as Summon to select appropriate models and methods that were then used to collect data from students, academics, and Subject Librarians.

The data analysis highlighted the interrelationships that exist among the academics, students, and Subject Librarians to determine the use or non-use of Summon. The researcher proposed a model for Summon training and Summon use that defines the role of the academic, Subject Librarian, and student in improving the use of Summon. There is a high dependency on the Subject Librarian to promote Summon in the Faculty of Health Sciences. The commitment from the academic to include Summon training as part of the course curriculum plays a crucial role in improving the use of Summon among students, as well as the integrated assignments that promote the use of library resources. The student's participation in the training, and understanding of the benefits of Summon for academic purposes not only increases personal use, but also influences the use of Summon by other students.

A number of recommendations were proposed to improve the use of Summon. These include: compulsory attendance of Summon training; improving the access and usability of Summon to make it more user-friendly; and improved marketing of Summon. The study concludes that Summon is used by students, academics, and Subject Librarians from the Faculty of Health Sciences for academic and research purposes.

8. APPENDICES

8.1 Appendix A: Informed Consent

1   Title of research project: **An investigation into the use of Summon at the Durban University of Technology**

2   I ……………………………………… hereby voluntarily grant my permission for participation in the project as explained to me by

……………………………………………………………………………

3   The nature, objective, possible safety and health implications have been explained to me and I understand them.

4   I understand my right to choose whether to participate in the project and that the information furnished will be handled confidentially. I am aware that the results of the investigation may be used for the purposes of publication.

6   Upon signature of this form, you will be provided with a copy.

Signed:

_____   Date: _____

Witness:

_____   Date: _____

Researcher:

_____   Date: _____

8.2 Appendix B: Questionnaire

The Use of Summon at the Durban University of Technology (DUT)

My name is Sagren Moodley, a staff member at the DUT Library. I am currently completing a mini-dissertation as part of a Masters in Information Technology (MIT) degree at the University of Pretoria. My dissertation focuses on the use of the library's web scale discovery service called Summon, in particular to ascertain how it is being used by first year students and staff. Summon is a new service offered by the library that allows you to search all library resources from a single 'Google like' search box that is available on the library webpage and can also be accessed via a mobile device from anywhere, anytime.

You have been selected to participate in this study as you attended Summon training as part of your Information Literacy (IL) training held for first year Faculty of Health Science students. Your participation in this study is both valuable and essential as you form part of a core group of users who can contribute to improving the use of Summon at the Durban University of Technology.

The survey will take about 20 minutes to complete. **Please answer all questions**. Please hand the completed questionnaire to the Subject Librarian attending to your class, or if you need to clarify any of the questions, please contact me on 0836337217 or email me at

Thank you

Sagren Moodley

MIT Student (u12354113)

University of Pretoria

Section A: Demographic and General

Question 1

Gender: Male ☐   Female ☐

Question 2

Please tick ✓ to indicate your course/s of study

Child and Youth	
Chiropractic	
Dental	
Radiography	

Question 3

How would you rate your computer skills to find information for your course assignments and/or research projects easily? **Tick ✓ one of the options**

Excellent		Good		Weak		Need training urgently	

Question 4

How often do you access the internet to get information for your course assignments and/or research projects? **Tick ✓ one of the options**

Daily	
more than once a week	
Less than once a week	
I never access anything on the internet	

Question 5

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How often do you access the DUT libraries (library website, library catalogue and other library online electronic resources such as databases, eBooks, Examination papers and eJournals) to get information for your course assignments and/or research projects? **Tick ✓ one of the options**

Daily	
more than once a week	
Less than once a week	
I never access anything from DUT Libraries online	

Question 6

Where are you most likely to start your search for information for your course assignments and/or research projects? (Tick ✓ one of the options)

Summon	
Library databases	
Google	
Google Scholar	
Other (please specify)	

Question 7

What is your main route to accessing full text content (eBooks, journal articles, newspaper articles etc.) from the library? You may choose **two** options; label them as **1 for first choice, and 2 for second choice.**

Links from Subject guides	
Library website links to e-resources	
A Summon search from the Library website	
Google	
Google Scholar	

I never access full-text content from the library	

Question 8

Which of these library resources have you used in the past three (3) months (since you attended Summon training) for your course assignments and/or research projects? **You may tick ✓ more than one option**

Library catalogue	
Library databases	
Summon	
Subject librarians	
e-Books	
I do not use library resources for my course assignments and/or research projects?	

--**Section B: Summon training**

Question 9

How many training sessions did you attend where Summon was taught? (Tick ✓ one of the options)

One session		Two sessions		More than two sessions	

Question 10

Would you require additional training on Summon to use it effectively?

Yes ☐   No ☐

Question 11

If you replied **yes** to question 11, what aspects of Summon do you think you will need further training on? **You may tick ✓more than one option**.

Evaluation of search results	
Understanding the different formats of information	
Limiting searches	
Advanced searching	
Full text linking options	
Emailing results	
Other (please specify)	

Question 12

In terms of the Summon training, what aspects did you find most useful and least useful? **You may tick ✓more than one option.**

	Most useful	Least useful	N/A
Easy to use Google - like search box			
Quick access to full-text content			
Limiting search results			
Advanced searching			
Many full-text linking options			
Saving to folders			
Emailing results			
Other (please specify)			

Section C: Using Summon to find information

Question 13

Have you used Summon when searching for information for your course assignments and/or research projects?

Yes ☐   No ☐

If not, why?
_____

Question 14

When searching Summon to find information, what aspects do you find **most useful** and **least useful**?
You may tick ✓more than one option.

	Most useful	Least useful	N/A
Easy to use Google – like search box			
Quick access to full-text content			
Limiting search results			
Advanced searching			
Many full-text linking options			
Saving to folders			
Emailing results			
Saving to file			
Database Recommender			

Question 15

Where (access points) have you searched Summon from, and how many times have you searched Summon from these access points in the past three (3) months?

Access points	How many times have you accessed Summon?				
	0	1 - 2	3 - 4	5 - 6	More than 6
Library computers					
SmartPhone on campus					
SmartPhone off campus					
Personal laptop on campus					
Home Computer / Laptop					
Internet cafe					
Other (please specify)					

Question 16

Has Summon improved your ability to find relevant sources for your course assignments and/or research projects?

Yes ☐   No ☐   Unsure ☐

Please explain

……

Question 17

How would you best describe your experience using Summon as a tool to find information for your course assignments and/or research projects? **Tick ✓ one of the options**

Very dissatisfied	Dissatisfied	Somewhat dissatisfied	Neutral	Somewhat satisfied	Satisfied	Very satisfied	N/A

Question 18

What factors influence you or your fellow students' <u>use or lack of use</u> of Summon?

……
……
……………………………

Question 19

Do you have any suggestions on how to get fellow students to use Summon as a <u>first tool of choice</u> when searching for information for assignments, class projects and other research projects?

……
……
……………………………

Question 20

Would you recommend Summon to a friend?

Yes ☐   No ☐   Unsure ☐

Why?

……
……………

Thank you for participating in this survey. Your input will help shape Summon into a preferred starting point for you and your fellow students when searching for information to complete course assignments and/or research projects.

8.3 Appendix C: Interview schedule for academics

The Use of Summon at the Durban University of Technology (DUT)

My name is Sagren Moodley, a staff member at the DUT Library. I am currently completing a mini-dissertation towards a Masters in Information Technology (MIT) degree at the University of Pretoria. My dissertation focuses on the use of the library's web scale discovery service called Summon, in particular to ascertain how it is being used by first year students and staff. You may be aware that Summon has been implemented since February 2012 and to date the extent of the use of Summon has not been formally ascertained and investigated.

You have been selected to participate in this study as your first year students have attended Summon training as part of the information literacy training (IL) sessions undertaken by the Faculty of Health Sciences Subject Librarians. Your input to this study is essential as you form part of a core group of users who can contribute to improving the use of Summon among students and fellow staff at the Durban University of Technology.

This interview will take 30 minutes to complete and will involve answering a series of semi-structured questions to ascertain your awareness of Summon; namely the level of integration of your assignments and courses with the library, the training needs of your students, the perceived usefulness of Summon, the impact of training / use of Summon/ library resources, suggestions for improving training interventions and use of Summon among academics and students in your faculty.

Section A: General

Question 1

What courses do you teach to first-year Faculty of Health Sciences students?

Chiropractic		Child & Youth		Dental		Radiography	
Other							

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Question 2

How much time per week do you spend searching the internet for your lectures and/or research?
(Tick ✓ one of the options)

I never search for anything online		Less than once a week		More than once a week		Daily	

Question 3

How much time do you spend searching the DUT libraries (website, databases or other) for lectures notes and/or research? (Tick ✓ one of the options)

Less than once a week		more than once a week		daily		I never access anything online	

Question 4

Where are you most likely to start your research? (Tick ✓ one of the options)

Summon	
Library databases	
Google	
Google Scholar	
Other (please specify)	

Question 5

What is your main route to accessing full-text content from the library? You may choose **two options**; label them as **1 for first choice, and 2 for second choice**.

Links from subject guides	

Library website links to e-resources	
A Summon search from the Library website	
Google	
Google Scholar	
I never access full-text content from the library	

Question 6

Which of the library resources have you used in the past three (3) months? You may tick✓ more than one option.

Library catalogue(iLink)	
Summon	
Library databases	
E-Books	
Subject librarian	
I do not use library resources	

Question 7

If you have used Summon, please rate your expertise using Summon.

Expert		Average		Novice		I have never used Summon	

Question 8

If you have used Summon, what aspects did you find most useful and least useful?
(Tick ✓ one of the options for each aspect)

	Most useful	Least useful	Not applicable
Easy to use search box			
Quick access to full-text content			
Limiting search results			
Advanced searching			
Many full-text linking options			
Exporting results			
Saving to folders			
Emailing results			
Saving to file			
Database Recommender			

Question 9

Where (access points) have you searched Summon from, and how many times have you searched Summon from these access points in the past three (3) months? **Tick** ✓ **appropriate options**

Access points	How many times have you accessed Summon?				
	0	1 - 2	3 - 4	5 - 6	More than 6
Library computers					
SmartPhone on campus					
SmartPhone off campus					
Personal laptop on campus					
Home Computer/Laptop					
Internet cafe					
Other (please specify)					

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Question 10

If you have been using Summon to find information, are you spending more time, less time or the same amount of time using other skills or sources? (Tick ✓ appropriate options)

	More time	Same amount of time	Less time	N/A
SKILLS				
Boolean searching				
Broadening /narrowing search results				
Citing sources				
Evaluating sources				
Locating keywords				
Plagiarism				
Search strategies				
Other (please specify)				
SOURCES				
Library catalogue (iLink)				
Online databases				
Other (please specify)				

Section B: Course Integration with Information Literacy (IL), including Summon

Question 11

What is the level of integration of IL (which includes Summon) with your courses? Please list the courses and comments?

……..

……

Question 12

As part of your lectures or lecture notes, do you introduce Summon to first year Faculty of Health students as a means to search and discover library resources easily?

Yes [ ]   No [ ]

Question 13

How often do you give first year Faculty of Health Sciences students assignments and/or research projects that involve the use of library resources?
(Tick ✓ appropriate option)

Always		Seldom		Never	

Question 14

Do you recommend the inclusion of the following in assignments and/or research projects for first year Faculty of Health Sciences students?
(Tick ✓ appropriate options)

	Yes	No
Relevant websites		
Reference Lists		
The use of library online databases		

Question 15

Do you have any suggestions as to what the library can do to improve assignments and/or research projects for the courses you teach?

………......
.............……

Section C: Summon training

Question 16

How often have you had a librarian teach a class on Summon as part of information literacy training for first year Faculty of Health Sciences students in the period February to June 2013? (Tick ✓ appropriate option)

Never		1-5 times		More than 5 times	

Question 17

With reference to **question 16**, did you attend any of these classes?

Yes [ ]   No [ ]

Section D: Summon Use

Question 18

Since the Summon training for your first year Faculty of Health Sciences students, have you noticed an improvement in the quality of resources (for e.g. better use of sources; authoritative content) used in assignments and projects?

[ ]   [ ]

Yes   No

Please explain

....
....

Question 19

How would you best describe the reaction of first year students and fellow academics in your Faculty to using Summon as a tool to find information? **Tick ✓ appropriate option**

	Very dissatisfied	Dissatisfied	Somewhat dissatisfied	Neutral	Somewhat satisfied	Satisfied	Very satisfied	N/A

1st year student							
Academic							

Question 20

How can the use of Summon by fellow academics in your Faculty be improved?

……....
………
……
……………………………………………………

Question 21

How can the use of Summon by first year students in your Faculty, and generally, be improved?

……....
……
………….....................

Thank you for your input. Your participation will help develop Summon tool into a tool that is used widely by all library users.

8.4 Appendix D: Interview schedule for subject librarians

The Use of Summon at the Durban University of Technology (DUT)

My name is Sagren Moodley, a staff member at the DUT Library. I am currently completing a mini-dissertation as part of a Masters in Information Technology (MIT) degree at the University of Pretoria. My dissertation focuses on the use of the library's web scale discovery service called Summon, in particular to ascertain how it is being used by First-year students and staff. Summon has been implemented since February 2012 and to date the extent of the use of Summon has not been formally investigated.

You have been selected to participate in this study as you are involved in training first year students in the Faculty of Health Sciences on Summon training as part of your Information Literacy (IL) training. Your contribution to this study is essential as you form part of a core group of users who can contribute to improving the use of Summon among students and academics at the Durban University of Technology.

This interview will take 30 minutes to complete and will involves answering a series of semi-structured questions to ascertain the extent of training undertaken by you; namely, aspects of training covered, and suggestions for improving training interventions and the use of Summon among academics and first-year students in your faculty.

Section A: General

Question 1

In which course/s do you teach information literacy (that includes Summon training)?
You may tick ✓more than one option

Child and Youth	
Chiropractic	
Dental	
Radiography	

Question 2

 In general, how would you rate the computer literacy skills of first-year Faculty of Health Science students?
Tick ✓the appropriate option

Excellent		Good		Weak	

Question 3

With regard to question 2, what percentage (%) of first-year Faculty of Health Sciences students fall into this category? **Tick ✓the appropriate option**

< 25 %		25 % - 50 %		50 % - 75 %		75 % - 100 %	

Question 4

How do the different skill levels of first year Faculty of Health Science students influence your training?

………
………
………
…………………………………………

Section B: Summon training

Question 5

How many IL classes did you teach to the first-year students from the Faculty of Health Sciences between February and June 2013?
Tick ✓the appropriate option

IL classes in this period			
1-3	5-6	7-10	11+

Question 6

With regard to *question 5*, in how many classes did you teach Summon?

………

Question 7

On average how many sessions do you spend teaching Summon for a specific course? **Tick ✓the appropriate option**

One session		Two sessions		More than two sessions	

Question 8

Since you have started teaching Summon, are you spending more time, less time or the same amount of time teaching other skills or sources (listed below)?
Tick ✓the appropriate option

	More time	Same amount of time	Less time	N/A
SKILLS				
Boolean searching				
Broadening /narrowing search results				
Citing sources				
Evaluating sources				
Locating keywords				
Plagiarism				
Search strategies				
Other (please specify)				
SOURCES				
Library catalogue (iLink)				
Online databases				

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Other (please specify)

Section C: Summon access and use

Question 9

Where do you add Summon links or search boxes to provide easy access for first-year Faculty of Health Sciences students and Faculty of Health Sciences academics? Tick ✓the appropriate option/s

Library guides		Handbooks		E-learning platforms	
Other					

Question 10

Has the implementation of Summon had an impact on reference queries (that you attend to) from first-year Faculty of Health Sciences students?

Yes ☐   No ☐

Please explain

………..

Question 11

In your opinion, does using Summon help first-year Faculty of Health Sciences students find appropriate resources to complete their course assignments and/or research projects?

Yes ☐   No ☐

Please explain

……

……

Question 12

Do you actively promote Summon to the Faculty of Health Sciences academics?

Yes ☐   No ☐

If yes, how? If no, why not?

....

....

Question 13

Do you actively promote Summon to first-year Faculty of Health Sciences students?

Yes ☐   No ☐

If yes, how? If no, why not?

....

....

....

Question 14

How would you best describe the reaction of first-year Faculty of Health Sciences students, Faculty of Health Sciences academics, and fellow librarians who have used Summon?
Tick ✓the appropriate option

	Very dissatisfied	Dissatisfied	Somewhat dissatisfied	Neutral	Somewhat satisfied	Satisfied	Very satisfied	N/A
First year students								
Academics								
Librarians								

Question 15

Are there any other comments you would like to share about the use of Summon and how the use of Summon can be improved by Faculty of Health Sciences first-year students, Faculty of Health Sciences academics, and fellow librarians?

……
……
……
……
……
…………………………………………………………………………

Thank you for your time. Your input will not only help shape Summon into a preferred tool for the discovery of authoritative and relevant information for all library users, but also contribute to one of first research projects in South Africa that focuses on the use of discovering tools (such as Summon) by first year students.

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