

# CHAPTER ONE: INTRODUCTION

## 1.1 BACKGROUND

It is generally accepted that education is fundamental to socio-economic development. The United Nations Education, Scientific and Cultural Organisation (UNESCO) World Conference on Education for Sustainable Development declaration recognises education as a significant factor in improving human wellbeing. The declaration mentions that through education, lifestyles based on economic and social justice, food security and sustainable livelihoods can be achieved (UNESCO, 2009). Education is ‘one of the most powerful instruments known for reducing poverty and inequality and for laying the foundation for sustained economic growth, sound governance, and effective institutions’ (Bruns *et al*, 2003:1). Education is perceived as a major contribution to improving people’s livelihoods and their socio-economic status. Teachers are considered to be fundamental agents of formal education.

Lesotho also acknowledges the importance of education, given that the Constitution of Lesotho, section 28 (a), stipulates that “education is directed to the full development of the human personality and sense of dignity and strengthening the respect for human rights and fundamental freedoms.” Even the Education Act of 1995, Education Act of 2010 and the Lesotho Vision 2020 highlight the importance of education and the significance of education in improving people’s lives. In addition, the Lesotho Government Education Sector Strategic Plan 2005-2015 also indicates, among others, that the government has to focus on ensuring that the quality of secondary education is at acceptable level to meet local and international experiences and expectations. This shows that in principle education is among the top priorities of the Lesotho leadership and civil society.

The delivery of education in Lesotho is largely carried out by the government through the Ministry of Education and Training (MOET), churches and the community. Formal education includes the early childhood care and development level, which usually lasts three years, then the primary education level, which is seven years of basic education ending with a national primary school-leaving examination. The learners proceed to secondary education level,

which takes five years. Secondary education is divided into three years of junior secondary and two years of senior secondary schooling. The junior secondary phase is often called junior certificate (JC), as the learners write JC examinations, which are an entry requirement for senior secondary education. The senior secondary education ends with Cambridge Overseas School Certificate (COSC) examinations that determine entry to the tertiary education level. In this study, the junior secondary and senior secondary levels are referred to as JC and COSC respectively.

The role of secondary education in least developed countries such as Lesotho, is centred on the need of learners to acquire functional knowledge skills to be employed or self-employed, because most of them drop out at this level, while a few proceed to tertiary education. ‘Secondary education builds upon basic education and continues to prepare learners for further education and training and the world of work’ (MOET, 2008:19). As a result, the secondary education curriculum aims to develop learners’ advanced entrepreneurial, technological and vocational skills for the world of work and further studies (MOET, 2008:21). According to MOET (2008:35), this curriculum is organised to address five major learning areas. Each learning area has a cluster of subjects to enable its achievement. These learning areas are:

- Linguistic and literary area.
- Numerical and mathematical area.
- Personal, spiritual and social area.
- Scientific and technological area.
- Creativity and entrepreneurial area.

The MOET is responsible for secondary education curriculum development, delivery strategies and standardised assessment. This includes addressing the learning areas mentioned above, as well as identifying various subjects, including their syllabi outlines, that are clustered under each learning area. Clusters of subjects help to provide the learners and schools with a wider choice. The choice of subjects for each cluster varies from school to school. Nonetheless, the compulsory subjects are English, life skills, mathematics, sciences (biology, chemistry, and physics) and Sesotho. The elective subjects are agricultural science, business education (accounting and commerce), development studies, drama, geography,

history, Information and Communication Technology (ICT), home economics (food and nutrition and home management), music, physical education, religious education, technical subjects and other international languages such as French and Spanish. Although the curriculum and assessment policy document has put geography, sciences and technical subjects under the scientific and technological learning area, the schools have put geography under the social sciences. In Lesotho schools, geography, history and development studies teachers are in the department of social sciences. Seemingly, the policy document considers geography as a scientific subject, while the schools regard it as a social science.

Lesotho secondary education faces constraints such as lack of finances, teaching materials and facilities such as laboratories and libraries. This is coupled with the problem of overcrowding in classrooms. Oversize classes and the scarcity of resources, coupled with the lack of trained teachers, has been an unresolved problem in Lesotho for a long time (Moloi *et al*, 2008:613). Veenam (1984:143) acknowledges that inadequate and/or insufficient teaching materials and supplies hinder effective teaching and learning. However, the Lesotho government has embarked on some initiatives to address these constraints. Some of these initiatives are building more secondary schools and the introduction of part-time and distance-education programmes for teacher training both at the National University of Lesotho (NUL) and the Lesotho College of Education (LCE) to increase the production of qualified teachers.

Lesotho teachers are working in a peculiar environment complicated by a number of factors that may affect their information needs and information-seeking patterns and that warrant research. Firstly, their schools operate in a bureaucratic system overseen by three governing institutions: government, churches and the community. These institutions are driven by different ideologies, which may be conflicting and may not always be in agreement with matters affecting teachers. For instance, while the government may find sex education vital in a school curriculum, churches and the community may view it as a taboo from religious and cultural perspectives. These conflicting views ultimately affect teachers and may trigger some information needs, thus impinging upon information-seeking.

Secondly, the Human Immunodeficiency Virus (HIV) and Acquired Immune Deficiency Syndrome (AIDS) impinge on the teachers because they are exposed to orphans and vulnerable children, with no learning support at home concerning school work and other life matters. For some orphans, the only adult figure with whom they interact is their teacher. Hence the teachers may have to assume additional roles of being counsellors, parents and guardians, among others. This is affirmed by Mnubi-Mchombu *et al's* (2009) study of the information needs and information-seeking behaviour of orphans and vulnerable children (OVC) and their caregivers in Namibia which found teachers as the main source of information for OVC. Teachers also emerged as a primary source of information for learners in political upheavals in Stilwell and Bell (2003) study. The teachers are also not immune to HIV and AIDS; they might not only be infected but also affected as they have families and friends suffering from this pandemic. The HIV and AIDS pandemic, as well as other emerging societal and technological challenges, require the teachers to be capable and ready to equip their learners with the relevant information and necessary skills to combat the pandemic and the emerging challenges. This may require the teachers to seek more information regarding HIV and AIDS, including emerging societal challenges posed by this pandemic. Furthermore, the secondary teachers' mandate is to develop learners who are mostly adolescents. Adolescents' age ranges between 10 and 19 years and represents, in many societies, a transition to physical, psychological and social maturity (Mturi & Hennink, 2005:129). Adolescents may sometimes commence having unprotected sex, which may mean exposure to HIV and may also result in unwanted pregnancies.

Thirdly, the high influx of learners into high schools as a result of free primary education (FPE) is a factor that adds peculiarity to the teachers' environment. When FPE started in 2000, many children who could not afford tuition were registered in schools. This increased primary schools' enrolment enormously. In turn, the number of learners entering secondary education also increased remarkably in 2007, as it was the beginning of this phase for the first cohort of FPE learners. FPE has not only contributed to large class sizes at both primary and high schools, but has also exacerbated overcrowding in high schools, as the number of high schools has always been far lower than the number of primary schools in Lesotho. The 2008 statistics from the MOET indicate that there are 318 secondary and high schools while there are 1481 primary schools in Lesotho. These large class sizes pose challenges to teaching, resources, facilities and the provision of information in schools. At this point, one realises the

role that information could play in helping the teachers and learners in the process of teaching and learning in these difficult circumstances.

The Lesotho junior secondary geography syllabus aims to increase learners' knowledge and understanding of the earth as the home of humans, including the interaction of humans with their environment. It develops a positive attitude to caring for one's environment. It supports learners in gaining basic geographic skills and techniques that will enable them to address environmental problems. It also aims at improving their social lives within their living environment, as well as arousing their interest and curiosity to analyse the relationships between the bio-physical processes and human activities, including knowing about their country in relation to other countries (MOET, 2004).

The syllabus further recommends a learner-centred approach involving all the senses in the learning process. It also encourages a combination of more than one method. According to the MOET (2004:2), these methods are:

- Close observations of the environment by the learners.
- Use of audio-visual aids for abstract topics.
- Discussions and debates on topics which generate a lot of questions and arguments.
- Group work and peer-teaching.
- Use of guest speakers, research, fieldwork and excursions, as well as lecturing.

The junior secondary geography syllabus is formulated in Lesotho with textbooks both for the learners and teachers to aid the teaching and learning process in order to accomplish the objectives of the syllabus. These books are provided by the government under the book rental scheme for junior secondary education. Nevertheless, there is still a need for more information to supplement the textbooks so that various teaching and learning methods are used and also for developing the learners' information literacy skills; this can be addressed if the teachers are also information literate. Studies related to teachers' information literacy include those of Asselin and Lee (2002), Branch (2003), Crouse and Kasbohm (2004), Earp (2009), Herron and Haglund (2009), Immroth *et al*, 2007, Johnson and O'English (2004), Jones (2008), Kimsey and Cameron (2005), Lipu (2003), Merchant and Hepworth (2002),

Miller (2005), Miller *et al.*, (2005), Probert (2009), Stephens (2007), Todd (1997), Usluel (2007), Wen and Shih (2008), Williams and Coles (2007b) and Williams and Wavell (2007). Although they address the important issue of information literacy, the above studies provide little reflection on the information behaviour of teachers and their information needs.

The senior secondary Geography syllabus covers physical geography and human geography aspects. Physical geography includes scientific topics such as geology and geomorphology, weather and climate, mining, marine erosion and drainage systems. Human geography includes topics related to humankind such as population and settlements, tourism and migration. Most secondary level geography teachers in Lesotho graduated from the NUL with a BSc Ed, BA Ed, or B Ed degree.

The BSc Ed. teachers study Geography from the scientific perspective, which is mostly physical geography, while the rest study geography from the humanity perspective and mostly study human geography. This creates a disparity in knowledge content regarding these two spheres of geography. Yet, the teachers are expected to teach the subject fully covering these two major areas irrespective of their degree.

The senior secondary geography syllabus is developed by the University of Cambridge, which is the examinations body for senior secondary education in Lesotho, but no designed textbooks are provided. There is no single textbook that addresses all the topics in the syllabus adequately and this calls for several books for the subject of geography. Moreover, teaching geography requires comprehensive books with colourful illustrations to aid understanding, and often these are expensive and most of the learners may be unable to afford them. At senior secondary level, there is no government book-rental scheme. The need for information to meet the demands of the senior secondary syllabus, and also to address the NUL graduate teachers' content gaps emanating from their degree structure, cannot be overemphasised.

It is evident from the junior and senior secondary education geography syllabi that the teachers need to know their environment for geography teaching and learning. They might also have to source external people with expertise to talk on some topics and identify areas

for field work and excursions, both in Lesotho and possibly outside the country. The teachers have to identify topics suitable for research, group work, lecturing, discussions and debates, including the appropriate audio-visual aids for each topic. The environment changes over time and the field work excursions may not be the same every year; even the learners differ from year to year. The geography teachers need up-to-date, relevant information most of the time. Such information may be delivered to the teachers in their preferred format to address their information needs and could use their preferred information sources if all these are known. This can be determined through a proper investigation of the teachers' information needs and information-seeking patterns and preferences for communication channels that involve them directly. In this study information-seeking includes a preference for information sources, order of information sources used and preferred information communication channels; these components will be addressed through separate research questions.

Access to information remains a problem for teachers in Lesotho. Few schools in Lesotho have school libraries. Where school libraries exist, they are not adequately equipped and there is no evidence that these libraries are treated as an important component of the school curriculum, as they are often manned by unqualified library assistants or professional teachers with no librarianship qualification (Kakoma, 1999:121). Mafube (2005) still indicates lack of school libraries and information resources in secondary education, while Kakoma and Mariti (2008) emphasise lack of information resources in tertiary education.

School libraries are invaluable facilities that contribute to positive learning outcomes (Chartered Institute of Library and Information Professionals, 2004; Crossley & Murby, 1994; National Literacy Trust, 2010). They are 'indispensable adjuncts to education as well as a base for generating innovative thinking, a stimulus to culture, and an aid to individual self-development' (Önal, 2009:45). The school library, therefore, is one of the important sources of information to teachers and learners in achieving learning outcomes. The library has ample potential to improve the quality of educational processes in the school (De la Vega & Puente, 2010:311).

Although teachers are described as ‘the population group that is active, experienced and critical users of information’ (Taylor, 1991:219) and teaching and learning are associated with handling of information (Karunarathna, 2008), the secondary level teachers in Lesotho may still have limitations in accessing information. This is mainly due to lack of diverse modern ICTs in many schools, including library facilities, as indicated earlier. Yet, pedagogy and content require information. The teachers have to deal with the national curricula requirements and syllabi outlines, as well as emerging social, economic, political and natural issues, which are dependent upon the accessibility of up-to-date information. Failure to obtain relevant and authentic information may hamper the learning process and ultimately have negative effects on the learners’ performance.

The need for information cuts across all spheres of life, but the relevance of information in the education of young minds and their teachers cannot be overemphasised. Consequently, ‘information-seeking is a primary activity of life and people seek information to deepen and broaden their understanding of the world around them’ (Karunarathna, 2008:13). Rogers (1995) acknowledges that obtaining information is one of the primary ways of reducing uncertainty. Teachers and learners are constantly in dire need of information to build up or develop relevant knowledge. There are learners who drop out of secondary education before completing it, while others complete it but do not proceed to higher education. Most of these learners have to seek employment. As a result, in Lesotho, secondary education also serves to prepare learners for employment. There is a need to equip learners with information relevant for different workplaces, including proper career guidance and good conduct in the midst of HIV and AIDS.

‘The field of education demonstrates a substantial amount of literature written by, for and about the teachers. However, the field of information science has yet to publish much with regards to teachers and information behaviour’ (Mundt *et al*, 2006:1). In education, teachers have been studied extensively in relation to information, often in respect of the use of the internet and other information and communication technologies in teaching (e.g. Barker, 2009; Becker & Ravitz, 1999; Chai *et al*, 2009; Chigona & Chigona, 2010; Haydn & Barton, 2008, 2007; Irvine & Williams, 2002; Madden *et al*, 2005; Noh *et al*, 2004; Passey, 2006; Tahee *et al*, 2004; Twidle *et al*, 2006). In the field of information science, literature on teachers’ information needs, information-seeking and preferences for communication



channels is still limited and mostly emanates from other continents such as Australia (e.g. Dillon, 1997), North and South America (e.g. Mundt *et al*, 2006; Patuelli, 2008; Perrault, 2007), Europe (e.g. Conroy *et al*, 2000; Henley, 1995; Williams & Coles, 2007b) and Asia (e.g. Hsu, 2005; Lan & Chang, 2002, Lundh, 2005; Wu *et al*, 2005). Some pertinent studies from Asia and South America are inaccessible because of language barriers (e.g. Chang, 2004; Chien & Chang, 2005; Kolozs, 1992). Other pertinent studies are on teachers (i.e. lecturers) at universities, not at secondary/high school level (e.g. Asunka *et al*, 2009; Tahir *et al*, 2008; Tahira & Ameen, 2009). Studies on teachers' information needs and information-seeking patterns are still limited in Africa, with exceptions including Nwokedi and Adah (2009), Oosthuizen (1997), and Snyman and Heyns (2004). At the time of writing this thesis, there was no study on the information needs and information-seeking patterns of teachers in Lesotho.

Secondary level teachers occupy an important role in education in any country. In Lesotho, they have the chief responsibility for producing a capable workforce that will be able to contend with the prevailing problem of high unemployment (Boaduo, 2005:12). It is often argued that both secondary education drop-outs and graduates contribute to unemployment. The importance of these teachers, in particular their information needs and information-seeking patterns, including the implications for providing them with a satisfactory information service, underpin this study.

The development of appropriate information service depends largely on understanding fully the target users' information needs and information-seeking patterns. This may be achieved through appropriate research. According to Hepworth (2007), information practitioners are faced with challenges pertaining to information products and services. Hepworth (2007:33) adds that understanding the consumer (user in this study) of information is becoming increasingly important in relation to the design and development of information products and services, because this understanding enables information services to be tailored to individuals and the community they serve. In affirmation, Wilson (2006a:667) argues that 'an information science firmly founded upon an understanding of information users in the context of their work or social life is likely to be of more use to the information practitioner, by pointing the way to practical innovations in information services.' Consequently, Oladokun and Aina (2009) studied the library and information needs, including the use of information

sources, of continuing education students at the University of Botswana (UB) and made recommendations for service delivery for the distance learners at UB. White *et al* (2009) studied the information needs and information behaviour of students studying abroad and developed library and information services for them. Similarly, in the context of the current study, there is a need to investigate the information needs of secondary level geography teachers in Lesotho, the way these teachers seek information, including the sources that they use and their preferences for communication channels, in order to guide the design and implementation of their information service. ‘We need to understand the user’s perspective to design more effective library and information services’ (Kuhlthau, 2004:13).

The following are some of the factors that led to a need to study secondary level geography teachers in Lesotho:

- Most secondary level geography teachers in Lesotho graduated from the NUL with a BSc Ed, BA Ed, or B Ed. The BSc Ed teachers study mostly physical geography, while the rest study mostly human geography. This creates a disparity in knowledge content regarding these two major geographical spheres that may be addressed through delivery of an appropriate information service.
- In the past five years, little attention has been paid to the secondary level geography teachers’ in-service training in terms of regular workshops, particularly by the MOET. It is worth investing how these teachers obtain information to meet their needs.
- In most of the newly opened government schools, geography is offered at JC level. Previously, some of the schools were phasing out geography by offering subjects such as development studies, business education, etc. It was felt that geography as a subject could be threatened by the new subjects, including the introduction of environmental education in schools. It is envisaged that the provision of more information on geography may increase appreciation of this subject.
- The researcher used to be a secondary level geography teacher in Lesotho. Given her experience and knowledge of teaching geography in Lesotho, it may be easier to study secondary level geography teachers compared to teachers of other subjects.
- The researcher is now an information practitioner at the Institute of Education (IE) Information and Documentation Centre (IDC) at the NUL. In her current designation, she has to initiate and provide information services for various users in the field of

education. Most of these users are pre-service and in-service teachers. Therefore, investigating the information needs and information-seeking patterns of secondary level geography teachers would enable the researcher not only to understand them, but also to provide them with an appropriate information service.

It is against this background that there was a need for an investigation into the information needs and information-seeking patterns of secondary level geography teachers in Lesotho, in order to guide the design and implementation of an information service for them.

## **1.2 STATEMENT OF THE PROBLEM**

An understanding of human information behaviour is fundamental to the provision of high quality library and information services. Once librarians and other designers of information services understand people's information-seeking behaviour and preferences, they might mould their services and resources to conform to these patterns, thereby better serving the users' needs (Agosto & Hughes-Hasell, 2005:141-163). They might also note opportunities for intervention that may shape and have an impact on information behaviour. Consequently, the central focus of this study is the information needs and information-seeking patterns (part of information behaviour) of secondary level geography teachers in Lesotho. These teachers' information needs and information-seeking patterns, including preferences for information sources and information communication channels, are regarded as fundamental to the design and implementation of an appropriate information service. The study poses the following principal research question:

**What are the information needs and information-seeking patterns of secondary level geography teachers in Lesotho with regard to their teaching roles and how can these guide the design and implementation of an information service for these teachers?**

### 1.2.1 Research questions

The principal research question is broad and was therefore divided into the following sub-questions:

1. What are the information needs of secondary level geography teachers in Lesotho?
2. What are the information-seeking patterns of secondary level geography teachers in Lesotho?
3. Which information sources do these teachers mostly use?
4. Which information communication channels are preferred by these teachers to access and exchange information?
5. Which information sources are available and accessible to these teachers at schools?
6. What kind of an information service can be recommended for secondary level geography teachers in Lesotho?

### 1.3 THEORETICAL FRAMEWORK

Studying the information needs and information-seeking patterns of human beings as part of their information behaviour is not new. Many studies have been undertaken resulting in models that reveal human behaviour in seeking information. Some of these models explain how the information needs arise, how these needs are addressed and how the information is used. While some models could be termed broad and general, others are specific and concise. For instance, Wilson (1999) and Wilson and Walsh (1996) offer a general information behaviour models that encapsulates the cycle of information activities, from the origin of an information need to the stage when information is used. Taylor (1991) specifically offers an information use model outlining the uses of information. Kuhlthau (1993) offers an information search process model and Ingwersen (1996) an information retrieval model. A few examples of other information behaviour related models are suggested by Choo *et al* (1999, 2000), Dervin (1983), Ellis (1989, 1993), Johnson (1997), Krikelas (1983), Leckie *et al* (1996) and Savolainen (1995) on everyday life information-seeking focusing on non-work information-seeking and tested on teachers and textile industry workers. Although the current study focuses on teachers' information-seeking for work purposes, considering that the current study involves teachers in a developing country, who have to prepare learners for

employment, while also facing peculiarities such as HIV and AIDS, bureaucratic systems under which their schools operate and high influx of learners in schools, models focusing on everyday life information-seeking, such as Savolainen's (1995) might be of value in this study.

Ikoja-Odongo and Mostert (2006:154) explain that each model has its own strengths and weaknesses and not all of them are based on empirical tests. Wilson (1999:250-251) asserts that models can be presented theoretically or conceptually, aiming to provide a thinking framework about a problem; in this case, using a model enables specific research questions to be tested and researched. However, all available information-seeking models do not test the same things, therefore researchers need to acquaint themselves with what each model has set out to test, then choose a model after determining whether the model will present the information required accurately, reliably and systematically, and whether it can explain or predict the desired phenomena, specifically enabling validation of representations and findings (Wilson, 1999). After familiarising oneself with several models in the literature, and bearing in mind the principal research question outlined above, it was found that Leckie *et al*'s (1996) information-seeking of professionals model would be the most appropriate to adopt as the theoretical framework of this study. This model is explored in more detail in Chapter Two (section 2.2.1). Nonetheless, it is important to explain briefly why this model was chosen as the study's theoretical framework.

As mentioned earlier, teachers are important agents of formal education. Therefore, their information needs and information-seeking patterns underpin this study. As a result, this study aims to establish the information needs and information-seeking patterns of teachers with respect to their work, in order to guide the design and implementation of information service for these teachers. The teachers are professionals, and it is therefore imperative that a study of their information-seeking behaviour be guided by the information-seeking model that specifically applies to professionals at work. As a result, the study employs the Leckie *et al* (1996) model because it is an information-seeking model for professionals. It was derived from studies of professionals such as engineers, lawyers and those in health care. Moreover, Leckie *et al* (1996:161) maintain that their model is applicable to all professionals and it focuses on the professionals' tasks and work roles (Case, 2007:139). Where necessary the model can be supplemented with insights from other models.

## **1.4 RESEARCH DESIGN AND METHOD**

This section briefly introduces the research design and method that were followed in this study. The comprehensive explanation of the entire research procedure is presented as Chapter Three. This study employs a survey research method both quantitatively and qualitatively to investigate the research problem. However, the overall methodology was a qualitative one. The objective was to use the two methodologies so that they complement each other and assist in gaining insight into the research problem. It was envisaged that the use of both quantitative and qualitative methodologies would help to increase the validity and reliability of the data collected. Section 1.4.2 below shows how the quantitative and the qualitative methods were used.

### **1.4.1 Study population**

The rationale and elaborate description of the study population are outlined in Chapter Three (section 3.4). The following were the groups that formed the study's population:

- In-service secondary level geography teachers.
- Prospective secondary level geography teachers.
- Institutions directly involved in secondary level geography education in Lesotho.

### **1.4.2 Data collection methods**

While quantitative methodology was found suitable to collect data from the prospective geography teachers, a qualitative methodology was found appropriate for collecting data from the in-service secondary level geography teachers, and institutions involved in secondary level geography education in Lesotho, as well as site visits for observation of school libraries. Specifically, data were collected using the following methods that are described further in Table 1.1:

- Literature review to establish the theoretical framework and to guide the empirical component of the study.
- Questionnaire for the prospective secondary level geography teachers.
- Focus group discussions with the in-service secondary level geography teachers.

- Interviews with officials in the institutions involved in secondary level geography education in Lesotho.
- Partial observation through site visits to school libraries.

**Table 1.1: Research techniques used for the study of secondary level geography teachers**

| Research techniques   | Descriptions of the research techniques  |
|---|--|
| Literature review   | The review covers the information needs and information-seeking patterns of teachers, their information communication channels and information sources, including information service in relation to the wider field of information behaviour. The extensive literature review is provided as Chapter Two.   |
| Prospective secondary level geography teachers' structured questionnaire  | The questionnaire for the prospective secondary level geography teachers addressed the information needs, information-seeking patterns and information communication channels of these teachers during their teaching practice. It sought suggestions on the improvement of information service for secondary level geography teachers in Lesotho. (Appendix D)  |
| Focus group schedule for the in-service secondary level geography teachers  | The schedule for the focus groups involving the secondary level in-service geography teachers aimed to establish their information needs, information-seeking patterns and information communication channels, as well as their opinion on the availability of information in their schools, including their suggestions on the improvement of such information service. (Appendix A )                               |
| Semi-structured interview schedule for individuals in institutions involved in secondary level geography education in Lesotho | The interview schedule was aimed at the institutions involved in secondary level geography education in Lesotho. It was meant to investigate their perceptions of teachers' information needs as well as their preferred modes of information communication. The schedule aims to establish the existing information service for the teachers and methods of disseminating information to the teachers. (Appendix B) |
| Observation schedule for libraries  | This was used to explore the school libraries as part of information service in place to support the information needs and information-seeking of the teachers. (Appendix C)   |

It is common for information needs and information-seeking studies to combine research methods, therefore the current study is no exception. The table below provides examples of some related studies that utilised more than one research technique.

**Table 1.2: Examples of multiple research methods in related information behaviour studies**

| Author(s)                             | Focus  | Research techniques                                   |
|---------------------------------------|--|---|
| Williams and Coles (2007a)            | Teachers' use of research information in teaching  | Questionnaire, interviews, focus groups               |
| Stokes and Lewin (2004)               | Information-seeking behaviour of nursing teachers  | Questionnaire, interviews and observations            |
| Dias Gasque and De Souza Costa (2003) | Teachers information-seeking behaviour in continuing education   | Questionnaire and interviews                          |
| Mnubi-Mchombu <i>et al</i> (2009)     | Information needs and information-seeking behaviour of OVC and their caregivers (included because of teachers' involvement with orphans owing to HIV and AIDS) | Interviews, focus group discussions and questionnaire |

### 1.4.3 Data analysis

Since this study applied both qualitative and quantitative methodologies, it is inevitable that the data collected are qualitative and quantitative. Therefore, data had to be analysed accordingly. Qualitative data were collected from focus group discussions, individual semi-structured interviews and observations, while quantitative data were collected from the structured questionnaire. Content analysis was used to analyse the qualitative data while the quantitative data from questionnaire were analysed using Statistical Package for Social Science (SPSS). An explanation of the qualitative data analysis for this study is provided in Chapter Three (section 3.9.2). The general aim of the data analysis was to establish the information needs and seeking patterns of secondary level geography teachers, as well as to establish the existing information services, including their preferred channels of communication. The ultimate purpose was to guide the design and implementation of information service for these teachers.

### 1.5 SIGNIFICANCE OF THE STUDY

This study is investigative in nature. It examines the information needs and information-seeking patterns, including the use of information sources and preferences for means of communication, in order to improve information service delivery for the secondary level geography teachers in Lesotho. Specifically, the study aimed to:



- Understand the secondary level geography teachers' information needs, information-seeking patterns and preferred information sources;
- Identify the information communication channels and information gaps for the secondary level geography teachers;
- Look for effective ways of information service delivery to the secondary level geography teachers in Lesotho that could even be applicable to the entire teaching sector; and
- Contribute important knowledge in the field of information behaviour in the area of the teachers' information needs, information-seeking patterns and information service delivery. Such knowledge is still limited, particularly in Africa, and lacking in Lesotho.

## **1.6 LIMITATIONS**

- The study focuses only on secondary level geography teachers in Lesotho in the schools that offer geography both at JC and COSC levels.
- The study did not consider prospective teachers at the LCE because they are engaged in teacher training for JC level only.
- Geography is an elective subject as opposed to a core subject and therefore it is not offered in all the schools. The schools that offer geography may have certain unique features, unknown to the researcher, which may introduce some peculiarity that shapes the findings of this study. Therefore, this may have an impact on generalising the findings to all schools and all subjects.
- Studying the teachers' information needs and information-seeking patterns and formulating an appropriate information service strategy do not necessarily solve the many other problems that teachers face in facilitating the teaching and learning of geography in Lesotho, such as overcrowded classrooms and an increasing number of orphans in schools.

## 1.7 CLARIFICATION OF TERMS

This section outlines the working definitions of terms used in this thesis. The study is on information needs and information-seeking patterns and the term information is crucial. From the research questions (section 1.2) it is evident that terms such as information need, information-seeking, information source, information communication channel, information service and secondary level geography teacher also have to be clarified. The terms are presented in a systematic manner that is logical for easy understanding. Although these terms are briefly clarified in this introductory chapter, they are further discussed in Chapter Two for literature review.

### 1.7.1 Information

Despite a lot of efforts to define information in the field of information science, there is still no generally accepted and agreed explicit understanding of the concept of information (Bawden, 2007:2). Somehow there seem to be problems and complexities when dealing with the term ‘information’. The following are some of the reasons for the complexities pertaining to the term ‘information’ found in the literature:

- Information is too vast a concept to define and examine, given that it is intangible and multifaceted (Weller, 2007:438-439).
- The term ‘information’ has many underpinning meanings and perspectives, depending on the field in which it is being studied and the context in which it is being used (Zhang & Benjamin, 2007:1935).
- Information has been studied in many different disciplines, such as Computer Science, Communication, Information Science, Information Systems and Informatics, and each of these disciplines has a different focus (Mutsheva, 2006:34).
- Information does not have a single definition and there is also some failure to make distinctions among information, facts, advice and opinion (Wilson, 2006a:659).

Nonetheless, Ikoja-Odongo and Mostert (2006:149) argue that information can be seen as any stimulus that reduces uncertainty. According to Zhang and Benjamin (2007:1935), information is related to concepts such as fact, data, knowledge, intelligence, news, communication, instruction, representation, mental experience or stimulus, among others. To

corroborate this view, Wilson (2000a:6) indicates that information can be understood as a *physical entity* or phenomenon, such as books, journals, etc., as well as the *channel of communication* through which data are transferred, whether written or oral, or as *subject data* contained in a document or transmitted orally, or *factual data* objectively transferred, or *advice* or *opinions*, into which value judgements enter.

Because of the complexities pertaining to the term ‘information’ outlined earlier, this study does not attempt to define information, but rather opts to be guided by the understanding outlined by Wilson (2000a) above. This is because in many instances ‘we ordinarily use and hear the word “information” without much concern for its definition; but we know what we mean when we use the word information’ (Case, 2007:42). In the same vein, it is deemed that the research participants will know what is meant by information, especially when it is pertinent to their teaching.

### **1.7.2 Information need**

According to Kuhlthau (2004:26), ‘information need is an actual, but unexpressed need for information, or an ill-defined area of indecision which may be expressed in an ambiguous, rambling statement. Information need may start as a vague sort of dissatisfaction which is characterised by confusion and perplexing reaction to a vague new idea. This confusion increases and mounts until the person may be threatened by his/her lack of understanding.’ On the one hand, Ingwersen and Järvelin (2005:20) state that ‘information need signifies a consciously identified gap in the knowledge available to an actor. Information needs may lead to information-seeking and formulation of requests for information’. On the other hand, Ikoja-Odongo and Mostert (2006:149) observe information need as the recognition of the existence of uncertainty in the personal or work-related life of the individual. In addition, Ikoja-Odongo and Mostert (2006:147) note that information needs may be expressed, unexpressed or dormant, where dormant needs are those that the individual is unaware of, but may be potentially activated by an information service provider. Furthermore, there are unconscious needs which do not necessarily lead to action.

Based on the discussions above, in this study information need is regarded as an absence or lack of information that creates deficiency in the knowledge of the teachers. While this study

acknowledges that information needs may be expressed or unexpressed, or may be derived from the environment within which users operate, it considers only the expressed information needs.

### **1.7.3 Information-seeking**

Information-seeking is described as the purposive acquisition of information from selected information carriers; these include information sources and channels for communicating information (Johnson, 2003:737). It includes examining the ways in which people find information they require, such as how and where people look for solutions to information problems (Burke, 2007:679). However, Spink and Cole (2006:27) argue that it is not in every case that human beings seek information for a specific purpose, because there is the everyday life information-seeking that includes more consideration of human sense-making behaviour of the environment and more non-academic and less formal information-seeking behaviour. This may happen when browsing or reading for leisure, but finding something that was not originally sought (Foster & Ford, 2003:324). Nonetheless, McKenzie (2003:27) indicates that there are also occasions when people make contact or interact with information sources through the initiative of another agent, either the information source or some other gatekeeper or intermediary. It is also important to note that Fourie (2006:101), in line with the suggestions by Wilson (1999), indicates that “information-seeking can be active or passive”. On the one hand passive information-seeking occurs when people decide that they do not want to seek information, or they may be unaware of the fact that they might need information. On the other hand, active information-seeking occurs when people do everything in their power to seek information.

From the arguments above, one deduces that information-seeking may occur with a specific purpose in mind in order to address the information need. It may also happen when one is regularly interacting with sources of information without necessarily looking for something specific. This study regards information-seeking as the process which the secondary level geography teachers engage in to find information, either with a specific purpose in mind, or through regular interaction with information sources such as browsing or through other agencies. The study also considers that information-seeking can be an individual endeavour or a group exercise.

#### **1.7.4 Information behaviour**

Ingwersen and Järvelin (2005:21) define information behaviour as the human behaviour dealing with generation, communication and use of information and other activities concerned with information, such as information-seeking behaviour and interactive information retrieval. Case (2007:5) maintains that ‘information behaviour encompasses information-seeking as well as the totality of other unintentional or passive behaviours (such as glimpsing or encountering information), as well as purposive behaviours that do not involve seeking, such as actively avoiding information.’ To corroborate this view, Wilson (2000b:49) describes information behaviour ‘as the totality of human behaviour in relation to sources and channels of information, including both active and passive information-seeking and use.’ In the same vein, Fisher and Julien (2009:317) explain that information behaviour focuses on people’s information needs; particularly how they seek, manage, give and use information, purposefully and/or passively, in their varied roles in their everyday lives. In this study, information behaviour is considered as any activities in which teachers engage in relation to information phenomena. This includes awareness of their information needs, their active information-seeking, their use of information in creation and presentation, their communication of information, their preferences and use of information sources, and how they interact with such sources.

#### **1.7.5 Information use**

According to Byström and Hansen, (2005:1055) as a result of information-seeking, certain information is retrieved, collected and may be used in various ways. It may be used as a whole, in part or in combination with other information already existing. Nahl (2007:xix) indicates that information use is related to the feeling of wanting to do something with the information that has been received, such as telling someone else, or buying it, or selling it, or using it to achieve something more effectively. In the same vein, Choo *et al* (2008:794) note that an important form of information use is instrumental utilisation, which is more related to outcomes. Therefore, one may deduce that a person realises the information gap, acts on it to seek information and does something with the information as discussed by Savolainen (2006a). Information use occurs when something is actually done with information to utilise it to address information needs, share information or communicate, and generate other information.

### **1.7.6 Information source**

Generally speaking, ‘anything human beings interact with or observe can be a source of information’ (Bates, 2006:1035). The information source is a medium in which knowledge and/or information is stored (Nikalanta & Scamell, 1990:25). In the workplace, Byström and Järvelin (1995:193) mention that from the workers’ point of view an information source contains (or is expected to contain) relevant information. Fisher and Julien (2009:332) indicate that there are two types of information sources that dominate the literature in studies on information behaviour: the interpersonal and the internet. Other related terms found include information carriers (Johnson, 2003) and information resources (Fidel & Pejtersen, 2004). In this study, an information source is understood as something that contains and/or stores information. This is affirmed by Tucker and Napier (2002:299) when they indicate that the information source provides content or expertise of interest to the information seeker.

### **1.7.7 Information communication channel**

According to Huang *et al* (2004:148) a communication channel refers to a transmission system or medium, including the whole process of sending messages from the source to the receiver. This is a mechanism through which information is transferred from an information source to an information seeker. Nikalanta and Scamell (1990:25) indicate that a communication channel is a means by which information is moved from one point to another. Tucker and Napier (2002:299) point out that the information communication channel refers to the methods or vehicles by which information is transferred or received. This study considers an information communication channel as a conduit, transmitter or passage for information transfer from source to receiver.

### **1.7.8 Information service**

According to Woodsworth and Williams II (1993:3), an information service can be described as a combination of information, technology and people, including a set of activities that provides individuals with relatively easy access to data or information. Ju (2006:354) mentions that the core benefit of information services is their capacity to help the users to get the right information, thereby enhancing their academic understanding and efficiency. Moreover, Ju (2006:355) indicates that to meet users’ needs, information services should focus on identifying, analysing and coordinating the needs of various potential user groups.

In this study, information service refers to those services involving a combination of information, technology, people and activities that aim to provide specific information to teachers in order to carry out work-related tasks and activities in a relatively easy and convenient way. It may involve current awareness services, social networking of teachers, document delivery and guidance on how to use the internet and other electronic resources.

### **1.7.9 Secondary level geography teacher**

For the purposes of this study, the teacher concerned is a person who is teaching geography at the secondary education level in Lesotho and typically associated with high schools. The teacher prepares learners for tertiary education and therefore is an intermediary in education between primary education and tertiary education. However, owing to a high dropout rate at secondary education level in Lesotho, teachers are also mandated to prepare learners for employment and to deal with social issues such as HIV and AIDS.

## **1.8 THESIS STRUCTURE**

The thesis has been structured according to the following chapters:

### **Chapter 1 – Introduction**

This chapter offers the introduction and overview of the study. It covers the background to the study; the statement of the problem, which includes the principal question and its sub-questions; the methodology; significance and limitations of the study; the clarification of key concepts and the thesis structure.

### **Chapter 2 – Literature review**

Chapter two presents the review of the relevant literature based on the research questions outlined under the statement of the problem. It also covers literature on information-seeking models, including the model that was selected for the theoretical framework for this study. The literature on the information needs and the information-seeking patterns of the teachers, as well as the information sources and information communication channels that are used by teachers is also reviewed. Since this study ultimately aims to guide the design and

implementation of an information service for secondary level geography teachers in Lesotho, literature on information services is also outlined.

### **Chapter 3 – Research design and method**

This chapter describes the research design of the study and this includes the study population, sampling techniques, survey methods of data collection and the procedures and steps taken to increase the validity and reliability of data.

### **Chapter 4 – Data analysis**

This chapter is mainly an analysis of both the qualitative and quantitative data collected. It portrays the analytic presentation of the information obtained from the literature, focus group discussions, semi-structured interviews, questionnaire and observations through site visits.

### **Chapter 5 – Interpretation of the data**

The chapter offers an interpretation of the data and informed discussions of the data that were analysed and presented in Chapter Four. The data are compared and contrasted with the results of other studies reviewed. Data are further interpreted based on the theoretical framework guiding this study, which is the Leckie *et al* (1996) model of information-seeking of professionals.

### **Chapter 6 – Proposed information service model for secondary level geography teachers in Lesotho**

An information service model for secondary level geography teachers in Lesotho is proposed in this chapter. The chapter also suggests strategies for the design and implementation of the information service for these teachers.

### **Chapter 7 – Findings and recommendations**

This chapter presents the summary of findings and recommendations of the study in relation to the principal research question and its sub-questions. It reaches a general conclusion based on these findings and formulates recommendations, including suggestions for further research.



## **1.9 CONCLUSION**

Chapter One served as the thesis introduction and provided the background to the study, in particular the factors that underpinned the research problem. It outlined the statement of the problem and posed the principal question and its sub-questions for this study. It briefly discussed the research design and method that were followed. This includes a survey research method using both qualitative and quantitative approaches. The chapter outlined the study population and how data were collected and analysed. The study's significance, limitations and working definitions were also presented. It ended by articulating how the thesis is structured. Chapter Two offers a review of the related literature. This review will be guided by the research questions posed for the study.

## CHAPTER TWO: LITERATURE REVIEW

### 2.1 INTRODUCTION

While the previous chapter formed the introduction and provided the background to the study, the statement of the problem, research questions and introductory research design and method, this chapter offers the literature review for the study. The aim of the literature review is to develop fundamental insights into research on information needs and information-seeking patterns of teachers. The literature review should not only help to provide the research perspective for the current study, but also forms a basis for the empirical study on the teachers' information needs and information-seeking patterns, which will assist to guide the design and implementation of an information service.

Another objective of the literature review is to address the principal research question: **What are the information needs and information-seeking patterns of secondary level geography teachers in Lesotho with regard to their teaching role and how can these guide the design and implementation of an information service for these teachers?** This principal question, along with its sub-questions outlined in Chapter One (section 1.2), not only guided the literature review process, but also established the subtopics for this chapter. The chapter's subtopics are:

- Information-seeking models.
- Information needs of teachers.
- Information-seeking patterns of teachers.
- Information sources used by teachers.
- Information sources available and accessible in schools.
- Information communication channels preferred by teachers.
- Information service delivery for teachers.

This chapter also alludes to information-seeking models because the current study uses the Leckie *et al* (1996) information-seeking of professionals' model for its theoretical framework. The theoretical framework model cannot be discussed without recognising other information-seeking models.

## 2.2 INFORMATION-SEEKING MODELS

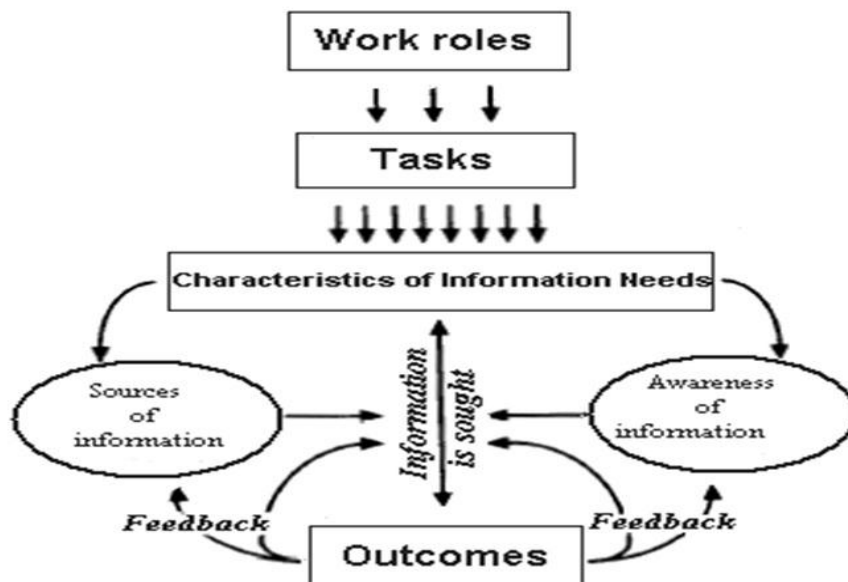
In order to theorise information needs and information-seeking, some models were reviewed to establish their relevance to the current study in order to develop an appropriate theoretical framework to guide the study. The review of the models is based on the principal research question. There are many information needs and information-seeking related models in the literature, as noted by Case (2006, 2007), Courtright (2007) and Fisher and Julien (2009). While it is important to recognise their existence, one does not necessarily have to discuss these models, as they may not bear direct relevance to the current study. Some of the popular models found in the literature include:

- (a) General information behaviour models
  - Dervin (1983, 1996) sense-making theory.
  - Wilson (1981, 1999) and Wilson and Walsh (1996) information behaviour models.
- (b) Workplace and task-related information behaviour models
  - Byström and Järvelin (1995) task complexity and information-seeking and use.
  - Leckie *et al* (1996) information-seeking of professionals' models.
- (c) Digital environments models
  - Choo *et al* (1999, 2000) information-seeking on the web.
- (d) Information-seeking, search and retrieval models
  - Ellis (1989) model of information-seeking behaviour.
  - Ingwersen (1996) information retrieval process model.
  - Kuhlthau (1991, 1993) information search process model.

As explained in Chapter One (section 1.3), this study employs the Leckie *et al* (1996) information-seeking of professionals' model as its theoretical framework. Therefore, it is befitting to review literature related to this model. The actual model is explained along with other scholars' perceptions of it, and evidence of the model's application in information-seeking related studies. Although other models and their implications are noted, the focus of this study will be on models that allow for workplace tasks and roles of professionals, including the environment in which workplace tasks are completed. The Leckie *et al* (1996) model will guide data collection, since it is deemed to be the most appropriate model, and it will also add value for data analysis and findings to be mapped against other task-related models.

### 2.2.1 Leckie *et al's* (1996) information-seeking of professionals' model

This study uses the Leckie *et al's* (1996) model as the framework for the investigation of the information needs and information-seeking patterns of secondary level geography teachers in Lesotho. The graphical presentation of the information-seeking model of professionals is presented in Figure 2.1.



**Figure 2.1: The Information-seeking of Professionals model (Leckie *et al*, 1996:180)**

From Figure 2.1, it is evident that the Leckie *et al* (1996) model has six components: work roles, tasks, characteristics of information needs, awareness of information, sources of information and outcomes. From the model, one can see that work roles lead to certain tasks that trigger information needs and depending on the nature of the information need, information-seeking may occur. The information needs determine the information sources to be used and also influence awareness of information. The information-seeking process results in outcomes. These outcomes provide feedback about the information-seeking process, including the information need, the sources of information and the awareness of information. In addition, these outcomes may lead to other information needs. It is evident from the model that information needs emanate from tasks that emanate from the work roles of the professionals.

According to Leckie *et al* (1996:181), professionals may have work roles such as service provider, administrator/manager, researcher, educator and student. The secondary level geography teachers being studied here are educators. Leckie *et al* (1996:181) indicate that within the professionals' roles, there are embedded tasks such as assessment, supervising, counselling, report writing, etc. To corroborate this view, Niedźwiedzka (2003:9) indicates that certain roles indicate specific information needs and the environment within which the life and work of the information user take place. This would apply to secondary level geography teachers in Lesotho, as depicted in Chapter One (section 1.1). In addition, Vakkari (1998, 1999, 2001, 2003) and Byström and Hansen (2005) discuss tasks in relation to information-seeking, information retrieval and searching. Vakkari (1999:824-5) affirms that a worker's job consists of tasks that are well identified by the workers, as they are primary actors. According to Vakkari (1999:825), the complexity of a task determines its performance and consequent information needs. The geography teachers being studied here, in addition to being educators, are likely to have the tasks of assessing, supervising their learners and writing the learners' progress reports. Moreover, since many schools in Lesotho do not have professional counsellors, some of the teachers have the task of counselling learners when the need arises. Considering the earlier reference to the role of the teachers in Lesotho regarding subject teaching, preparing for employment and their care-giving role in the prevailing HIV and AIDS situation, counselling tasks might be important to note in this study. Other authors reporting tasks and information-seeking behaviour are Järvelin and Ingwersen (2004); Kallehauge (2010); Landry (2006); Morehead and Rouse (1982); Vakkari (2003) and Xu, *et al* (2006).

Leckie *et al* (1996:181) point out that information-seeking is strongly related to the enactment of a particular role and its associated tasks. Most importantly, an ongoing aspect of a professional's work is keeping up with the advancements in one's field and upgrading one's education and skills (Leckie *et al*, 1996:182). This implies that the geography teachers as educators not only have certain tasks and roles that may require information-seeking, but that they may also seek information just to be up to date with the latest developments in their field. This is affirmed by Noh *et al* (2004:1296) who argue that the teachers need opportunities for their professional development in order to maintain and enhance their abilities to teach, and because the subject contents as well as instructional methods are evolving and expanding. Therefore, it is imperative also to find out how the teachers generally interact with information to keep abreast with the latest developments.

According to Leckie *et al* (1996:182) information needs arise from situations pertaining to specific tasks that are associated with one or more of the professionals' work roles. This is also supported by Järvelin and Ingwersen (2004), Kallehauge (2010); Landry (2006), Morehead and Rouse (1982), Vakkari (1999, 2003) and Xu, *et al* (2006). The information needs are not constant and can be influenced by intervening variables such as:

- Individual demographics such as age, profession, specialisation, career stage and geographic location. Some of these demographics are also noted by Hargittai and Hinnant (2006), Johnson (1997) and Taylor (1991).
- Context (need arising from a specific situation). This is also affirmed by Courtright (2007) and Wilson (1999).
- Frequency of the need (recurring or new).
- Predictability (anticipated need or unexpected need).
- Importance of the need (degree of urgency).
- Complexity of the need (easily resolved or difficult).

The nature of the information need, particularly its importance, has been indicated by Krikelas (1983) when discussing immediate needs and deferred needs. Moreover, the 'information need analysis' component of the Byström and Järvelin (1995) model is related to the information need issues outlined by Leckie *et al* (1996) above.

The above intervening variables indicate that it is important to establish the age of these teachers, their teaching experience and the geographic location of their schools. This is because the teachers in the urban schools may have different information needs from teachers in the rural schools. It is also important, in this study, to establish the specialisation of the geography teachers, given that some of these teachers graduate from NUL with a BSc Ed, BA Ed, or B Ed, as explained in Chapter One (section 1.1), which may affect the type of geography training they receive. Furthermore, it is of importance to determine the frequency of the information needs experienced by the teachers, given that the ultimate aim of the study is to formulate an appropriate information service for these teachers. Therefore, one would like to focus first on delivery of information that is needed frequently.

According to Leckie *et al* (1996:183-187) the sources of information and awareness of information are factors that affect information-seeking. This is also evident in the models of Byström and Järvelin (1995), Krikelas (1983) and Wilson (1999). Firstly, professionals seek

information from various sources such as colleagues, librarians, handbooks, journals and their own personal knowledge and experience. Personal knowledge and experience are important to professionals because they have to master an advanced body of specialised knowledge before practising. In addition, personal knowledge and experience also entail the different ways in which work is conducted or practice is carried out within a profession. As a result, it is also necessary to identify the information sources consulted by the geography teachers, including their use of personal knowledge and experience. According to Meyers *et al* (2007:5), various information sources may be used, depending on the nature of the information need. It is therefore crucial to consider all possible sources used and preferred by the teachers, given that the ultimate aim of this study is to guide the design and implementation of an information service. Studies related to information sources of teachers include those undertaken by Kirby and Bogotch (1996), De la Vega and Puente (2010), Henley (1995), Landrum *et al* (2007), Mowen *et al* (2007), and Weiss (1995). Literature that deals with teachers' use of information sources is reviewed later in section 2.5.

Secondly, Leckie *et al* (1996:185) point out that knowledge of various information sources and the perceptions formed about the information retrieved play a crucial role in the overall process of information-seeking. These scholars argue that knowledge and awareness of information, in particular content, can determine the course of information-seeking. It is mentioned that professionals will consult sources that they are familiar with and with which they have had prior success in satisfying an earlier information need. Professionals consult sources that they trust will provide accurate information in a preferred format. Furthermore, professionals use sources that they know will deliver the information on time and are accessible in terms of distance and costs. In the same vein, Case (2007:97) mentions that it is widely believed that humans tend to seek information that is congruent with their prior knowledge, beliefs and opinions, and to avoid exposure to information that conflicts with these internal convictions. To corroborate this view, Kuhlthau (1991:362) argues that people actively and constantly construct their view of the world by assimilating and accommodating new information with what they already know or have experienced. Furthermore, Kuhlthau (1991:362) affirms that as people have a limited capacity for assimilating new information, they purposely construct meaning by selectively attending to information that connects with what they already know.

Although information source preferences are not static, the information source preferences of the geography teachers in this study need to be established for appropriate information service delivery (Hepworth, 2007; Wilson, 2006a). However, an appropriate information service will require constant evaluation and close monitoring because change in life is inevitable (Chattopadhyay *et al*, 2006; Chiware, 2008). In various information behaviour models (e.g. Byström & Järvelin, 1995; Johnson, 1997; Krikelas, 1983; Taylor, 1991; Wilson, 1981, 1999) there are variables, such as demographics, context, information need and prior knowledge, that influence users' choice of information sources.

Thirdly, outcomes are the results of the information-seeking process. It may be considered as the end result of the work related requirements of specified work roles and tasks (Leckie *et al*, 1996:187). In the Leckie *et al* (1996) model, the optimal outcome is when the information need is met and the professional has accomplished his/her task. However, it is possible that the outcome does not meet the information need such that the task is not accomplished and therefore further information-seeking is pursued. This has been outlined as the feedback loop in the model (Leckie *et al*, 1996:187). According to Prabha *et al* (2007:74), the current abundance of information makes it crucial for information seekers to decide what information is sufficient to meet their objectives. Prabha *et al* (2007:77) discuss information-seeking behaviour models regarding decisions on when to stop searching for more information. From their article, one gathers that there are several factors that lead to decision-making. These factors may be incorporated in the feedback process of the outcomes component of the Leckie *et al* (1996) model. These factors, according to Prabha *et al* (2007:77-79) are users' feelings that they have enough to write; time and money; knowledge of trusted authors; nature of the problem and task at hand; context, situation or setting that the user is in; search system; motivation level of the user; task-domain knowledge and information-seeking ability. It is important to find what the geography teachers usually do when they find that their information needs have not been met after seeking information.

When choosing the Leckie *et al* (1996) model as the theoretical framework for this study, it was believed that it had attributes that could help to address the principal research question and ultimately help to guide the design and implementation of an appropriate information service for secondary level geography teachers in Lesotho. Moreover, the model was chosen because it incorporates both information needs and information-seeking, which are the core aspects of the current study. In addition, the model was derived from studying professionals



(lawyers, engineers and health professionals) in the workplace. Leckie *et al* (1996:161) maintain that their model is applicable to all professionals. This is important in this study because it focuses on teachers' information needs and information-seeking patterns pertaining to their work as professionals. Furthermore, in comparison to other models that were reviewed, this model was found to be simple to understand and follow.

Since the Leckie *et al* (1996) model forms the theoretical framework for the current study, it is worth observing how other scholars view it and therefore, some literature regarding this model is reviewed in the next section.

### **2.2.2 Literature review of the Leckie *et al* (1996) model**

Case (2007:127) asserts that the Leckie *et al* model is restricted to professionals, and it is not surprising that work roles and tasks are considered as the prime motivators for information-seeking. In addition, some important factors in this model, according to Case (2007:128), are familiarity and prior success with the source (or the search strategy employed), along with the trustworthiness, packaging, timeliness, cost, quality and accessibility of the sources. According to Case (2007:128), in the Leckie *et al* (1996) model needs create an awareness of information sources and/or content, and thus motivate a person to examine those needs. Furthermore, information-seeking behaviour is viewed as a two-way process between the characteristics and outcomes of the information need. Case (2007) criticises the model for restricting itself to professionals in the workplace and indicates that it does not consider other non-work contexts that may affect a professional. In a certain sense this model is well suited to this study that investigates teachers' information needs and information-seeking patterns for work purposes. The limitation highlighted by Case (2007) further justifies the appropriateness of this model in this particular study. However, the model may be expanded to consider non-subject teaching ideas for teachers.

According to Courtright (2007:279), the Leckie *et al* (1996) model was derived from an analysis of influences on information practices of users' roles at work, and stemming from these roles, the tasks they are charged with. The tasks give rise to information needs and the strategies deployed to meet those needs differ in various corporate cultures, individual habits, availability of information sources and systems, as well as commitment to professional development of staff. This implies that the teachers' unique work settings have to be taken

into consideration. These settings could be the fact that they teach in different schools, located in different places, with different information resources and school governance. Secondary level geography teachers may also be teaching other, different subjects and may have differing teaching loads. One also gathers from Courtright (2007) that it is important to establish the information sources and systems that are available to teachers. This may include the institutions and the infrastructure that is in place to help the teachers with information.

According to Pettigrew *et al* (2001:62) the Leckie *et al* (1996) model is holistic and based on the assumption that studies in information-seeking of professionals should understand the broader working context and examine, in depth, the details of individuals' work, including all the roles a professional has to play. This is done bearing in mind the complexity and unpredictability of the process of information-seeking. This means that this study has to understand the context of geography teaching in Lesotho. For instance, context may be interpreted in terms of the information resources that are available in the schools, their accessibility to the teachers and the perception that the teachers have regarding the information content of these resources. Furthermore, one has to examine the duties of the geography teachers, including the roles and different tasks that these teachers have in the schools where they are teaching, in order to ascertain their information needs and the ways in which they obtain the information that they need.

The Leckie *et al* (1996) information-seeking of professionals' model emanates from lawyers, engineers and health professionals. This is mostly a scientific cadre of professionals (except the lawyers). This study, however, intends to use the model in relation to geography teachers who are professionals in education. Baker (2004:11) observes that because the Leckie *et al* (1996) model evolved from the literature of healthcare professionals, engineers and lawyers, it may be too formal, applying rather to the traditional type of work in an institutional setting where information in various formats can be accessed easily. In Lesotho secondary education, geography is sometimes clustered with science subjects and sometimes with social sciences. However, as mentioned in Chapter One (section 1.1), secondary level geography teachers in Lesotho operate in an institutional setting characterised by limited information sources. The teachers in this study are in a least developing country, while the model evolved from literature is found mostly in the developed world. According to Baker (2004:11), the Leckie *et al* (1996) model does not address information-giving (i.e. information-sharing) in the information-seeking process of professionals, and yet some professionals, such as teachers,

nurses, doctors, librarians, etc. have the task of sharing and giving information. Consequently, this model is applied recognising the issues outlined above, with some expectation of disparities in the model and the findings of this study.

Wilkinson (2001) studied the information-seeking behaviour of lawyers and maintains that the five roles that the Leckie *et al* (1996) model describes did not apply to the information-seeking activities of the lawyers who were studied. According to Wilkinson (2001:270), only two roles, viz those of service provider and administrator/manager, were identified and the other three roles of researcher, educator and student were not identified. Wilkinson (2001:274) adds that the five roles described by Leckie *et al* (1996) may not be the only roles that the professionals have; the professionals may have fewer roles or totally different roles to those described in the Leckie *et al* (1996) model. Therefore, one learns some important facts about the Leckie *et al* (1996) model from the critique of the model and the studies testing the model, such as the need to use it flexibly, knowing that not all its components and variables are applicable in every situation.

The literature reviewed above about the Leckie *et al* (1996) model highlights the importance of considering the following:

- The broader work context of professionals, such as the socio-political and economic conditions of their countries, their institutional settings and the availability of infrastructure for information service and information resources.
- The nature of the work, which might be scientific and/or non-scientific.
- The type of profession, its discipline and the diversity of its roles, associated tasks and requirements.
- Possibilities of giving and sharing information among professionals at the workplace and in non-work contexts.

### **2.2.3 Other studies based on the Leckie *et al* (1996) model**

In addition to the studies noted in the preceding section, it was established from the literature that the model had been used as the research framework in more empirical studies. For instance, Du Preez (2007, 2008) and Du Preez and Fourie (2009) report on a study on the information behaviour of consulting engineers in South Africa using the model as a theoretical framework. Landry (2006) used the model as a conceptual framework to study the

work roles, tasks and information behaviour of dentists. Mundt *et al* (2006) utilised this model to study the information behaviour of teachers by employing it to frame questions on the characteristics of the information needs of their participants and also incorporated the ‘work roles’ component of this model into their new model. Baker (2004) used it as the framework for studying the information needs of female police officers involved in undercover operations with sex workers. Kerins *et al* (2004) used the model when studying the information-seeking behaviour of engineering and law students in selected universities in Ireland. Kostianen *et al* (2003) used the model to examine information-seeking in pre-trial police investigation. Wilkinson (2001) developed the information-seeking behaviour model of practising lawyers and tested it against the Leckie *et al* (1996) model. These examples are evidence that the model chosen for the theoretical framework guiding this study has been used before in studies related to information needs and information-seeking. This is crucial because this model is used knowing that it has been successfully applied in other empirical studies related to the current study and how it was applied, and most importantly, with awareness of its limitations and the criticism of other authors.

After outlining the theoretical framework used in this study, it is imperative to review the literature related to the research questions. The first research question is about the information needs of teachers, which are considered in relation to the characteristics of the information needs component of the Leckie *et al* (1996) model. Therefore, the next section presents the literature review on information needs and builds on the interpretation of the concepts of information and information needs that were discussed in Chapter One (sections 1.7.1 -1.7.2). It outlines the concept of information, clarifies information needs in the context of the reported study and then reviews literature on teachers’ information needs. This section starts with information needs because the focus of this study is on information needs and information-seeking patterns of teachers based on the principal research question as outlined in Chapter One (section 1.2). At a later stage it will be aligned with the Leckie *et al* (1996) model and its focus on work roles and associated tasks components.

## 2.3 INFORMATION NEEDS OF TEACHERS

It is not easy to study information needs without discussing the term ‘information’. This is because information needs are intertwined with information. Therefore, the term ‘information’ is discussed before the term ‘information needs’.

### 2.3.1 Information

While Chapter One (section 1.7.1) defined the term ‘information’, this section reviews the literature related to the concept of information in more detail. Scientists/researchers have been reflecting on the meaning of information for many years. Nonetheless, the term still proves problematic. Case (2007:42) asserts that the central difficulty is that the word ‘information’ has been used to denote several different concepts. Wilson (2000a:6) acknowledges that defining the concept ‘information’ is problematic because there is no single definition of the concept and moreover, explanations fail to distinguish among alternative, common-sense meanings of the word ‘information’. Moreover, Mutsheva (2006:34) opines that the problem is compounded by the fact that information has been studied in many different disciplines, such as Computer Science, Communication, Information Science, Information Systems and Informatics, each with a different focus. Another complexity is brought about by the fact that distinctions may or may not be made among information, facts, advice and opinion (Wilson, 2006a:659).

In 1981, Wilson (as cited by Bawden, 2006:672) described information as a ‘troublesome concept’ and showed that it was difficult to believe that the situation would improve in subsequent years. It might worsen, as the term ‘information’ is used even more widely as a central concept in other sciences. According to Bawden (2006:673), researchers had better distinguish the best sense of the meaning of the word for their purpose. However problematic the concept of information may be, information is acknowledged as a crucial phenomenon in people’s undertakings. Wilson (2006a:659) maintains that information does not have a single definition and that researchers fail to use a definition appropriate to the level and purpose of their investigation.

Zhang and Benjamin (2007:1935) argue that the concept of information has many underpinning meanings and perspectives, depending on the fields in which it is being studied and the context in which it is being used. But in general, information is related to concepts such as fact, data, knowledge, intelligence, news, communication, instruction, representation,

mental experience or stimulus, among others. Buckland's (1991) argument is affirmed by Wilson (2000a:06) who asserts that information can be understood in the context of user-studies research, as a **physical entity** or **phenomenon**, such as books, journals, etc.; as the **channel of communication** through which data are transferred, whether written or oral; or as **subject data** contained in a document or transmitted orally; factual data objectively transferred, or as **advice or opinions** into which value judgements enter.

As mentioned in Chapter One (section 1.7.1), the study being reported here adopts Wilson's (2000a) view outlined above and postulates that the concept of information may be viewed using the following categories:

- Information as physical phenomenon such as books, journals, discs, pictures, etc. that could be perceived as informative.
- Information as messages that are being transferred or communicated in various formats and/or media, e.g. electronic or print media.
- Information as subject matter found in data, messages, physical documents, advice, opinions, etc.

One notes that 'human beings can potentially act on or be influenced by virtually any imaginable information in the universe' (Bates, 2006:1033). According to Buckland (1991:356), 'we are unable to say confidently of anything that it could not be information'. As mentioned in Chapter One (section 1.7.1), despite all the confusion clouding the definition of the term 'information', in principle, 'we ordinarily use and hear the word "information" without much concern for its definition; but we know what we mean when we use the word information' (Case, 2007:42). Once again, it is assumed that the teachers in this study are likely to know what is meant by information, and what is meant when they are questioned about their information needs for work purposes.

### **2.3.2 Information needs**

In Chapter One (section 1.7.2) the term 'information needs' was defined for the purposes of this study and this section builds on the definition outlined in section 1.7.2 by reviewing literature about this concept. The trouble with defining 'information' also makes it difficult to explain 'information needs'. This is corroborated by Wilson (2006a:659) who asserts that part of the difficulty with explaining 'information needs' lies with the troublesome concept of

‘information’, as has been explained in the previous paragraphs. If there had been no information there would not be any information needs.

Information need may be understood in the context of Belkin’s “anomalous state of knowledge”, as that knowledge gap or uncertainty existing within the individual that triggers information-seeking, either immediately or at a later stage in an attempt to address uncertainty (Belkin *et al.*, 1982:62). Uncertainty is a concept that has been addressed by many researchers of information needs, such as Anderson (2006) and Yoon (2007). Although it is not the purpose of this study to discuss uncertainty, one gathers from the literature that uncertainty is closely linked to information needs, such that uncertainty leads to information need, which may lead to information-seeking. For instance, Ikoja-Odongo and Mostert (2006:149) observe an information need as the recognition of the existence of uncertainty in the personal or work-related life of the individual (Ingwersen & Järvelin, 2005; Kuhlthau, 2004). Therefore, once teachers recognise the existence of uncertainty in their work life that might turn into an information need.

According to Ingwersen (1999:19), an individual’s information need is a function of the current knowledge state of that individual. Moreover, information needs may be stable and well defined, such as is often the case in selective dissemination of information, or they may be vaguely stated or ill-defined, such as during exploratory search sessions. This is affirmed by Kuhlthau (2004:26) as quoted in Chapter One (section 1.7.2). Furthermore, Ingwersen and Järvelin (2005:20) state that ‘an information need signifies a consciously identified gap in the knowledge available to an actor. Information needs may lead to information-seeking and formulation of requests for information.’ However, Ikoja-Odongo and Mostert (2006:147) cite Devadason and Lingam (1997) and Krikelas (1983) who state that information needs may be expressed, unexpressed or dormant; dormant needs are those that the individual is unaware of, but which may be potentially activated by an information service provider. These include unconscious needs which do not necessarily lead to action. This also fits in with Wilson’s (1996) viewpoint of passive information needs.

The above paragraph reveals that the teachers being studied here may have uncertainties that may develop into information needs. The teachers’ information needs may be expressed, unexpressed, dormant or unconscious. It is envisaged that it will not be easy to investigate the information needs that are unexpressed, dormant or unconscious. Consequently, the study

will focus only on the expressed information needs, but in order not to miss the unexpressed, dormant and unconscious information needs, the study also considers the prospective geography teachers and the institutions involved in secondary level geography education in Lesotho to help reveal the complexity of these teachers' information needs. Prospective teachers will be questioned on their information needs during their teaching practice, while the officials from institutions involved in secondary level geography education will be questioned on their perceptions of secondary geography teachers' information needs.

Case (2007:76-77) discusses information needs from both the objective and subjective viewpoints. An objective viewpoint is adopted when an information need is considered as reflecting an objective reality, and an information need is well-defined in order to retrieve a specific fact to make a decision or solve a problem to reduce existing uncertainty. From this objective viewpoint, information needs are relatively fixed. A subjective viewpoint represents the idea that many searches of information are prompted by a vague feeling of unease, a sense of a gap in knowledge, or simply by anxiety about a current situation. From a subjective viewpoint, the emphasis is that humans often strive to make sense of their situations, and their information needs might be highly dynamic. Sense-making posits information as sense-made that stands as a bridge over gaps (Dervin, 1999:739). Sense-making is succinctly discussed by Dervin over years as a model and constructivist approach (Dervin, 1983, 1998), as a *communitarian* (Dervin, 1994), as a verbing approach (Dervin, 1998) and as research method, methodology and meta-theory (Dervin, 1999, 2003).

As indicated in Chapter One (section 1.7.2), this study regards an information need as an absence or lack of adequate information that creates a deficiency in the knowledge of people, in this study secondary level geography teachers. The knowledge deficiency makes it difficult for the teachers to deal with their situation. As mentioned earlier, it is deemed that it will be difficult to establish unexpressed information needs. Therefore, the study will focus only on information needs expressed by the teachers. It was imperative to determine from the literature what had been reported on the information needs of teachers before carrying out the empirical component of the current study by focusing on information needs that had been reported, including the factors that may trigger these needs. These are discussed in the next section.



### 2.3.3 Teachers' information needs

This section discusses teachers' information needs and the factors that trigger these needs, as reported in the subject literature. While the previous section 2.3.2 explained the expanded concept of an information need, this section focuses on the information needs specific to teachers as reported in the literature.

Mardis (2009:1) mentions that the 'literature surrounding teachers' development suggests that teachers have very specific information needs relating to mastering the curriculum content and the behavioural structure of their classrooms for a diverse range of learners'. De la Vega and Puente (2010:317) indicate that teachers not only require sources of information on the curricular areas they teach, on pedagogy, didactics and information technology, but also on issues students face.

Lan and Chang (2002) studied the information behaviour of biology teachers in junior high schools in Taiwan, where they found that the biology teachers' pedagogical knowledge played an important role in their processing of information. Furthermore, those biology teachers' information needs included information pertaining to students, subject matter and pedagogical content, among others. These scholars reveal an important issue about knowing more about the students one teaches. This requires information, as one needs to establish the different learners' capabilities, interests and social behaviour, including their problems, because these are some of the things that may affect their learning and development (Lang & Chang, 2002). Passey (2006) analyses the use of information and communication technologies by primary and secondary pupils. Passey (2006:146) indicates that within the overall arena of knowledge handling, teachers are fundamentally concerned with subject knowledge and the curriculum, which could be factors associated with teachers' information needs.

Shulman (1987:7) asserts that the teachers transform understanding, skills and desired dispositions into pedagogical representations and actions. Therefore, at a minimum, a knowledge base required for teaching includes:

- Content knowledge;
- General pedagogical knowledge, including its content;
- Curriculum knowledge;

- Knowledge of the learners and their characteristics;
- Knowledge of educational contexts; and
- Knowledge of educational ends, purposes, and values, including their philosophical and historical backgrounds.

The above points are considered to be pertinent to the information needs of teachers. One may interpret these points thus: content knowledge pertains to the subject matter to be taught, which is geography in this study. The general pedagogical knowledge relates to teaching methods and approaches that may be used to deliver the geographical content to the learners for better teaching and learning. The curriculum knowledge is related to the national geography curriculum requirements, syllabus outlines and geography examinations. The educational contexts may be related to, among others, the goals of education, the aims of secondary education, the environment within which teaching and learning take place and the situation of the schools, including other subjects offered in the schools. The educational ends are related to the objectives and outcomes of education, the principles of education and the historical development of education bearing the culture of the nation.

Although the study focuses on the European Union Education Policy dimension, Conroy *et al* (2000) reveal some of the information needs that could be affecting the teachers that will be studied here. Conroy *et al* (2000) indicate that the European information needs of secondary school teachers include:

- Current information, because things change a lot in modern times;
- Social and cultural information; and
- Information resources that are tailored for teachers and learners.

Similarly, Perrault (2007) refers to the following issues on which teachers seek online information and resources:

- Curriculum content.
- Presentation materials.
- Personal knowledge.
- Individualised learning materials (for the learners).

Mundt *et al* (2006:9) mention that teachers have three major roles for which they often need information for, namely:

- Lesson planning and content;
- Teaching methods; and
- Student evaluation.

Snyman and Heyns (2004:212) investigated information needs of Afrikaans language teachers in South Africa and identified that the information needs pertained to:

- Classroom activities;
- Curricula; and
- Supportive study material.

In addition, Snyman and Heyns (2004:212) found that factors that have an impact on the information needs of these teachers are, among others:

- A changing curriculum;
- The nature of languages as a subject;
- A high workload;
- Extramural activities; and
- Pressure regarding examination results.

Pattuelli (2008) alluded to three dimensions of context pertaining to the teachers, which may trigger their information needs. These are pedagogical, institutional and personal aspects of contexts. According to Pattuelli (2008), the pedagogical aspects relate to the way teaching and learning take place, such as inquiry-based learning, stimulating learners' interests and engaging them in creative analytical activities. Institutional aspects are associated with national curriculum standards, including national examination for testing whether standards have been met. Personal aspects of context pertain to individuals' characteristics such as their attitude to technology, ability to manage time and their knowledge of and experience of the subject matter to be taught. From Patuelli (2008) one notes that teachers' information needs are related to pedagogy, national curriculum standards and the syllabus, including examinations as well as knowledge of the subject matter to be taught. One further observes that it is possible that the geography teachers in Lesotho might need information related to their subject curriculum and full syllabus, including its examination. They might also need to

know the subject of geography in order to offer the right content. Moreover, the content has to be offered using appropriate teaching methods and therefore, this may require pedagogical information.

As indicated earlier (section 2.2.1), certain roles and the environment within which the life and work of the information user take place may indicate specific information needs (Niedźwiedzka, 2003:9). Similarly, Leckie *et al* (1996) explain that professionals have certain roles (service provider, administrator, manager, researcher, educator and student) incorporating certain tasks that trigger information needs. Given that this study is guided by the Leckie *et al* (1996) model, it is imperative to contextualise secondary level geography teachers in Lesotho into the work roles mentioned in the literature that applies to them, and this is done in subsequent chapters.

In summary, the literature indicates that the teachers' information needs are related to the subject matter they teach and the teaching and learning methods that will help to achieve the curriculum aims. The information needs are also related to the curriculum, the syllabus, and the assessment of the subject and the learners. Moreover, the information needs pertain to the learners being taught, that is, their capabilities, interests, social backgrounds and their intellectual growth and development. Furthermore, information needs may be related to other work roles and tasks that the teachers have within their schools. In essence, there are many issues pertaining to the information needs of teachers in their work as professionals. It is appreciated that these information needs may differ from time to time and from individual to individual, depending on the situation.

## **2.4 INFORMATION-SEEKING PATTERNS OF TEACHERS**

When information is insufficient, such as an anomalous state of knowledge (Belkin *et al*, 1982) and information gap (Dervin, 1999), this results in information needs, which may lead to information-seeking. However, there are also times when information is sought on an ad hoc basis without any explicit realisable information needs owing to the need to monitor and master information on an on-going basis, as explained in Chapter One (section 1.7.3). This section reviews literature on information-seeking, including the different ways of information-seeking, the factors that influence information-seeking and the information-

seeking behaviour of teachers. It expands in more detail on the information-seeking concept outlined in Chapter One (section 1.7.3).

### **2.4.1 Information-seeking**

As shown in Chapter One (section 1.7.4), information-seeking is part of information behaviour and as mentioned in Chapter One (section 1.7.3), “information-seeking can be active or passive” (Fourie, 2006:101). On the one hand, passive information-seeking occurs when part of people’s information behaviour is to decide that they do not want to seek information, or they may be unaware of the fact that they might need information. On the other hand, active information-seeking takes place when people do everything in their power to seek information. As mentioned earlier (section 2.3.2), it is envisaged that it will be difficult to establish unexpressed information needs. Similarly, it is deemed that it will not be easy to establish passive information-seeking, given the available resources, such as time and money, for the current study. Therefore, this study focuses on active information-seeking because it is informed by the teachers’ perceptions and views on their information-seeking.

Literature points out that active information-seeking can be done purposefully, serendipitously, through proxy and collaboratively. This is evident in the subsequent discussions.

#### **2.4.1.1 Purposeful information-seeking**

Johnson (2003:737) describes information-seeking as the purposive acquisition of information from selected information carriers. It includes examining the ways in which people find information they require, such as how and where people look for solutions to information problems (Burke, 2007:679). According to Foster (2004:228), information-seeking has been conceived as being a process in which information needs are pursued, or in which problem-solving takes place within a context. Moreover, the information-seeking process is initiated by a recognised need for information and a decision to act on it (Byström & Hansen, 2005:1055) and most importantly, information-seeking would reflect the experiences of the information seeker (Foster, 2004:234). Seeking information for lesson planning and use in class for learners is purposive information-seeking by teachers and it is discussed in studies by Kahlert (2001), Lundh (2005) and Sánchez and Valcàrcel (1999). Moreover, Asunka *et al* (2009:43) note purposeful visits to the library website to seek

scholarly material by teachers in the same way they physically visit the library. There are instances when information-seeking is not necessarily initiated by information needs, but rather through incidental encounters with information or through everyday life interactions with information to keep up with the advancements in one's field. This is often referred to as serendipitous information-seeking and it is discussed below.

#### **2.4.1.2 Serendipitous information-seeking**

Foster and Ford (2003) allude to information-seeking that occurs not necessarily to achieve a specific task, solve a problem, pursue information needs or for immediate use. This process they term serendipitous information-seeking, which may happen when browsing or reading for leisure, and finding some information that was not originally sought (Foster & Ford, 2003:324). In the same vein, Spink and Cole (2006:27) argue that it is not in every case that human beings seek information for a specific purpose, because there is everyday life information-seeking that includes more consideration of human sense-making of the environments and more non-academic and less formal information-seeking behaviours. It was also learnt from Fisher *et al* (2004), Hyldegård (2006) and McKenzie (2003) that the person seeking information actually not always goes out personally to search for information. Sometimes people use others to seek information on their behalf and this is explained below.

#### **2.4.1.3 Proxy information-seeking**

Fisher *et al* (2004:757) mention that there are occasions when information is sought not only incidentally, in a serendipitous manner without anyone expressing the need for that information, but also in proxy information-seeking when someone seeks information on behalf of someone else. Taking the issue of proxy further, McKenzie (2003:27) refers to proxy as occasions when people make contact with or interact with information sources through the initiative of another agent, either the information source or some other gatekeeper or intermediary. Hyldegård (2006:280) cites Allen's (1977) description of the gatekeeper phenomenon, by indicating that the gatekeeper takes the responsibility to look for information and forward it to colleagues in his/her team, and in this way, the information recipient and the gatekeeper collaborate to find information. White *et al* (2009:190) argue that the gatekeeper may restrict and permit access to information, and advocate a facilitator who eliminates the restrictive nature of the gatekeeper and permits access to information, and who also actively helps in finding needed information. Kirby and Bogotch (1996) and Uibu

and Kikas (2008) indicate that teachers have the role of information provider and knowledge/information disseminator respectively involving acquisition and distribution of information. This means that when teachers assume this role they become proxies for information-seeking.

At this point information-seeking is considered as any process in which the teachers engage to find information, whether purposely, incidentally or through proxy. For the research design it is important to bear in mind that information-seeking may also happen through proxies. There are times when people at work have tasks that they have to perform as a team, for which they may require certain information. As a result, teams instead of individuals engage in information-seeking. This is explained in the next subsection.

#### ***2.4.1.4 Collaborative information-seeking***

Fourie (2006:101) maintains that collaborative information-seeking occurs when one is not alone in the process of seeking information, but rather works through interaction with colleagues and peers. This appears to be common in situations of joint projects, authorship, team work, etc. According to Foster (2006:330) ‘collaborative information-seeking and retrieval is the study of the systems and practices that enable individuals to collaborate during the seeking, searching and retrieval of information.’ Although Foster’s review is mainly on studies on collaborative information-seeking in academia, industry, medicine and military settings, he alludes to the concept of information-sharing as ‘an umbrella concept that covers a wide range of collaboration behaviours, from sharing accidentally encountered information to collaborative query formulation and retrieval’ (Foster, 2006:331).

There is general contention that most models of information behaviour focus on the individual information seeker (Madhu & Jansen, 2008:256), even though much information behaviour takes place in collaborative settings (Hyldegård, 2006:276). Consequently, studies on collaborative information-seeking have emerged in the literature. For instance, recognising that people in most organisations conduct much of their work in collaborative settings and the general perception of information behaviour at the individual level, Madhu and Jansen (2008) studied the collaborative information behaviour of healthcare teams in context and came up with a model on collaborative information behaviour. In the field of education, Hyldegård (2006) studied collaborative information behaviour of students using Kuhlthau’s (1993)

information search process model. In addition, Lazonder (2005) studied the effects of students' collaboration on web search behaviour. Hertzum (2008:957) argues that collaborative information-seeking should be a combined activity of information-seeking and collaborative grounding, mainly because collaborative grounding is necessary to share information among collaborating actors, and thereby establish and maintain the common ground necessary for their collaborative work.

Chen and Lee (2009) discuss collaboration of teachers and teacher-librarians in designing information literacy instruction and indicate that collaboration may be improved through joint research projects, collaborative planning and co-teaching. Goldman *et al* (1993) note joint decision-making and teachers' collaboration in developing and fulfilling schools' mission and vision statements and point out that as teachers become more collaborative, their desire for information increases. Deaney and Hennessy (2007:68) indicate that teachers in the UK do not work alone, since the subject departments act as a *community of practice* (Lave & Wenger, 1991; Wenger, 1998) that shares resources and approaches to teaching and learning and collaboratively develops schemes of work, where these are perceived as collaborative work of teachers involving collaborative information-seeking. In addition, Snyder (2007:428) indicates that school faculties work as a team to describe their programmes and practices, accessing information from a variety of sources to support their descriptions and notes that schools that are most successful are those that rise above individual effort and see professional development and collaboration as central to developing effective schools (Snyder, 2007:433). This means that teachers not only collaborate in practice, but also work more effectively through collaborations.

The above literature reveals an important aspect of information-sharing that needs to be borne in mind in this study. It may be worth investigating the different ways in which teachers share information as a means of establishing collaborative information-seeking. This literature further informs researchers that information-seeking is not always a process undertaken by individuals; it might involve teamwork. This might also be the case for teachers in Lesotho and must therefore be considered in the research design. For the purpose of the research instruments, collaborative information-seeking could be simplified to information-sharing.



#### 2.4.2 Factors that affect information-seeking

Heinström (2005:229) indicates that information-seeking is a dynamic and changeable process that depends on the situation, but also to a large extent on the individual performing it. This is because the attitude, motivation and mood come into play when the information seeker is confronted with a complex task (Hyldegård, 2006:288). Heinström (2005:229) adds that information-seeking may be influenced by different factors such as the personality of the information seeker, the urgency of the information need, the context or situation of the information seeker and the availability of information sources, among others.

From the information behaviour related models outlined earlier, in particular Johnson (1997), Leckie *et al* (1996), Taylor (1991) and Wilson (1996), it is evident that demographics influence information needs and information-seeking and information-seeking is affected mainly by the sources of information and awareness of information (Leckie *et al*, 1996). In addition, Hargittai and Hinnant (2006:58) maintain that when studying human information behaviour, variables that should not be ignored are socio-economic background, gender, age, ethnicity and education, because these things may well influence an individual's information-seeking behaviour. Since this study is guided by the Leckie *et al* (1996) information-seeking model, it will consider age and career stage, which are linked to teaching experience, geographic location of the schools where the teachers work and the teachers' qualifications.

As mentioned earlier (section 2.2.1), Case (2007), Kuhlthau (1991) and Leckie *et al* (1996) reveal that people tend to seek information that is congruent with their prior knowledge, beliefs and opinions and may avoid exposure to information that conflicts with their state of mind. Moreover, people may also assimilate and accommodate new information with what they already know or have experienced and tend to connect what is new with what they already know. Consequently, users' prior knowledge is perceived as another factor that affects information-seeking, since people tend to seek information that fits in with what they already know. Relevance and timeliness of information sources were also found to have an impact on information-seeking and utilisation for school improvement (Cousins & Leithwood, 1993).

Affections are also a factor that might influence information behaviour. For instance, Preece (2007:xvi) asserts that instinctively there is an inherent emotional and affective quality to information, such that when people process information they may avoid information that

provokes strong negative emotions (Choo *et al*, 2000:17). This means that people avoid hurting others' feelings, causing embarrassment, conflict or regret, thus avoiding tarnishing their self-images; they would rather work towards enhancing their status or reputation. Another psychological factor is the perceived value of the information given: 'whenever information is sought, issues of relevance, pertinence, and salience arise' (Case, 2007:115). Power dynamics could also influence information-seeking behaviour. For example, Mutshewa (2007:249) expounds on power as a possible avenue to understanding the information-seeking behaviour of people at work. He asserts that people who want to gain power from information would portray information-seeking behaviour that enables them to come into possession of information and subsequently use it (Mutshewa, 2007:250). Moreover, Mutshewa (2007:250) posits that the power one anticipates to either gain or lose influences the kind of information behaviour one exhibits when in need of information.

Inskip *et al* (2008:648) explain that when studying information behaviour, one may also consider the following factors pertaining to information: subject, function, nature, intellectual level, viewpoint, quantity, quality/authority, date/currency, speed of delivery, place and the processing of such information. Another important factor that may affect information-seeking is when one decides to stop the information-seeking process. Prabha *et al* (2007:80) mention that in the Ellis (1989) model the decision on whether the information found is sufficient to meet the users' needs depends upon chasing and evaluating references, as well as systematically identifying content that is of interest to the users. In the Dervin and Frenette (2003) model, the ending requires making sense of the situation or resolving the problem with the information gathered. In essence, the process of information-seeking, its extent and intensity may depend on how quickly the information seeker decides that the information gathered is sufficient to address the information need. According to Prabha *et al* (2007:77-79), information-seeking stops because of the following factors that may also be considered to be influencing information-seeking:

- The users' feeling that they have enough to write and that they have consulted the authors they trust.
- Time and money.
- Nature of the problem and task at hand and task-domain knowledge.
- Context, situation or setting that the user is in.
- Search system.

- Motivation level of the user and his/her information-seeking ability.

Information must be accessible in order to be sought, found and used. In essence, ‘people tend to look for the information that is most accessible, sometimes referred to as the Zipf’s principle of least effort’ (Savolainen, 2008:276). Zipf’s principle of least effort is also discussed by Case (2005) and Hertzum (2002). Madhu and Jansen (2008:258) view physical distance as a factor that either facilitates or inhibits information-seeking. In addition, Gardiner *et al* (2006:356-357) indicate that some common problems affecting the usability of a currently available electronic information service are:

- Payment - users are not prepared to pay for information sources.
- Poor readability of electronic information.
- Accessibility and retrieval of information due to complexities of interfaces.
- Information overload – too much information scattered all over.
- Reliability and authenticity of web information where anyone can publish anything.
- Amount of time required for accessing information owing to information overload.

More literature on the accessibility of information is reviewed in section 2.5.3, which addresses the availability and accessibility of information sources.

Gardiner *et al* (2006) and Prabha *et al* (2007) mention time as a factor that influences information-seeking. It is also noted that Savolainen (2006b) discusses different ways in which time influences information-seeking. He shows how time is a fundamental element of a situation or context of information-seeking; how time is a qualifier of access to information and how time is an indicator of the information-seeking process.

The above subsection can help in deciding on pertinent variables to consider for the research design. Such variables include gender, age and educational background; as some teachers may have bachelors or masters degrees or diplomas, it may be worth finding out if these qualifications affect their information-seeking, as well as social networks and the availability of resources, to name a few. The next section outlines the literature on the information-seeking patterns of teachers.

### 2.4.3 Information-seeking patterns of teachers

Lundh (2005) researched high school teachers' information-seeking during their transition from educational to occupational practice. Part of the current study explores the information needs and information-seeking patterns of final-year education students, who are at the point of transition from training to practising. Lundh (2005) found that during training, the teachers mostly used scientific material through their academic libraries. As they started practising, the teachers' information-seeking became more related to their pupils and colleagues were mostly used as information sources. This study indicated that it is considered more important to find material that is useful in classroom situations rather than scientific. In essence, the most important criterion for material selection is its applicability in the classrooms; this notion was also observed by Kahlert (2001) and Tanni *et al* (2008). It is therefore worth investigating the criteria for material selection used by secondary level geography teachers in Lesotho.

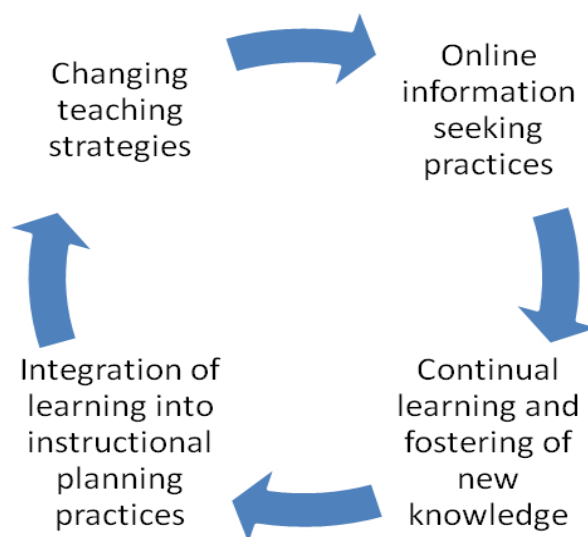
Shanmugam (1999) completed a study on the information-seeking behaviour of trainee teachers in selected teachers training colleges. The study attempted to establish the trainee teachers' motives for seeking information, the resources they explored, the channels they preferred, the attributes of information that they valued and the problems they encountered in the information-seeking process. From Shanmugam (1999), it is evident that the teachers prefer informal and interpersonal sources of information. Accessibility of an information source was the most important attribute affecting its use. Information currency and relevance were very important considerations in information-seeking. In addition, the teachers preferred to use sources written in their vernacular to sources written in English.

Wu *et al* (2005) studied elementary school teachers' searching behaviour for instructional resources on the internet, and how they integrate those resources into classroom teaching. The study found that the teachers' choice of resources on the internet was determined by the accuracy and currency of information, as well as the attractiveness of a web site. From this, one gathers that teachers opt for information that is not only accurate, but also current and attractive. Therefore, alerting the teachers to new information released may be a vital information service.

Tanni *et al*'s (2008) study found that teachers' information behaviour, in particular the seeking process, was influenced by subject knowledge. This knowledge would determine

what specifically to search for, what to deliver during the lesson and where to search for more information. Their study reveals that often teachers start by reading textbooks to familiarise themselves with the topic and to compare different views from the books. Depending on the outcome, they search for more information using Google on the web. The internet is mainly used if the information from the textbooks is inadequate or conflicting. The information found is used in the lesson plans to complement textbooks, exemplify, illustrate, maintain interest or raise discussions among the learners. Moreover, the study found that when processing information, the teachers choose only the parts of a document that will be understood by their learners, simplifying the vocabulary and reducing and synthesising information. Furthermore, it was important to find appropriate ways of presenting the information to learners in a limited time, still maintaining their interest in the topic. It is evident that the teachers bear the learners in mind when they are seeking information for teaching purposes. Therefore, they prefer information that will help the teaching and learning process. This is affirmed by Sánchez and Valcàrcel (1999:509) when stating that all teachers claim to take students into account when preparing for lessons; they consider the level of the learners, age and general knowledge of the subject in question.

Perrault (2007) explored biology teachers' online information-seeking practices. She found evidence of a recursive process in which teachers engage in online information-seeking practices. The researcher interprets and presents this recursive process as illustrated in Figure 2.2 below:



**Figure 2.2: Teachers' recursive online information-seeking practices based on Perrault (2007)**

From Perrault (2007) one deduces that teachers' information-seeking practices are influenced by currency of information, need to generate new ideas, gaining of personal knowledge and availability of time.

Mundt *et al* (2006:11) mention that teachers tend to ask the following questions when selecting/seeking information:

- Is it easy to use?
- Does it keep me aware of new developments?
- Is it complete and comprehensive?
- Does it respond to my problem?
- Is it likely to have the information that I need?
- Is it free or inexpensive to use?
- Is it authoritative, accurate and objective?
- Is it close at hand and easily available?
- Does it offer a variety of viewpoints or discussions?
- Can I access it on my own without involving other people?
- Does it lead to other sources?

Borgman *et al* (2005:651) found that geography educators seek new literature through the following means:

- Browsing familiar sections of the library.
- Making bookmarks for favourite websites.
- Following citation links.
- Attending professional conferences.
- Receiving sources and references from the scholarly peers.

A principle drawn from this is that work roles bear certain tasks that trigger information needs, resulting in information-seeking. The information is sought from various information sources. One of the sub-research questions of this study aims to determine the information sources used by the teachers. It becomes imperative, therefore, to review literature related to information sources and this is done in the next section.

## **2.5 INFORMATION SOURCES USED BY TEACHERS**

This study's stance is that there are information needs, which may result in information-seeking using information sources. This is evident in many information related models such as those of Byström and Järvelin (1995), Ellis (1989), Krikelas (1983), Kuhlthau (1991), Leckie *et al* (1996) and Wilson (1999). This section reviews the literature on information sources used by the teachers. It builds the conceptual framework for the focus on information sources. Then it outlines the information sources used by the teachers. This is followed by a discussion on the availability and accessibility of information sources. The intention is to address one of the sub-questions in Chapter One (section 1.2) that is concerned with the availability and accessibility of information in schools.

### **2.5.1 Information sources**

According to Bates (2006:1035), generally speaking, 'anything human beings interact with or observe can be a source of information'. In addition, Bates (2006:1033) indicates that the only thing in the universe that does not contain information is total entropy. The two statements by Bates above suggest that everything in the world can be a source of information. In the workplace, Byström and Jarvelin (1995:193) mention that from the worker's point of view an information source contains (or is expected to contain) relevant information. Byström and Jarvelin (1995:196) categorise information sources as the people concerned with something; experts who are knowledgeable people in the area; literature in mainly formal publications and official documents, which are mainly office papers such as minutes, letters, memoranda, etc. It was also mentioned earlier that Leckie *et al* (1996:183-187) maintain that the sources of information used by professionals are colleagues, librarians, handbooks, journals and their own personal knowledge and experience.

### **2.5.2 Information sources preferred by teachers**

Williams and Coles (2007a) address teachers' information behaviour in relation to their own professional development. In their study, the teachers were asked to reflect on scenarios which were likely to provoke a need for additional information, and this provided the opportunity to explore how the teachers went about information-seeking and differences in information behaviour related to the type of information need in terms of content and nature of information sources preferred (Williams & Coles, 2007a:816).

According to Williams and Coles (2007a:816) the teachers were asked what they would advise a colleague or student teacher to do in looking for and using information. This helped elicit their own preferences in a non-threatening way, and this strategy was also designed to partly overcome the danger of respondents telling the researchers what they thought they ought to do rather than what they actually do. The scholars found that the teachers tend to rely on readily available resources, particularly those available in the school. Their frequently used information sources were mostly colleagues, in-service events, newspapers and reports available in the schools. The main barrier in information-seeking and use was limited time. It is therefore imperative for the current study to identify the information sources mostly used by the teachers and to determine if these information sources can be found in their schools. The limitations or challenges that they encounter in using the available information sources also need to be determined. Kirby and Bogotch (1996:14) and Williams and Coles (2007b:201) indicated that sources of information available in the school environment are among the most popular. Therefore, it seems that to increase information use, teachers need a well-organised access point to information located within the school that would allow them to find the information that they want as quickly as possible.

Dias Gasque and de Souza Costa (2003) studied elementary and secondary school teachers' information-seeking behaviour in the context of continuing education in Brazil. This involved identifying teachers' information channels and sources, as well as the factors that influence their behaviour when they seek information in continuing education. The results showed that print sources were still predominant and new information technologies had not yet been used by teachers. It is worth establishing the information format preferred by secondary level geography teachers in Lesotho.

Martin (2008) studied undergraduate students majoring in education to investigate their information-seeking behaviour in order to understand where they find their research information and to determine if library instruction had any impact on the types of sources they use. The study by Martin (2008) reveals that the majority of students find their research information on the freely available web. Therefore, the internet was the major source of information. In addition, Tanni *et al* (2008) reveal that information sources used by trainee teachers comprised both print and electronic documents such as textbooks, books, magazines, newspapers, compact discs, web sites and videos. Moreover, the teachers often used Google to search the internet and Wikipedia was another source that was often used by the teachers



instead of a printed encyclopaedia. The paper reveals that today's college students are using freely available internet sites much more than library resources. One would therefore want to determine the extent of internet use among the prospective teachers currently being studied compared to other sources.

Landrum *et al* (2002) studied teachers' perceptions of the trustworthiness, usability and accessibility of information from different sources. They found that teachers generally rated colleagues, workshops and in-service presentations as accessible, trustworthy and usable sources of information. In essence, professional journals were found to be less trustworthy, less usable, and less accessible when compared with information from colleagues. Sánchez and Valcàrcel (1999) found that in general teachers used the textbooks prescribed for learners as the principal source of reference although they also consulted magazines and other textbooks if the prescribed textbooks were considered to provide insufficient information or if the teachers did not agree with the information provided in the textbooks. In addition, the teachers also used their subject knowledge and experience to make modifications or additions to the information found in the textbooks. Perrault (2007) stipulates that sources that teachers consult for planning purposes include personal notes and handouts, audio-visual materials and tests from previous years. Nwokedi and Adah (2009) found that teachers preferred textbook information to any other source of information. In addition, Nwokedi and Adah (2009) report that most of the teachers prefer to have information sources in their own specific subject areas.

Conroy *et al* (2000) mention the following sources of information as being preferred by the teachers they studied:

- The internet, mainly because it provides current information and is also popular among learners. However, not all schools have access to the internet.
- CD-ROMs are also popularly used by teachers as an information source, mainly in the form of encyclopaedias.
- Videos are also used and are generally preferred to textbooks prescribed for learners because videos capture the learners' attention more.
- The press and television are used because they cover current affairs.

Mundt *et al* (2006:9) mention that teachers use information sources as follows:

- Curriculum materials, followed by colleagues and personal files, are used mainly for lesson planning.
- For improving teaching methods, teachers often use their colleagues as well as workshops, seminars and meeting notes.
- For assessing students, teachers confer with students and consult their personal notes and files.
- For keeping up to date with local and international affairs, mainly in the form of everyday life information-seeking, teachers use newspapers, magazines, television, educational journals and the internet.

Borgman *et al* (2005:651) allude to the following sources of information for geography educators:

- Primary sources, including raw, unprocessed data or images such as maps, photographs, census data.
- Secondary sources, including conference papers, journal articles, books which come from the processing of primary sources.
- Physical geographers, who are concerned with sources that deal with climate and geomorphology and human geographers, who are concerned with social activities associated with places.

Merchant and Hepworth (2002:82) indicate that teachers use different sources to satisfy different information needs. Print sources, with the exception of newspapers and magazines, were viewed as sources of information with which to build a framework for the topic, the theory behind what was to be taught, or for factual information. Alternatively, the internet in particular, and also television, subject journals, newspapers and magazines were considered to provide current, supplementary information, both to fill in gaps in the material available through textbooks and to add the ‘interest factor’, which would engage pupils in the subject matter.

### 2.5.3 Availability and accessibility of information sources

The study reported here focuses on the information needs and information-seeking patterns of secondary level geography teachers in Lesotho. It was depicted in the Leckie *et al* (1996) model that information is sought from sources of information with some awareness of the information. As mentioned earlier in section 2.4.3, it is imperative for information sources to be available and accessible for information-seeking to occur. Hence this section attempts to review literature reporting findings on the availability and accessibility of information sources and how it impinges on information-seeking. The remark by Johnson (2003:737) that information-seeking is the purposive acquisition of information from selected information carriers is noted. In addition, according to Hargittai and Hinnant (2006:59), information-seeking does not occur in isolation from one's surroundings, as these surroundings encompass, among a wide range of factors, the availability of sources. Moreover, Hargittai and Hinnant (2006:59) argue that the autonomy of information resources, meaning the extent to which the user or person seeking information has the flexibility to consult the necessary information resources at his/her leisure and convenience, can influence information-seeking.

Vancouver and Morrison (1995) discuss accessibility by restricting it to the availability of information sources. This means that information can be accessed if the information sources are available. The Oxford dictionary (2005) defines availability as 'how easily you can find something' whereas accessibility is defined as 'how easy it is to reach or approach something'. From this, it can be deduced that availability of an information source means that the source is there in place, meaning that it exists. The accessibility of an information source is related to the user being able to reach the information source that exists. Pinelli *et al* (1993) perceive accessibility strictly in terms of the physical distance between the information seeker and the information source, while Meyers *et al* (2007:5) opine that information should be physically, psychologically and intellectually accessible in order to be used. Some of the issues related to accessibility of information were outlined earlier under factors that affect information-seeking in section 2.4.2. From Meyers *et al* (2007), it is interpreted that information sources have to be available and then accessible in order to be used, and that the availability and the accessibility of information sources affect information-seeking. Furthermore, during the information-seeking process, various information sources may be used, depending on the nature of the information need. Sometimes the information source may even be at a distance from the information seeker and may therefore be accessed through

an information communication channel, such as a knowledgeable teacher (information source) in another school who may be consulted by telephone (communication channel). Nwokedi and Adah (2009) report lack of transportation as a problem hindering the provision of information sources to teachers. In Nwokedi and Adah's (2009) study it is revealed that information resource centres are available for teachers; however, these centres are in towns and the teachers in rural areas need transport to get to these information centres.

In the literature reviewed not much was reported on information sources' availability and accessibility for teachers. One notes De la Vega and Puente's (2010) study on availability and use of information sources by high school teachers in Peru, which found that availability of information to teachers both privately and at the workplace is very limited. One of this study's research questions aims to determine the information communication channels that are used by teachers to access and exchange information. Consequently, the literature related to information communication channels is reviewed. Similarly, efforts were made to find literature on information communication channels preferred and used by teachers; nothing was found. Hence the literature reviewed in the next section is general and it only aims to clarify further the concept of an information communication channel and its impact on information-seeking and information behaviour in the context of the current study.

## **2.6 USE OF INFORMATION COMMUNICATION CHANNELS WITH POSSIBLE IMPLICATIONS FOR TEACHERS**

This section reviews literature on information-seeking and information communication channels in general to identify possible implications for the teachers being investigated. Although in Chapter One (section 1.7) the terms 'information source' and 'information communication channel' were defined in order to avoid confusion between these concepts, it is significant to explain them further to clarify their meanings in the context of this study.

Rogers (1995) mentions that researchers often use the terms information 'sources' and 'channels' interchangeably. It is significant to clarify the difference between information sources and information communication channels to avoid confusion. This study embraces that 'an information source is a medium in which knowledge/information is stored while a communication channel is a means by which information is moved from one point to another' (Nikalanta & Scamell, 1990:25). This is affirmed by Tucker and Napier (2002:299) when

they indicate that sources provide the content or expertise of interest to the information seeker, while channels refer to the methods or vehicles by which information is transferred or received. Therefore, in this study the information source is viewed as anything that contains information and might inform a person about something or provide knowledge to somebody, while an information communication channel is just a conduit for information transfer. This interpretation is reflected in the discussions in sections 1.7.6 - 1.7.7.

Huang *et al* (2004:148) indicate that a communication channel refers to a transmission system or medium, including the whole process of sending messages from the source to the receiver. Bondarenko *et al* (2010:468) maintain that communication channels nowadays include email and instant messaging tools, forums, blogs, chat rooms, social networking tools, web conferencing and voice-over-IP. Pauleen and Yoong (2001:190) explain electronic communication channels as technologies supporting email, bulletin boards, audio/video/data conferencing, automated workflow, electronic voting and collaborative writing. According to Pauleen and Yoong (2001:194) communication channels fall into three groups, namely face-to-face, conventional and internet-based. Face-to-face meetings are regarded as highly effective in building relationships in the sense that they allow a deeper kind of rapport or trust to develop. A telephone is a conventional channel. When people cannot meet face-to-face, they converse over the telephone. The telephone has been around for very long; people are familiar with it and its use is generally second nature to people (Pauleen & Yoong, 2001:195). Phone calls can initiate meetings as well as business relationships (Pauleen & Yoong, 2001:196). According to Pauleen and Yoong (2001:197-198), internet-based communication channels include emails, chatting and instant messages and desktop video conferencing.

According to Dawson (2008:208), internet and email communication are some of the information communication technologies teachers are prepared and willing to use. Hsu (2005:309) indicates that email has been used to increase communication between student teachers, supervising teachers and peer student teachers. Moreover, multimedia portfolios and case discussions on the World Wide Web have been tried to harness peer-group support for student teachers during their teaching practice. Hsu (2005:308) further indicates that face-to-face communication must still be supported because despite tremendous advances in communication technologies, most communication among student teachers in their study took the form of face-to-face interaction.

The ultimate aim of the current study is to guide the design and implementation of an information service for secondary level geography teachers in Lesotho. It is imperative to review literature related to the design and implementation of information service. The next section discusses information service, its design, implementation and evaluation.

## **2.7 DESIGN AND IMPLEMENTATION OF INFORMATION SERVICE**

In the wake of an exponential increase in volumes of information due to advancements in information and communication technologies, teachers, like many other professionals, face a huge challenge in keeping up to date with the latest developments in their field. In order to be up to date, teachers need an appropriate information service. One of the aims of this study is to guide the design and implementation of an information service for secondary level geography teachers in Lesotho. Such a service may raise awareness of collections and tools that will meet the diverse range of information needs of these teachers. As a result, literature on information service, in particular the design, implementation and evaluation of information service, is reviewed in this section.

Arising from the literature on teachers and information that was outlined earlier, issues were noted that could be related to an information service for teachers. For instance, Nwokedi and Adah (2009) found that teachers prefer to use textbooks rather than other information sources. As a result, their study recommends that teachers should be supplied with current textbooks in their areas of specialisation. Moreover, the Nwokedi and Adah (2009) study recommends that government should install computers in school libraries with full internet service for teachers to access information. In addition, it is recommended that the teachers should be trained in using the internet for teaching.

In Lesotho, Kakoma (1999), Kakoma and Mariti (2008) and Mafube (2005) observe problems of information for teachers originating from lack of school libraries and information resources in educational institutions. These scholars recommend proper training of school librarians, provision and supply of information resources such as books and up-to-date information material by government to schools, as well as promotion of information literacy among teachers and learners alike. In addition, Kakoma (1999) recommends the formulation of an information policy and an information act to provide a legal framework that could guide the institutions dealing with information.

Mundt *et al* (2006) have found that teachers prefer interpersonal information sources, and they state that librarians need to establish personal contact with teachers so that teachers view them as interpersonal resources and feel comfortable coming to them for information. In addition, these scholars indicate that school librarians should have knowledge of the various roles and skills involved in teaching in order to serve the teachers better with the information that they need.

### **2.7.1 Information service**

According to Woodsworth and Williams II (1993:3), an information service can be described as a combination of information, technology and people, including a set of activities that provides individuals with relatively easy access to data or information. Ju (2006:354) mentions that the core benefit of an information service is its ability to help users to source the right information, thus enhancing their academic understanding and efficiency. To corroborate this view, Brophy (2000:168) cites Bernal (1945) who says that the modern information service should aim to ensure that the right information, in the right form, is sent to the right people. Moreover, Ju (2006:355) asserts that to meet users' needs, information services should focus on identifying, analysing and coordinating the needs of various potential user groups. While information services might formerly have relied on their own collections, it has become necessary to consider the vast range of networked information services, including the web and other internet sources and commercial databases (Brophy, 2000:169).

Cloutier (2005:333) reveals two types of information services, namely research services and document delivery services. The former is defined as the mediated use of electronic databases, the internet or any research collection by the library staff in order to respond to the information requested by the clients. These services include the delivery of articles, books, reports, theses/dissertations or any publicly available materials (regardless of availability to the local collection or not) to the clients. Document delivery also appears in the hospital-based patient information service model by Tarby and Hogan (1997). Tarby and Hogan's (1997:163) information service model for patients comprises an information specialist, who maintains two-way interaction with the users of information, who are patients and various healthcare professionals, in a hospital setting. The role of the information specialist is to provide information to these users using an in-house resource centre/library collection,

electronic databases, document delivery and community resource centres/libraries. Tarby and Hogan's (1997) model provides an important framework to consider for Chapter Six that proposes suggestions for an information service for secondary level geography teachers in Lesotho.

Kaur and Rani (2008) outline some aspects of library information services in the university setting; these are presented in Table 2.1 below.

**Table 2.1: University libraries' information services and facilities (Kaur & Rani, 2008:530-532)**

| Services           |  | Facilities       |                     |
|--------------------|--|------------------|---------------------|
| Basic services     | Advanced services                      | Basic facilities | Advanced facilities |
| Photocopy          | Current awareness service              | TV               | Desktop publishing  |
| Bibliography       | Selective dissemination of information | VCR              | UNIX                |
| Press clipping     | Content pages of journals              | Telex            | Barcode             |
| Inter-library loan | Indexing service                       | Microfiche       | Scanner             |
| Library membership | Abstracting service                    | Microfilming     | Full automation     |
| New arrivals       | Translation services                   | Fax              | Local area network  |
| Reference service  | Online searches including CD-Rom       |                  | Video satellite     |
|                    | Email                                  |                  | Intranet            |
|                    | Internet surfing                       |                  |                     |

Many of these services may be adopted for teachers in Lesotho. However, after reviewing the literature on the information service, it is envisaged that it will be worthwhile to establish, empirically, the information service that the teachers being studied would prefer in order to guide the design and implementation of their appropriate information service. This is because such an information service has to be relevant to the teachers, taking cognisance of their prevailing conditions. Nonetheless, it is beneficial to learn more about the different information services' models, particularly the design of the information service. The next subsection aims to provide insights from the literature.



### 2.7.2 Design of information service

Design is perceived as a planning process (Underwood, 1990). It has been gathered from the literature that information services are often initiated after extensive planning processes, which may comprise a survey of users' needs. For instance, Kaur and Rani (2008:535) advocate the involvement of users in the designing of processes concerning new services and products targeted at them. In the same vein, Madden (2008:563) maintains that before developing an information service model, the information needs must be ascertained through both formal surveys and on-going dialogue. One recognises Hepworth (2004) who provides an important conceptual framework for collecting and understanding the information needs of a target community for information service. Hepworth (2004) synthesises most of the popular information behaviour models, some of which were recognised earlier in section 2.2 (e.g. Ellis, 1989; Kuhlthau, 1991; Wilson, 1999), into a comprehensive framework and then applies it to informal carers.

A paper by Chattopadhyay *et al* (2006) on the design and implementation of a library-based information service at the University of Pittsburgh explains that the design and implementation of the information service in this project comprises the following:

- Survey of targeted user needs.
- Hiring of an information specialist to lead the design and implementation process.
- Hands-on workshops on the use of databases and software to train the targeted users in the technologies that are going to be used for the information service.
- Individualised consultations with targeted users on the tools to be used.
- Licensing of commercial products such as programs and software to be used.
- Web portal, comprising information about services, workshops and available information resources and tools.
- Promotion of the information service to the targeted users by the information specialist.

From Chattopadhyay *et al* (2006) one deduces that the design and the implementation of the information service should begin with a proper needs assessment. This should be followed by appointing an information specialist who will spearhead the process. Such a specialist should not only lead the design and implementation of the information service, but also train the targeted users. In addition, the specialist should have consultations with the users to seek the

best ways of service delivery. Furthermore, the specialist should consider legislation and ethical issues related to the products and tools that the service will utilise. According to Chattopadhyay *et al* (2006), when all legal and ethical matters have been addressed, the information service has to be publicised so that the targeted people will know about it.

In the same vein, Underwood (1990) indicates that in the design stage of an information service, the main focus is on the users of the service. The salient issues to consider during the design stage would entail:

- Operational issues such as a specific outline of the products, what the actual service entails and how such a service will be delivered and developed over time;
- A marketing programme that entails a plan of action on how the intended users will know about the service;
- Human resource requirements, which are important because there have to be an adequate number of competent people who will provide the service; and
- Technology requirements that articulate the specific outline of the technology (tools and equipment) that will be required to deliver and manage the service.

Chattopadhyay *et al* (2006) and Underwood (1990) address issues related to the human resources and technologies required for information service. Similarly, Woodsworth and Williams II (1993:3) affirm that information professionals, information resources and delivery systems are some of the common components of the information service. In addition, Chattopadhyay *et al* (2006) and Underwood (1990) reveal the issue of marketing the information service. This is supported by Madden (2008:563) who argues that after the information service has been developed, it needs to be marketed and promoted so that it will be fully used. In affirmation, Kaur and Rani (2008:536) argue that libraries must grasp that marketing and business plans are essential for survival in the face of rising competition and a fast-changing environment. This is clear emphasis on the importance of widely publicising information service to create awareness of their existence.

Although it is in the context of digital libraries, Borgman *et al* (2005:653-654) draw the following implications for the functionality and architecture of geographical digital libraries that could be noted in this study:

- Searching by concept is essential, although it is difficult because people have different interpretations of concepts.
- Personal digital libraries are important mainly because people have different approaches to selecting, collecting and organising teaching resources, implying that each teacher needs his or her own space in which to manage digital resources.

This implies that when designing an information service, one should bear in mind that it is going to serve individuals who not only have different needs and ways of searching information, but also different ways of collecting and storing information. Therefore, a linear model for an information service may not work well, given the versatility and instability of users' information needs and information-seeking patterns that have been noted in preceding sections.

Chen *et al* (2009:224) maintain that while providing a proactive information service, a digital library needs to address the following three issues:

- How to determine that a user needs information.
- How to collect the information needed by the user comprehensively.
- Which mechanisms to adopt in order to direct the information to the user.

Chen *et al* (2009:225) add that once a library determines the users' information needs, it may comprehensively collect pertinent information and provide users with personalised services.

The Reference and User Services Association (RUSA) is a division of the American Library Association responsible for stimulating and supporting excellence in the delivery of library services and the provision of reference and information services (American Library Association, 2011). RUSA guidelines for information service (2000) indicate that information services should take into account the information-seeking behaviour, the information needs, and the service expectations of the members of the community they intend to serve. The issues in the RUSA guidelines pertaining to information service are presented in Figure 2.3 and elaborated on in Table 2.2 below.



**Figure 2.3: RUSA guidelines’ model of an information service (2000)**

Based on Figure 2.3 and RUSA (2000) guidelines, the researcher formulated Table 2.2 below.

**Table 2.2: Expansion of RUSA guidelines for an information service**

| <b>Information service</b> |  |
|----------------------------|--|
| <b>Services</b>            | <ul style="list-style-type: none"> <li>• Provision of required information.</li> <li>• Provision of complete accurate information in appropriate formats.</li> <li>• Instruction in how to use the services’ resources effectively.</li> <li>• Publicity of what is available.</li> <li>• Continual needs assessment.</li> <li>• Proactive information delivery.</li> <li>• Information repackaging to suit users’ needs.</li> </ul> |
| <b>Ethics</b>              | <ul style="list-style-type: none"> <li>• Maintenance of high ethics at all times.</li> </ul>   |
| <b>Personnel</b>           | <ul style="list-style-type: none"> <li>• Sufficient qualified staff that meet the users’ needs and communicate effectively.</li> <li>• Staff having knowledge of information needs of the users.</li> <li>• High competency levels and need for continuing education.</li> </ul>   |
| <b>Resources</b>           | <ul style="list-style-type: none"> <li>• Resources aimed at serving the full spectrum of the intended users.</li> <li>• Accurate and current resources that are adequate for a variety of users.</li> </ul>  |
| <b>Access</b>              | <ul style="list-style-type: none"> <li>• Ready accessibility to users.</li> <li>• Highly visible services accommodating users with disabilities.</li> <li>• State of the art communication methods for access to resources.</li> <li>• Appropriate equipment, in adequate quantities for users to access information.</li> <li>• Convenient opening hours for the services.</li> </ul>   |
| <b>Evaluation</b>          | <ul style="list-style-type: none"> <li>• Information service evaluation.</li> <li>• Integration of staff and clients in the evaluation process.</li> <li>• Process that emphasises factors important to clients.</li> <li>• Collection of relevant statistics.</li> <li>• Evaluation of resources.</li> </ul>  |

Madden (2008) studied the professional associations' library and information service in the United Kingdom and came up with an ideal library and information service model presented as Figure 2.4 below.



**Figure 2.4: A model of library and information service for a professional association (Madden, 2008:563)**

Madden (2008:562-3) explains the model thus:

- Online library and information resources refer to the web site.
- The in-house library services refer to the physical collection.
- The enquiries service is likely to be a reference service providing answers to factual, technical or professional questions, and it can be run in-house, online and by telephone.
- Research services involve library and information staff helping with the research topics of users.
- Information summaries could take the form of new product displays.

The Madden (2008) and RUSA (2000) guidelines have shed some light on information service models. Such models may be used in the design and implementation of an information service for the teachers being studied here. Nonetheless, 'choice of a model in the design stage of information service depends, to a large extent, on the specific conditions prevailing in a particular country' (Chiwere, 2008:60). Therefore, the existing information services need to be determined in order to know the prevailing conditions. The teachers' information needs and their prevailing conditions have to be considered when designing and implementing their information service. It is perceived that the Fidel and Pejtersen (2004)

framework, outlined below, might help to determine the specific prevailing conditions for secondary level geography teachers with regard to information.

Fidel and Pejtersen (2004) articulated a cognitive work analysis conceptual framework using the example of a project to study the information behaviour of teachers in a public elementary school with the aim of developing design recommendations for an information system. Fidel and Pejtersen (2004:5) present seven components of the framework thus:

- **The work environment** investigates the environment in which the school operates, for instance the national or district regulations governing the school, curriculum policies and standards, student population, testing, etc.
- **Work-domain analysis** studies the work that is done at the school and the school library, the goals of each organisation and its activities, resources and constraints.
- **Task analysis** looks at specific tasks and analyses them through the same questions, for instance, teachers' goals for lessons, sources they consult and their constraints when searching information for lessons.
- **Organisational analysis** examines the management style and the rationale for the allocation of roles and responsibilities.
- **Decision analysis** provides a more specific analysis of individual decisions, such as what information sources one uses and finds desirable and appropriate for one's task.
- **Strategies analysis** examines possible strategies for each task and decision.
- **User's resources and value analysis** identifies the characteristics of each group of users. These include the teachers' experience, knowledge, values, etc.

The above framework sets out some important issues that concern the information needs and information-seeking of teachers relevant in the design and implementation of their information service. For instance, the work environment is basically related to the curriculum, syllabus and examination. Work domain analysis is related to the resources available at schools; task analysis may be related to lesson plans, and all these need information. Organisational analysis is related to other roles and responsibilities that the teachers may have. As mentioned earlier, teachers have other roles in addition to teaching. These roles include sports master/mistress or serving in committees such as disciplinary, debate and cultural ones, to name a few. It is evident that these roles may require information,

as indicated by Leckie *et al* (1996). Decision, strategy and value analysis is related to individual teachers' knowledge, experience and preference in carrying out tasks, delivering content and using information sources. The Fidel and Pejtersen (2004) framework highlights the factors that can be used to develop a clear picture of the prevailing conditions for secondary level geography teachers in Lesotho. It is envisaged that these factors have the potential to help this study to yield the data that will help to guide the design and implementation of the teachers' information service because the prevailing conditions of these teachers would be known.

### **2.7.3 Implementation of information service**

While the design is the planning stage, the implementation puts the designed plans into action. The plans that are drawn up during the design stage are then put into effect. The intended schedules are adhered to and the activities that constitute the information service are embarked upon (Wilson, 2000a). This includes the delivery of the information service.

McMenemy (2010:7) asserts that the delivery of reliable information to users is one of the most vital aspects of a librarian's role. In addition, McMenemy (2010:7) argues that the ethics inherent in decision-making are fundamental to librarians' professional ethos and their role in supporting people's use of information for enhancing their lives. Moreover, McMenemy (2010:7) maintains that wrong delivery of information may well be professionally unethical, but it could also be potentially dangerous for the individual librarians and their organisation. As mentioned in Chapter One (section 1.1), failure to deliver relevant and authentic information to teachers may hamper the teaching and learning process and may ultimately have negative effects on the learners' performance.

### **2.7.4 Evaluation of information service**

After designing and implementing the information service, the impact, value, relevance, etc. of such services need to be established. This is normally done by evaluating the information service. Wilson (2000a) mentions that evaluation involves assessment of all the data collected during the monitoring process with the objective of determining the success, usefulness or value of the innovation, and in this study the innovation is the information service. Therefore, at the evaluation stage, one will be assessing whether the users find the information service useful, valuable and successful.

Botha *et al* (2009) studied the impact of the special library service at the Council for Scientific and Industrial Research (CSIR) on research scientists. Botha *et al* (2009:112) assert that as their special library (CSIR Information Service) understands the researchers' information needs well, it can evaluate the service and products on offer in order to select those information products that best serve the researchers' needs. These products include external information suppliers procured by the CSIR Information Service (e.g. outsourcing online journals) for researchers' use.

For the evaluation of the information service, Kaur and Rani (2008:535) suggest regular user surveys to determine whether a service should be continued/modified or withdrawn. Immediate feedback on the quality of services is essential for making the necessary adjustments to meet the requirements. Moreover, Kaur and Rani (2008:536) indicate that libraries should constantly maintain and improve the quality and range of their services/products and match these to the changing requirements of users. Assessing the quality of information services is nothing new. There are instruments, such as SERVQUAL, that developed into SERVPERF, which have been developed, tested and used in various settings to determine the quality of services as well as the performance of services (Parasuraman *et al*, 1988). Brophy (2005) sets out means for comparing the different effects of a service on individuals in a particular community over time. Brophy's (2005) model aims to assess the level of impact of information and library services. It is beyond the scope of this study to intensively review literature on the evaluation of information services, including the instruments and techniques that are used. It is envisaged that the evaluation will be done after the information service for teachers has been designed and implemented. Therefore, an extensive literature review on the evaluation of the information service will be more relevant at that point.

In this section it is gathered that it is crucial to involve users when designing the information service. The information service's design requires needs assessment and understanding information-seeking. The design stage is the planning phase, the implementation stage is the execution of the plans, and the evaluation stage marks the identification of outcomes after the delivery and could be interpreted as the reality check on the impact of the information service. It should be noted that after designing and implementing the information service for the secondary level geography teachers in Lesotho, evaluations will need to be carried out. As mentioned earlier, it is only then that more evaluation techniques, models and instruments



will be reviewed. For the purpose of this study, it suffices to be aware that the delivery of an information service needs to be evaluated constantly in order to enhance efficiency.

## 2.8 CONCLUSION

This chapter has been the literature review for the current study. The literature addressed most of the research sub-questions except the information service aspect specifically for teachers. The Leckie *et al* (1996) information-seeking of professionals' model that forms the theoretical framework for this study was reviewed with recognition of other information behaviour related models. The review of the Leckie *et al* (1996) model also included soliciting other scholars' views and studies that applied the model.

The literature review helped to conceptualise some of the key terms related to this study that were briefly clarified in Chapter One (section 1.7). These terms are information, information need, information-seeking, information source, information communication channel and information service. Furthermore, a distinction was made between an information source and an information communication channel in the context of this study.

The literature revealed the categories of information needs of teachers. It was evident that the teachers' information needs pertain to pedagogy, the curriculum and syllabus, including examinations, as well as knowledge of the subjects they teach. In addition, the teachers need information related to their students, such as their talents, capabilities, interests and social behaviour.

It emerged that information may be sought for a specific purpose, while it may also be found incidentally as one interacts with information sources. Sometimes people seek information through other people (agents/proxies) and also collaborate to find information. The literature also pointed out that teachers generally seek information from sources that are readily available in their schools. The teachers prefer to seek information that is not only current, but also relevant and applicable to teaching. The textbooks are the first point of information-seeking for the teachers. In addition, the teachers tend to seek information that will be easily understood by their learners and go to the extent of simplifying the language and finding different means of presenting the information to the learners to enhance understanding and interest.

The information sources used by teachers are mostly colleagues, books, magazines and newspapers, with a preference for mostly formal publications. In one study it was specifically noted that the teachers preferred print sources to electronic sources. In another study, it was observed that the teachers preferred sources that were written in their vernacular to those written in English. In this respect it is worth determining the situation with the secondary level geography teachers in Lesotho.

It was established that the information communication channels can be personal, such as face-to-face talking, conversing over the telephone/cell phones, using SMS through cell phones, or more internet-based such as email, web chatting, web sites, instant messaging, and Facebook, twitter, wikis, blogs, etc. As a result, the empirical component of the current study needs to establish the teachers' preferred communication channel, given that this study also aims to guide the design and implementation of these teachers' information service. Therefore, it is important to find the channels that are appropriate to use in the delivery of such an information service.

Provision of an information service often begins with a needs assessment of the targeted users, including establishing essential facilities and services, as this has a bearing on the delivery of the information service. The design of the information service involves specifying the services to be offered and their mode of delivery. Other factors to consider include prevailing conditions in the country, the necessary staff, equipment and marketing plans for the information services, as well as implementation strategies. It is important to note that the information service needs to be evaluated from time to time in order to establish its impact, whether it is still needed, or should be modified or discontinued. The information service related models and frameworks noted in this chapter that may be used in subsequent chapters are the studies by Brophy (2005, 2000), Hepworth (2004), Kaur and Rani (2008), Madden (2008) and the RUSA guidelines (2000), as well as Tarby and Hogan (1997).

The next chapter addresses the research design and methods that were used to carry out the investigation of the information needs and information-seeking patterns of secondary level geography teachers in Lesotho. It considers the empirical components of the studies reviewed in this chapter to justify the decisions made on the choice of research methods.