

CHAPTER SIX: PROPOSED INFORMATION SERVICE MODEL FOR SECONDARY LEVEL GEOGRAPHY TEACHERS IN LESOTHO

6.1 INTRODUCTION

Chapters Four and Five respectively addressed the presentation and interpretation of the data for the current study. These previous two chapters presented the information needs of secondary level geography teachers in Lesotho and their information-seeking patterns, including their preference for information sources and communication channels. The chapters also revealed the suggestions from participants in the study on information service for these teachers. The ultimate aim of this study is to guide the design and implementation of an information service for secondary level geography teachers in Lesotho. It was revealed in both Chapters Four and Five that there is a need to improve the information service for secondary level geography teachers in Lesotho. This may be done through the strategic design and implementation of an appropriate information service specifically for secondary level geography teachers, bearing in mind their information needs and information-seeking patterns. As indicated in Chapter One (section 1.1), the development of appropriate information service depends largely on understanding the information needs and information-seeking behaviour of users (Hepworth, 2007; Wilson, 2006a).

An information service is fundamental in the provision of information for the teaching and learning process that occurs in schools for teachers to fulfil their roles and to meet with the educational challenges faced in their specific working context. Various needs and challenges for secondary level geography teachers emanating from the study as reflected in Chapter Five (Table 5.1 and Figure 5.4) are serious concerns warranting the design of an appropriate information service. The challenge for the designer and implementer of these teachers' information service is to tally the service, the information delivered, the needs of the targeted information users and the prevailing conditions in their country (Chiwere, 2008). Understanding the teachers' information needs and information-seeking patterns, including their preferences for information sources as well as their preferred process of satisfying these

needs, cannot be ignored because these issues are of paramount importance in the design and implementation of an information service for them.

This chapter draws on the literature such as the work of Chiware (2008), Kaur and Rani (2008), RUSA (2000) and Tarby and Hogan (1997) and the study's empirical findings to propose an appropriate information service for secondary level geography teachers in Lesotho. The suggestions and scope for the design and implementation of the information service also include the working context of the target users (as discussed in Chapter Five, section 5.2.1) to make it practical and feasible. This approach was also followed by Chiware (2008) in a study of business information needs, information-seeking patterns and information services for the small, medium and micro-enterprises sector in Namibia. The chapter also intends to address the latter part of the principal research question as mentioned in Chapter One (section 1.2), which is: **“How can the results of this study guide the design and implementation of an information service for secondary level geography teachers in Lesotho?”**

Therefore, this chapter discusses the following two major points.

- 1) Designing an information service for secondary level geography teachers in Lesotho:
 - Objectives of the information service proposed in this study.
 - Factors guiding the design of the information service for secondary level geography teachers in Lesotho.
 - Proposed information service model for secondary level geography teachers in Lesotho.
 - Evaluation of the information service for secondary level geography teachers in Lesotho.

- 2) Suggestions for implementing the information service for secondary level geography teachers in Lesotho:
 - Presenting the proposed model to stakeholders.
 - Setting up the task team for the proposed information service.

- Establishing infrastructure for the proposed information service.

Given that the discussions in this chapter are mostly based on the data that have been presented and interpreted in Chapters Four and Five respectively, as well as the literature that was reviewed in Chapter Two, there is some repetition of certain key points from the previous chapters. This is done in order to provide background to the strategies proposed in this chapter, but will be kept to a minimum.

6.2 DESIGNING INFORMATION SERVICE FOR SECONDARY LEVEL GEOGRAPHY TEACHERS IN LESOTHO

Chapter One (section 1.1) explained that the need for information cuts across all spheres of life, but the relevance of information in the education of young minds and their teachers is crucial. Therefore, it becomes imperative to make sure that teachers have a relevant information service. It was also indicated that the researcher is a former geography teacher who is now an information practitioner at the Information and Documentation Centre (IDC) of the Institute of Education (IE), National University of Lesotho (NUL). In her current designation, she has to initiate and provide information services for various users in the field of education. It is envisaged that this study will be significant for the IDC of the IE at the NUL, given that it may help to address the following objectives and functions of the IE at the NUL:

- Serve as a consultative and advisory body to the MOET and other educational institutions, on matters affecting the training of teachers and on all educational matters.
- Organise in-service training and extra-mural programmes which may result in further development and continual improvement of teachers' abilities.
- Encourage and promote dissemination of professional information through educational journals or other publications (Institute of Education, NUL, 2010).

It is also presumed that the findings and the proposed information service from this study may be applied to other teachers in Lesotho, or even in other places with a similar setting. It is suggested that the information service proposed in this chapter be implemented by the IDC in the form of a collaborative partnership with the geography teachers and the institutions

that are directly involved in secondary level geography education in Lesotho. Therefore, the IDC is being proposed as the implementing agency of the information service model for secondary level geography teachers in Lesotho, while the institutions will be the stakeholders and the secondary level geography teachers will be the users of the information service. These stakeholders are outlined later in section 6.3.1. Chattopadhyay *et al* (2006) mention hiring an information specialist to lead the design and implementation of an information service. Relevant experience, knowledge and understanding of information behavior and information service design are some of the factors to consider when appointing an information specialist to spearhead the design and implementation of an information service for secondary level geography teachers in Lesotho.

Partnership and collaboration between schools, university departments and libraries suggested in this chapter are not new, given that Gresham and Van Tassel (2000) advocate educational partnerships between academic libraries and public schools and suggest that these partnerships could be in the form of circulation and borrowing of material by school students and teachers; librarian reference services, workshops for secondary school librarians and teachers, pre-visit orientations, and instruction sessions for high school students. Gresham and Van Tassel (2000) report a secondary school outreach programme at the University of Colorado at Boulder Libraries as an information literacy programme for 25 partner schools. Through the programme, secondary schools' students and their teachers discovered the value of information technologies. They also had a chance to access material and services provided by the University of Colorado. If developed countries such as the USA with better resources are forming partnerships between their universities and schools, then it is inevitable for developing countries such as Lesotho. The most important thing is to develop strategies that will make the information service safe, easy and manageable. It is equally important to define the goals and objectives of the information service.

6.2.1 Objectives of the information service proposed in this study

It is significant that the overall goals and objectives of the information service for secondary level geography teachers in Lesotho are defined at the design stage. Considering the key factors for the design of the information service for secondary level geography teachers in

Lesotho that were presented in Chapter Five (Table 5.1) and literature such as Cloutier (2005), Nzimande and Stilwell (2008), and RUSA (2000), the study realises the following objectives of the information service for these teachers:

- To collect and repackage relevant physical geography information to cover the scope of information needed by secondary level geography teachers as discussed in Chapter Five (section 5.3.1).
- To provide a range of information sources in multimedia formats relevant to the Lesotho JC and COSC geography syllabi.
- To create a reference service that serves as an inquiry and answer service for secondary level geography teachers in order to address the need for current and accurate content.
- To strengthen geography education research through provision of research services to researchers and teachers in line with Cloutier (2005), who suggests that information services may be document delivery services and research services, as well as with the researcher role interpreted in Chapter Five (section 5.3.2).
- To promote information resource-sharing among secondary level geography teachers and in Lesotho schools at large to address the shortage of information sources.
- To provide alerting services for newly released publications that are relevant to geography education to enable teachers to keep abreast with the latest developments.
- To encourage the use of facilities for internet access to enable the teachers to access information that is available on the internet.
- To evaluate the information service meant for secondary level geography teachers regularly.

It is envisaged that defining the objectives of the information service for these teachers might help them to fulfil their respective work roles (educator, student, researcher, information disseminator, resource provider, administrator, committee member, caregiving, service provider) and associated tasks in the work environment as presented in Chapter Five (section 5.2.3). The objectives may also be used for the evaluation of the proposed information service, as they may be used to measure the successes and failures of this information service.

In addition to proposing an implementation agency and information specialist as well as defining the objectives of an information service for secondary level geography teachers in Lesotho, there are other important factors from the data and the literature that have to be considered for the design of an information service for secondary level geography teachers in Lesotho.

6.2.2 Factors guiding design of information service for secondary level geography teachers

Bryson (2006:67) maintains that an information service has a responsibility for ensuring that all information, regardless of source or format, is subject to a managed life cycle that comprises six phases: planning, acquisition, maintenance, exploitation, evaluation and review, and retirement. As a result, the design and implementation of the information service for secondary level geography teachers also has to consider these phases of information, including the key factors emanating from this study that were reflected in Chapter Five (Table 5.1).

It is equally important, when designing an information service, to take into account the information needs of the users, their preferences for information sources and the resources around them, including the prevailing conditions in their country (Chiwere, 2008; Hepworth, 2007; Wilson, 2006a). There is a scarcity of resources in Lesotho and this may require resource-sharing as well as efforts to provide affordable services to both the service provider and the targeted users in order for such an information service to be sustainable. As a result, the ‘choice of a model in the design stage of information services, depends to a large extent, on the specific conditions prevailing in a particular country’ (Chiwere, 2008:60). This is because the purpose is to come up with services that will be realistic and achievable. Bearing in mind the literature above, in designing an information service for secondary level geography teachers in Lesotho, it may also be necessary to consider the following factors:

- Resource availability within the IDC (service provider) as well as the resources of the secondary level geography teachers (service users). These resources are human

resources, time, information and information sources, technology and existing networks.

- The secondary level geography teachers' information needs, information-seeking patterns and preferred information communication channels.
- The working context of these teachers as presented in Chapter Five (section 5.2.1).

Underwood (1990) explains that when designing information services, one must focus on the users of the information service and should think of operational issues by outlining specific products and the details of the service, including how it will be delivered and developed over time. In addition, it is important to establish the marketing strategies for the service, including its human resource and technology requirements. Therefore, in the design of the information service for these secondary level geography teachers, it is significant also to consider:

- The users of the information service;
- The services constituting the information service;
- The marketing strategies;
- Human resources; and
- Technology requirements.

The factors guiding the design of the information service for secondary level geography teachers in Lesotho are based on the work of Underwood (1990) and the results of this study and other models that were presented in Chapter Two (Figure 2.3 and 2.4); these are all incorporated in Figure 6.1 below. Each component is discussed in the subsequent sections.



Figure 6.1: Factors guiding the design of an information service for Lesotho geography teachers

6.2.2.1 Users of the information service

When designing the information service for secondary level geography teachers in Lesotho, it is important to meet their characteristics and requirements. Some of the characteristics of secondary level geography teachers identified in this study that have to be met are:

- These teachers work in schools located in different geographical areas of Lesotho. Some schools are in remote rural areas with limited or no infrastructure for easy access to information, while others are in urban areas with relatively good infrastructure and better access to information.
- The teachers face inconsistent availability of resources and facilities in schools, given that some schools have access to the internet and others do not have it. This is because schools charge different amounts for school fees. As a result, they have different resources. such that some schools have better facilities and resources than others. They also have different proprietors, as shown in Chapter Four (Table 4.6).

- Secondary level geography teachers need easy access to relevant and reliable information given their heavy teaching load due to a large number of learners in their classrooms, many streams and teaching periods per week.
- Many secondary level geography teachers need skills to use the internet and modern multimedia resources. Especially older and more experienced teachers reported using other people to search for information for them on the internet. It is also possible that even the younger teachers who reported using the internet still have insufficient skills to use it optimally. This might require training in internet searching and information literacy, as discussed by Fourie and Krauss (2010). ‘The value of information literacy and especially Internet search skills for teachers is well acknowledged because it increases access to a vast array of information resources, especially those freely available through Internet search facilities, enables teachers to tailor information according to their own circumstances (for example, for lesson plans and assessment) and improves the quality of learning material. Information literacy can also support teachers in coping with everyday life problems such as HIV-AIDS, children exposed to domestic violence and issues of environmental protection’ (Fourie & Krauss, 2010:109). In the case of Lesotho teachers, information literacy may support them to cope with everyday problems of adolescents and orphans.
- Considering the teachers’ qualifications in this study (see Chapter Four, Table 4.1) it is envisaged that qualified teachers with bachelor’s degrees will be willing and able to learn how to use information technologies and electronic resources such as the internet. In addition, since secondary level geography teachers make extensive efforts to find information (as depicted in Chapter Five, Figure 5.2), it seems viable that these teachers may be interested in learning information literacy skills, including the use of the internet.

6.2.2.2 Services constituting the information service

According to Rowley (2006:20), information services support access to information, typically relying upon information goods, such as documents and web sources, as a key element of service provision. ‘A typical information service is engaged in making available, controlling access to, retrieving, selecting, organizing, presenting, interpreting, tailoring, personalizing, and targeting information resources to support user activities’ (Rowley, 2006:20). As previously indicated, it is proposed that the information service be delivered by the IDC, and in order for this information service to be sustainable, fundraising and lobbying for resources to sustain the information service are vital. This is because the IDC and many other information centres in Lesotho that may also offer the information services being proposed here, are already operating with very limited budgets and should therefore strive to offer good services with very little expense. Offering services with limited budgets needs to be emphasised in view of the prevailing poverty in Lesotho, as well as the global economic crisis that has hit the world economy. This is because under these circumstances sponsorships and budget increases are unlikely.

Kaur and Rani’s (2008) study on information services and products in India reveals services and facilities (see Chapter Two, Table 2.1) for academic libraries. Some of these information services are already offered by the IDC. Given the results of this study, it is imperative for the IDC to do literature searches for teachers based on the syllabus demands and compile tailor-made information packages for secondary level geography teachers. The emphasis should be more on physical geography topics such as geology and geomorphology, plate tectonics, marine erosion, etc. that are more complex to teach and where it has even been reported that some teachers may avoid teaching them, while others may mislead the learners. In addition, clippings of relevant geography information from magazines, newspapers and other publications may be compiled for the teachers. Constantly keeping abreast with geography information for teaching and learning in secondary education is imperative because any information found will be disseminated to the teachers. Various current awareness options should be explored for these teachers.

According to Cloutier (2005), information services may include research services and document delivery services. The research services involve the mediated use of information resources by the information professionals to respond to the information requested by clients. The document delivery services concern the delivery of information sources such as books, reports, articles, etc. to the clients (Cloutier, 2005). The information service for secondary level geography teachers in Lesotho may include both research services and document delivery services that will be carried out by the IDC, if it is ultimately considered as the implementing agency. Given that there is no evidence in the data that suggests the need for research services, offering research services for secondary level geography teachers may seem inappropriate at this stage. However, considering that information needs may be unexpressed (Krikelas, 1983; Kuhlthau, 2004), unrecognised (Fourie, 2006; Wilson, 1999), or even dormant (Krikelas, 1983) and subjective, changing depending on situations (Case, 2007), it is significant to offer research services, bearing in mind the research role of teachers interpreted in Chapter Five (section 5.2.3). Leckie *et al* (1996) indicate student and researcher as some of the professionals' roles. Three roles were evident from the data in Chapter Four (section 4.2.2.4). However, in the analysis in Chapter Five eight roles, surfaced (section 5.2.3). Failure of the data to reveal all the roles interpreted in Chapter Five explicitly may be attributed to the study asking questions pertaining to the information needs and information-seeking patterns with regard to teaching. This might have led the teachers to think only of their roles as educators and leave out their other roles, such as being a student and/or researcher. Therefore, providing secondary level geography teachers with information research services may not be unwarranted because it might address those unexpressed or unrecognised information needs and even resuscitate dormant ones.

Document delivery information service may be rendered electronically or physically, depending on the format of the information and the technological capabilities of the users. Physical delivery of documents may be slower and costly, since it requires transport and courier services. The information service being proposed here may include both the research service and document delivery service either electronically or physically, depending on the urgency and type of information need, the distance and location of the client, the amount of information needed and the technologies available to the client. In this instance, the client is the secondary level geography teacher.

It is envisaged that these research and document delivery service will be rendered such that the information that needs to be researched is sent to the IDC for its staff to process on behalf of the secondary level geography teachers and when the information is found, it is disseminated to the client electronically free of charge. If the teachers require printed information, it may have to be sent to them for a fee. However, charging fees for information services is a complex issue that needs to be investigated in more detail before implementation. There will be cases where the teachers need only concise factual information. In such instances, the information may be sent through SMS free of charge. This is an option because the data show that the teachers communicate through SMS, telephone, cell-phones and face-to-face. All these channels should be open and available for use in the provision of the suggested services. However, only information that is sent to the teachers through the website, SMS, fax and email is likely to be delivered free of charge.

The document delivery service concerns the delivery of documents to the teachers electronically through the acquisition, packaging and presentation of accurate, authoritative and current information that addresses the needs of both the JC and COSC syllabi in Lesotho. This calls for information packaging or tailor-made information packages. This information should be posted on the IE website for free and easy access by secondary level geography teachers. This is because electronic information is becoming prevalent worldwide, and its use is growing exponentially because more users are recognising the potential that it offers in terms of access and retrieval (Boumarafi, 2010:350), even though some teachers who participated in this study still do not use the internet and lack the skills to use it.

Considering the preference for books among the participants in this study (in-service and prospective teachers) and recognising that books can be purchased and/or borrowed, it is essential to provide teachers with information about various books that can be purchased and borrowed. It is equally important for the IDC to keep track of newly published books on secondary level geography education so that it offers an alerting service to secondary level geography teachers on newly published books. Current awareness services, as pointed out by Fourie (1999, 2003), are necessary and were regarded as essential to include in this study (see Chapter Five, Table 5.2).

The teachers' preference for printed information due to lack of resources in their schools requires physical document delivery. Given that these teachers lack resources such as time and money for travelling to various places to obtain information and that the IDC does not have money to transport and/or post the documents physically to every teacher, it is suggested that physical document delivery may be done through professional associations, formation of cluster schools, resource centres, teachers who come to the IDC to collect such information and courier services to the teachers. Issues on covering these expenses have to be decided when the proposed information service is accepted and implemented by the IDC. Alerts on new book releases need to be posted on the IE website and sent to the teachers through email, their geography teachers' associations and resource centres.

Making audio-visual information materials such as maps, videos and models pertaining to physical geography related topics available is clearly an essential service for these teachers, given the results of this study. The results further show that some schools and teachers can afford to buy and/or hire material and others may only be able to afford to hire it. It is therefore imperative for the IDC to acquire audio-visual information material, particularly for physical geography, and offer hiring or sales services to secondary level geography teachers, depending on the need. Both sales and hire options are essential because, as indicated earlier, schools have different resources. Data indicated that these teachers need these information materials in their schools to be readily available whenever they are needed. In this instance, an ideal information service would be able to provide these audio-visual information materials in every school. The information specialist needs to bring such information materials to the attention of geography teachers and help to map it to their information needs whether expressed or unexpressed.

Collecting and providing access to information that is generated through the relevant workshops, particularly workshop reports for the geography teachers' associations, is also significant. This information could be useful to these teachers and may help to avoid re-presentation of topics that have been dealt with in previous workshops. It would enable teachers to review the workshop reports so that new workshops can focus on new issues. It was evident that the teachers do not compile any reports for the workshops that they hold in their associations. Where reports are compiled, they do not cover all the salient details owing

to lack of documentation and report-writing skills. Workshop reports are vital sources of information that can help secondary level geography teachers in many ways. For instance, beginning teachers may find the reports a good point of reference. The information literacy training suggested earlier and in Chapter Five (Table 5.2) and in Table 6.1 should consider including the training of secretaries in different geography teachers' associations on report writing.

Given that not all schools have libraries and where libraries exist, they are generally run by unqualified people, training of these unqualified librarians to collect, organise and disseminate relevant information is important and can be done by the IDC. In addition, where there are no school libraries, geography teachers may be guided and assisted to collect and store their own information through information literacy training. It is envisaged that training these teachers may help them to perform their tasks of information-seeking and developing personal notes that were pointed out in Chapter Five (section 5.2.3) with some degree of skill.

Electronic services have to be considered for an information service for secondary level geography teachers, even though their work context (see Chapter Five, section 5.2.1) is characterised by limited information infrastructure and limited access or lack of access to the internet. This is based on recommendations from some of the teachers who participated in this study, as well as the notion that electronic resources are cheaper and faster to get to users and do not take too much physical space for storage (Wu & Chen, 2008). Some teachers appreciate that ICT such as the internet are here to stay and are advancing at a high pace, such that people who are not using them will be left behind. The geography teachers' associations indicated that they encourage their members to use the internet, to the extent that during some of their workshops they refer them to some relevant websites. The use of the internet has been recommended by all sets of participants in this study. Consequently, designing and implementing information services that are internet-based may be a step in the right direction because 'if teachers receive adequate training and have ready access to an internet connection, then they would be eager to use computers and link to the internet' (Wu and Chen, 2008:835).

6.2.2.3 Marketing strategies

Marketing information services is very important for secondary level geography teachers who are the targeted users of the services, because they need to be aware of the existence of such services. The importance of marketing and promoting information service has been highlighted by Chattodadhyay *et al* (2006), Kaur and Rani (2008), Madden (2008), Underwood (1990) and Woodsworth and Williams II (1993). Rowe and Britz (2009:40) recommend a marketing plan for information services that considers and acknowledges political, economic, societal and technological environments. Rowe and Britz's (2009) framework for developing a marketing plan and strategies of information services may be considered for marketing the proposed information service for secondary level geography teachers in Lesotho. However, based on issues discovered from the data collection and consideration for these teachers' work environment and the researcher's personal knowledge and experiences of Lesotho teachers' context, the suggestions for marketing the information service proposed in this chapter draw on the literature, insights gained from the study and personal knowledge of the teachers' environment in Lesotho. At this juncture, it is envisaged that the proposed information service will be marketed through some of the following means:

- Contacting the schools, heads of department and secretaries of the geography teachers' associations to inform them about the service and also request them to pass the information to their geography teachers. During data collection the contact details of the schools, including those of the heads of department were collected and once the information service is ready, the teachers will be made aware of it through their schools, heads of departments and professional associations.
- Hands-on training workshops as proposed by Chattodadhyay *et al* (2006) on the technologies and systems that are to be used for this information service are another important way of marketing the information service. The IDC should consider holding workshops through the geography teachers' associations for hands-on training on the services that are to be delivered for secondary level geography teachers. Such workshops may also inform the teachers about various means of connecting to the internet in Lesotho.

- Radio programmes may also help to market the information service. This is important, bearing in mind that not all schools participated in this study and not all the teachers are members of professional associations. The radio programmes may be broadcast on a national radio station called Radio Lesotho that reaches the entire Lesotho. Since the information service proposed here will be a national service, the radio slot might be available free of charge. Considering that NUL already has a programme called ‘*Tseba ka University*’, translated ‘know about your university’, that is run on Radio Lesotho, it is suggested that this information service be presented on the NUL programme. In addition, NUL has its own radio station that may also be used to market the information service; the only shortcoming is that the NUL station only reaches the Maseru urban audience.
- Designing and printing flyers and posting information on the internet may also be a worthwhile marketing and communication strategy (Rowley, 2006:115). Printed flyers may be distributed during the university open day when all the high schools visit the university to learn about its programmes. Every year NUL holds a university open day, on which learners come with their teachers who can be asked to take the flyers for distribution in their schools. Flyers may also be distributed in workshops, conferences and meetings where teachers are present.
- Exhibitions of audio-visual material at various events that involve secondary level geography teachers, heads of department and principals of schools. The events may be workshops, conferences or celebrations of special days, such as geography day and world environment day.

6.2.2.4 Human resources

The importance of information resources for an information service has been highlighted by Chattodadhyay *et al* (2006) as well as Underwood (1990); it is also evident in models such as those proposed by RUSA (2000) and Tarby and Hogan (1997). The role of human resources in an information service for secondary level geography teachers in Lesotho needs to be

interpreted against the results of this study, the proposed implementation agency and the information services being proposed. Human resources are needed by the implementing agency, which in this study is suggested as the IDC of the IE at the NUL. The education resource centres, the secretaries of the geography teachers' associations and school libraries are perceived as collaborative partners. The IDC has qualified information practitioners who are capable of designing, implementing, marketing and evaluating an information service. In addition, RUSA (2000) guidelines encourage involving people who have knowledge of the information needs of the users. Chattodadhyay *et al* (2006) suggest hiring an information specialist to lead the design and implementation of the information service. This means that the information service being proposed here might necessitate considering the incorporation of such an information specialist. IDC staff members have been working with teachers and researchers in the field of education for a long time, therefore they are competent to handle the proposed information service.

However, because of limited funds the IDC may not be able to satisfy all secondary level geography teachers' information needs, especially if they require printed information that has to be physically delivered to them. As a result, the IDC may require help from the MOET resource centres, the teachers' associations and school librarians. Where necessary, the IDC staff can help to train relevant parties so that the information service for secondary level geography teachers is offered by competent people who understand the urgency and the importance of information in teaching. In the light of the above, capacity building becomes imperative for the information service model proposed in this chapter. This study perceives training to be part of capacity building.

6.2.2.5 Technology requirements

As indicated in Chapter Two (section 2.7.1), information services are a combination of information, technology and people, as well as the activities that provide these people with relatively easy access to information (Woodsworth & Williams II, 1993:03). In this instance, the information service may be perceived as those efforts taken to incorporate the information, technology and the people that help secondary level geography teachers in Lesotho to have relatively easy access to the information that they need. Nevertheless,

Chapter One (section 1.7) refers to an information service aiming to provide specific information to these teachers in order to carry out work-related tasks and activities.

Bryson (2006:7) advocates optimum use of technologies, emphasises full exploitation of technology and indicates that it is fundamental to be able to use computers, as well as hand-held and wireless devices, and to have knowledge of sources of information. This compels information service providers and their target users to strive for full exploitation of the technology that is available. In this instance, it is important to support secondary level geography teachers to take full advantage of all the technologies around and use them optimally and to lobby for more information and communication technologies. The data analysis in Chapter Five showed that cell-phone penetration among the teachers who participated in this study is high and it is therefore suggested that cell-phones should be used optimally not only for phone calls and SMS, but also for internet or mobile access to information resources (Banks, 2010; Chigona *et al*, 2008). It is therefore relevant to consider cell-phone technology when designing an information service for the secondary level geography teachers in Lesotho.

According to Nwezeh (2010:689) the internet has broken down barriers of communication access from anywhere in the world. It is fast, reliable, does not have many restrictions and has a limitless range of facilities which assist users to access vast amounts of information. It also offers an opportunity to access up-to-date research reports and knowledge in diverse fields, areas and subjects. Other authors acknowledging the value and benefits of the internet include Chigona and Mbhele (2008), Fourie and Krauss (2010) and Parent and Cruickshank (2009). The internet is core to most of the proposed services for secondary level geography teachers. As a result, internet infrastructure is considered as the most significant technological requirement for the implementation of an information service for secondary level geography teachers. The results of this study indicate that the teachers need the internet because they believe that the internet is a source of variety of current information. It is envisaged that the internet will make the delivery of an information service easier and faster. Perrault (2007) points out that the internet has the potential to offer resources teachers seek and this is supported by Hsu *et al* (2003). Considering that most of these teachers do not have access to journals, connecting to the internet may help them to access free journals on the

web through resources such as directory of open access journals (DOAJ) and international network for the availability of scientific publications (INASP). Accessing journals is important, given that they are some of the information sources that provide current information that teachers need because issues are published regularly. They may also need to access magazines such as *National Geographic* and journals such as the *Journal of Geography*, *Journal of Geography in Higher Education*, etc. In addition, this study found that the schools already have technologies such as telephone lines, photocopiers, computers and printers in the offices and laboratories where computer studies are offered. Some schools also have fax lines and internet access as well. These technologies are already in place and should be considered in the design of the teachers' information service.

Before proposing the model for an information service for secondary level teachers in Lesotho, it may be useful to reflect on the issues learnt from this study against envisaged technological requirements. Table 6.1 below depicts the problems identified from this study and possible solutions through technology. Some of these problems were presented as constraints in Chapter Five (Figure 5.4).

Table 6.1: Possible technology solutions for secondary level geography teachers

Problems identified	Possible solutions
Information resources <ul style="list-style-type: none"> • Limited access to various media • Limited/no access to internet • Lack of email facilities • Limited communication channels 	Internet access in schools Availability of information in multimedia Mobile access to information Using Web 2.0 social media applications Availability of facilities such as telephones, faxes, photocopying, scanning, etc. in the schools
Information literary and internet skills <ul style="list-style-type: none"> • Inadequate skills for internet use and other e-resources • Inadequate skills for report writing 	Information literacy and internet training Training on information representation and report writing
Library services <ul style="list-style-type: none"> • Lack of libraries • Unqualified librarians • Irrelevant library materials • Outdated information materials 	Training of school librarians Exploration of possibilities of mobile technologies Introduction of inter-library lending system
Heavy teaching load <ul style="list-style-type: none"> • Large number of learners • High number of teaching periods 	Use of the internet and computers in teaching and learning

6.2.3 Proposed information service model for secondary level geography teachers

Investigating the information needs and information-seeking patterns of secondary level geography teachers, taking into account the factors outlined in section 6.2.2 and reviewing relevant information service models (e.g. Kaur & Rani, 2008; Madden, 2008; RUSA, 2000; Tarby & Hogan, 1997), guide the design of the proposed information service for secondary level geography teachers in Lesotho, as reflected in Figure 6.2, which incorporates the discussion in the preceding section. In addition, ideas were also solicited from scholars such as Chattopadhyay *et al* (2006); Chen *et al* (2009); Chiware (2008); Cloutier (2005); Ju (2006); McMenemy (2010); Underwood (1990) and Woodworth and Williams II (1993). As a result, the information service model proposed for secondary level geography teachers in Lesotho was drawn up based on the Tarby and Hogan (1997) model, which was briefly discussed in Chapter Two (section 2.7.1).

Figure 6.2 below depicts the Tarby and Hogan (1997) model of hospital-based information transfer for patient information services. Although the model concerns the health science discipline and the current study concerns the education discipline, this model underpins provision of an information service to a group of users (i.e. patients). In the current study this group is geography teachers. Table 6.2 below outlines the Tarby and Hogan (1997) model and contextualises it to the information service model proposed in this study.

Table 6.2: Contextualising the Tarby and Hogan (1997) model for the current study

Components of the Tarby and Hogan (1997) model	Components of the proposed model
Patient	Secondary level geography teachers
Specialists in the hospital: <ul style="list-style-type: none"> • Physician • Nurse • Allied health • Ask-a-nurse • Pharmacist 	Specialists in geography education: <ul style="list-style-type: none"> • Geography education specialist • Geography teacher educators • Geography curriculum specialist • Geography education inspectors • Geography examination specialists
Information specialist	Information specialists at IDC
Commercial resources, unit resources and colleagues	Relevant institutions/individuals such as: <ul style="list-style-type: none"> • Geography teachers' associations • Communities (farmers & miners) • Bookshops, book vendors, publishers • Government departments, NGOs, parastatal & private institutions
In-house resource centre	IDC services and resource centre services
Electronic databases, electronic document delivery	Electronic databases at the IDC, research and document delivery
Community resources	Relevant institutions above are also community resources

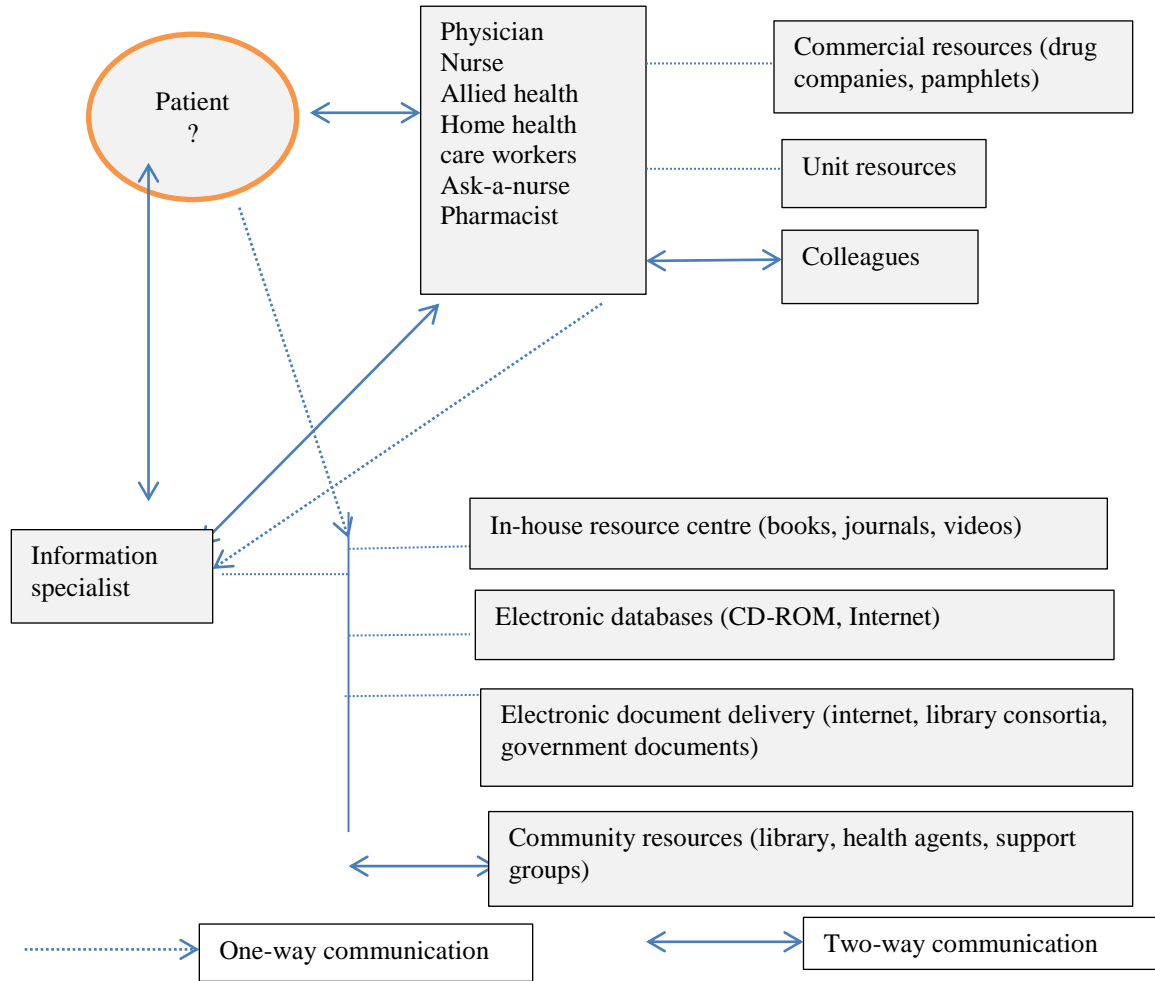


Figure 6.2: Hospital-based information transfer model for patient information service (Tarby & Hogan, 1997:163)

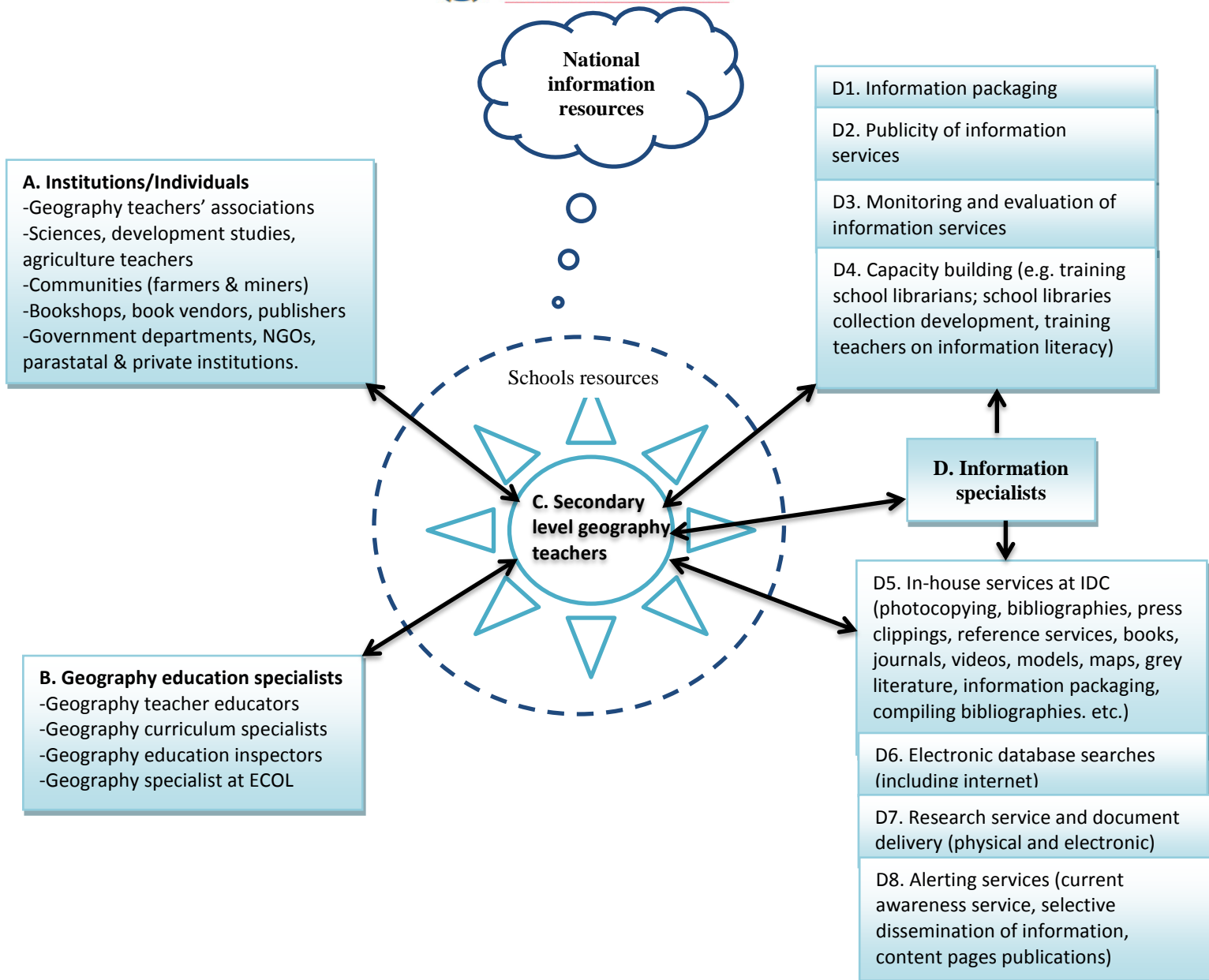


Figure 6.3: Proposed information service model for secondary level geography teachers in Lesotho

Figure 6.3 illustrates the proposed information model for secondary level geography teachers in Lesotho. It depicts that secondary level geography teachers are central to the proposed information service. It is their information needs, preferences and expectations emanating from the empirical study that need to be addressed through an information service. All the components of the model have been given codes A-D, and D1-D8 are services proposed to be rendered by the information specialists for the secondary level geography teachers; as depicted in Figure 6.3, these services can be directly accessed by the teachers. The components of the model are explained in Table 6.3.

The aim is to have an interactive model such that there is two-way communication between all the components A-D. For instance, there is two-way communication between the information specialist and the geography education specialists, secondary level geography teachers, and institutions and individuals who are often consulted for information by secondary level geography teachers. The geography education specialists are officials from institutions directly involved in secondary level geography education in Lesotho which participated in this study, as indicated in Chapter Three (section 3.4.3 and 3.5.3), who are already disseminating some information to these teachers.

The results of this study indicated that from time to time, teachers participating in this study solicit information from colleagues (in the professional associations, neighbouring schools, science, development studies and agriculture fields), communities (farmers and miners), institutions/individuals, geography education specialists and other sources of information. It is envisaged that these might help the information specialists to package information in order to deliver tailor-made information packages. The information specialists at the IDC will collect information from individuals, institutions and geography subject specialists and package it into tailor-made packages for teachers.

Open communication between the information specialists and secondary level geography teachers is important because it will help to acquire more detail on the information needs of these teachers and to send information to the teachers. Considering the results of this study and IDC resources, it is recommended that a website, email, SMS, telephone and fax facilities and opportunities for visits to the IDC for in-house services at the NUL be communication channels available for this service.

Bearing in mind that there is no single information centre that can meet all the needs of its users owing to limited resources, capacity building is significant if this information service is to be effective and sustainable. Capacity building is viewed as a long-term phenomenon that may be achieved in phases through training of school librarians, secretaries of the geography teachers' associations and possibly MOET resource centre personnel. Capacity building may also be achieved by introducing school information resource-sharing by establishing a school

libraries consortium, developing a common school library system and clustering schools and forming hubs. Capacity-building is also required for the information literacy and internet training for teachers in order to use modern e-resources effectively. Table 6.3 below reflects on each component of the model, including description and rationale.

Table 6.3: Components of the proposed information model for geography teachers in Lesotho

Component	Description	Rationale for inclusion in the service
A. Relevant institutions/individuals	Institutions and individuals consulted by the teachers in this study: Colleagues (in the professional associations, neighbouring schools, science, development studies and agriculture teachers) Communities (farmers and miners) Government departments and other institutions (e.g. NGOs, private institutions, etc.)	Teachers participating in the study already consult these institutions/individuals for information, which means that they have relevant information that might be used for tailor-made information packages for teachers. Some government departments, NGOs and private institutions may have information needed for social assistance of orphans, dealing with HIV and AIDS
A. Bookshops, book vendors, publishers	These are institutions that may have the latest information on books related to geography	Teachers expressed the need for current information and their preference for books. These might cater for the latest information from these institutions
B. Geography subject specialists	Officials from institutions directly involved in secondary geography education in Lesotho which participated in this study, as indicated in Chapter Three (section 3.4.3 and 3.5.3) who are already disseminating some information to these teachers	Already disseminate information to teachers. They are policy makers and have better knowledge of the geography syllabus and curriculum, geography examination and marking
C. Secondary level geography teachers	Core participants in the study Target users of the information service being proposed Their component includes their information needs, preferences and expectations as discussed in Chapters Four and Five	The proposed information service is for these groups and they are central to it
D. Information specialists	These information specialists are personnel at the IDC who will be executing the information services proposed for the secondary level geography teachers	As pointed out in the literature such as Chattodadhyay <i>et al</i> (2006) and Tarby and Hogan (1997), human resources with expertise are essential for the design and implementation of an information service
D1. Information packaging	It is a service that will be rendered by the information specialist for the secondary level geography teachers	Heavy teaching load of the teachers warrants readily available information that addresses the specific components of the syllabus
D2. Publicity of information service	This is the marketing of information services to various users and marketing strategies that will be used are explained in section 6.2.2.3	The information service has to be publicised among the target audience (Rowley, 2006) as explained in section 6.2.2.3
Component	Description	Rationale for inclusion in the service
D3. Monitoring and evaluation of information services	This is the evaluation of the information service from time to time to determine if it is still needed, has to be modified or stopped This is discussed in section 6.2.4. This will done by the IDC	After designing and implementing the information service, its impact, value and relevance need to be determined from time to time (Kaur& Rani, 2008)

D4. Capacity building	Collection development of school libraries, training of school librarians and training of secondary level geography teachers on information literacy and internet to be spearheaded by the IDC	Results of the study indicate the need to improve school libraries in Lesotho. The results also reveal lack of training of school librarians and inadequate information skills among teachers on the use of the internet and other multimedia electronic resources
D5. In-house services	These are in-house services that are regularly provided by the IDC, such as compiling bibliographies, press clippings, reference services and providing access to information sources such as books, journals, etc.	The IDC has been suggested as the implementation agency for the proposed information service. It has facilities and resources that are maintained regularly
D6. Electronic database searches	These include CD-ROMs and the internet and will be dealt with at the IDC	E-resources offer a variety of information sources that may help the teachers
D7. Research and document delivery service	To be done by the information specialists for the secondary geography teachers	To help address information that the teachers may need for their researcher role. The results of the study indicate that teachers need information in their schools; document delivery will help in that regard
D8. Alerting services	Current awareness services for teachers, selective dissemination of information, publicity of content pages for new releases	This component will address the need for current information expressed by the teachers. It might also keep teachers abreast with the latest developments in their field

6.2.4 Evaluation of information service for secondary level geography teachers in Lesotho

For the purpose of this study evaluation is only briefly mentioned with emphasis on the actual scope of the information service needed to be offered to reflect users' needs and information-seeking patterns. It has been established that after designing and implementing the information service, its impact, value and relevance need to be determined from time to time (Kaur & Rani, 2008). This was also reflected in Chapter Two (Figure 2.3). Therefore, it is important at the design stage to have an idea of how the information service being proposed in this chapter may be evaluated. The evaluation may be done at certain intervals after the successful implementation of the service, or it may become an ongoing exercise. The evaluation will help the implementation agency to learn from past experiences, thus improving service delivery, planning and allocation of resources, as well as review of information sources. Such evaluation might include assessment of user information needs and satisfaction with the service.

While defining objectives and goals is one way of aiding the evaluation process, regular user surveys may also be used for evaluation of the information service to determine whether the service should be continued, modified or withdrawn (Kaur & Rani, 2008). As mentioned in Chapter Two (section 2.7.4), there are instruments, such as SERVQUAL which developed into SERVPERF, that have been developed, tested and used in various settings to determine the quality and performance of services (Parasuraman *et al*, 1988). Considering the knowledge and experience gained from this study, it is suggested that surveys using questionnaires, interviews and focus group discussions with secondary level geography teachers as users of the information service may be the most suitable approach. This is because the implementation agency and the value of the methods used in data collection, analysis and interpretation for this study need to be noted during evaluation of the information service. The evaluation process may be undertaken in collaboration with the proposed task team.

6.3 IMPLEMENTING INFORMATION SERVICE FOR SECONDARY LEVEL GEOGRAPHY TEACHERS IN LESOTHO

The aim of the proposed information service model for secondary level geography teachers is to assist the implementing agency, which is the IDC, to conceptualise, plan and manage the entire process of developing and deploying information services for these teachers. The model involves institutions/individuals, teachers and geography education specialists who are perceived to have relevant information and interest in secondary level geography education in Lesotho, such that they may be referred to as stakeholders in the proposed model. This section explains the modalities of implementing the proposed information service, bearing in mind all parties concerned by the model, herein referred to as stakeholders.

As mentioned earlier, an in-depth analysis of data collected in the empirical component of this study, the literature and different factors was done before proposing the model outlined in Figure 6.3 to make it realistic and achievable. Since this model involves not only the IDC and its information specialists, but also other stakeholders, it is imperative to offer such stakeholders an opportunity to scrutinise the model further, bearing in mind their institutional goals and resources. Therefore, the implementation process should permit the parties concerned in the model (stakeholders) to scrutinise the resources (time, money, information and human), facilities, technologies and services that will be needed for the effective delivery of the ideal information service. Although it may seem like repeating the efforts of this study, this may help to critique the model further; in the process, any unforeseen omissions may be addressed.

It is envisaged that the specific implementation activities for the proposed model will include the following steps:

- Presenting the proposed model to the key stakeholders.
- Setting up the information services task team.
- Establishing the infrastructure for the proposed information service.

These will be discussed in the subsequent sections. Figure 6.4 depicts the modalities for the implementation of the information service for secondary level geography teachers in Lesotho.

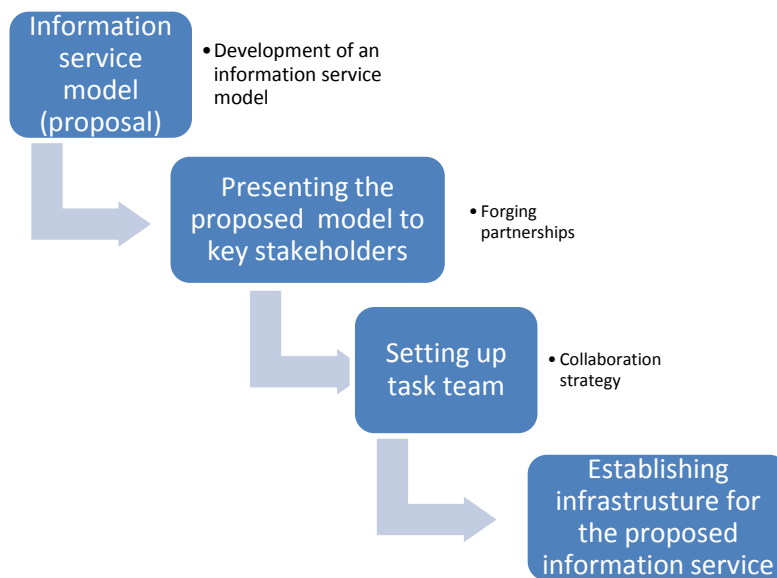


Figure 6.4: Modalities for implementing the proposed information service

6.3.1 Presenting the proposed model to stakeholders

In order for the proposed model to be thoroughly reviewed, it needs to be presented and known to the key stakeholders as well as the targeted users of the proposed information service. At this juncture, the key stakeholders in the provision of the information service for secondary level geography teachers in Lesotho are viewed as:

- The MOET, Principal Secretary and Chief Education Officer for secondary education. These are the officials who gave permission to carry out this study with the secondary level geography teachers. They are responsible for secondary education in Lesotho and whatever is being proposed here needs their support. This might open doors for financial support and policy developments by the MOET.
- The NCDC is responsible for developing and reviewing the curriculum and syllabi outlines. This body will be able to indicate if the information that is passed to the teachers and the learners will help to address the demands of the syllabus and the national set standards of teaching and learning, including helping to achieve the learning areas identified by the MOET, which were mentioned in Chapter One (section 1.1).

- The MOET Central Inspectorate is responsible for inspecting and ascertaining that teaching and learning take place appropriately in schools. Similar to the NCDC, it will help to review the information that will be passed to the teachers and learners through the website.
- In addition, the MOET Education Resource Centres and the ECOL are important stakeholders because the model suggests that the implementing agency should collaborate with the resource centres in the delivery of the information service. They need to be made aware of the proposed model so that they can indicate their interest and commitment and also how they envisage they will help.
- The committees of the secondary level geography teachers' associations are also key stakeholders. They will not only be representing their associations, but also the rest of the teachers who participated in this study. They will be in a position to indicate if their views were presented correctly and also review the proposed model to see if it will actually serve their needs.
- The principals of the secondary school that offer geography as a subject will have to be involved.
- The Lesotho National Library Service is also a key stakeholder because it is envisaged that its services will be required when training school librarians. This is because it already has a programme that assists school libraries with training and book loans in bulk for extended periods.
- The lecturers for the geography educators at the Lesotho College of Education and the NUL will play a part.
- The NUL authorities, in particular the Director IE, and the Pro-Vice Chancellor and the Head of the IE-IDC, are important people who should know about the proposed information service and soliciting their inputs and approval is crucial.

6.3.2 Setting up the information service task team

Through this study, a lot of fundamental work has been done. Firstly, the information needs of the secondary level geography teachers, including their preferred information formats, have been identified. Secondly, their information-seeking patterns, including their preferences for information sources, have been established. Thirdly, the information communication channels that secondary level geography teachers prefer to use were determined. Fourthly, the availability of information resources in the schools became known. Lastly, the recommendations on an information service for secondary level geography teachers were drawn from the in-service and prospective secondary level geography teachers, as well as the individuals who were interviewed. Many insights were gained through this study that might help to guide the task team to establish the information service proposed earlier.

It is envisaged that such a task team may be effective if it is made up of most of the key stakeholders, or at least their representatives. The main reason for bringing together various stakeholders in the task team is to ensure that their interests are also represented. It is assumed that the various stakeholders on the task team will contribute more expertise, knowledge and experiences essential for the delivery of an appropriate information service. The most important function of the task team will be to guide the implementation agency in policy development with more strategies and guidelines on how the information service will be managed and developed over time so that it is sustainable.

6.3.3 Establishing infrastructure for the proposed information service

The implementation of the service requires various types of resources and facilities. This study has already identified the target users of the proposed information service, including the conditions in which they work and their preferences for information sources and services. It has also already identified the implementation agency, its staff and other information resources. The study went further to propose the information service, the

human resource requirements, marketing strategies and technology requirements (see section 6.2.2).

However, since a task team comprising the implementation agency and key stakeholders is recommended, it becomes imperative to allow such a task team to establish more components that might have been omitted in this study. Although this study proposes an information service model for secondary level geography teachers, it has not taken full stock of all the existing information resources in Lesotho, which was not the intention of this study, because the focus was on deriving implications for an information service from the teachers' information needs and information-seeking patterns that can inform the design of an information service. It only focused on the information that is available in the schools. Yet it is important to establish what is available, what is required and how it can be obtained. Hence, forming a task team might be vital to assist in this regard.

6.4 CONCLUSION

Based on the data presented and interpreted in Chapters Four and Five respectively, existing information service models and other relevant literature, as well as prevailing conditions in Lesotho, this chapter proposed an information service model for secondary level geography teachers in Lesotho. The model is viewed as an end product of an analysis of the information needs and information-seeking patterns of secondary level geography teachers against their work environment and conditions in their country. The chapter explained the modalities for the design and implementation of an information service for secondary level geography teachers in Lesotho.

In the design phase, the chapter suggested the IDC as the implementing agency of this information service, which is a combination of services, human resources, technology and users' needs for easy access to information. It went further to outline the objectives of an information service for these teachers and ways in which this information service may be evaluated. The chapter highlighted some of the important factors that need to be considered for the proposed information service model. In the implementation phase, the chapter outlined three steps essential for the successful implementation of the proposed

information service model. It was explained that the model has to be presented to key stakeholders for further scrutiny and incorporation of ideas from parties concerned. The chapter also suggested the formation of a task team that might help the process of implementation and establish the appropriate infrastructure for the proposed service.

The next chapter presents the findings of this study and makes recommendations based on these findings. Some of the key issues pertaining to the information service proposed in this chapter appear again in Chapter Seven under recommendations. As a result, there are some points in Chapter Seven that may seem like a repetition of Chapter Six. This is because Chapter Six proposed the information service while Chapter Seven follows the study's literature review, data analysis and interpretation and makes recommendations, including recommendations for further research.

CHAPTER SEVEN: CONCLUSIONS

7.1 INTRODUCTION

This chapter presents the findings and the recommendations of the study that investigated the information needs and information-seeking patterns of secondary level geography teachers in Lesotho. The aim of this investigation was to guide the design and implementation of an information service for these teachers. The chapter presents the summary of the study findings, based on the principal research question and its sub-questions outlined in Chapter One (section 1.2).

The study's principal research question was: **What are the information needs and information-seeking patterns of secondary level geography teachers in Lesotho with regard to their teaching and how can these guide the design and implementation of an information service for these teachers?** This principal research question was broad and was further 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 sources are available and accessible to these teachers at schools?
5. Which information communication channels are preferred by these teachers to access and exchange information?
6. What kind of information service can be recommended for the geography teachers in Lesotho?

The findings of the study are based on the data collected from various sources, using different data collection methods as follows:

- Prospective secondary level geography teachers, using a questionnaire.

- Focus group discussions with in-service secondary level geography teachers.
- Interviews with officials in institutions involved in secondary geography education in Lesotho.
- Partial observation of the school libraries in the schools where focus group discussions were held.
- Literature review.

This chapter discusses the findings of the study, based on the principal research question and its sub-questions as outlined in Chapter One (section 1.2), as well as the theoretical framework. It also discusses the implications for an information service for secondary level geography teachers, as well as the study's recommendations, including recommendations for further research.

7.2 FINDINGS

7.2.1 Findings about the principal question

The main aim of this study was to carry out an investigation to answer the question: **What are the information needs and information-seeking patterns of secondary level geography teachers in Lesotho with regard to their teaching and how can these guide the design and implementation of an information service for these teachers?**

The principal research question for this study is twofold. The first part establishes the information needs and information-seeking patterns of secondary level geography teachers in Lesotho and related issues, such as preferences for information sources and communication channels. The second part is about guiding the design and the implementation of the information service for the secondary level geography teachers in Lesotho. This concerns a proposal for a model that will address these teachers' information needs and information-seeking. The study was guided by the Leckie *et al* (1996) information-seeking model of professionals as the theoretical framework and this was explained in Chapter Two (section 2.2.1).

The data that were collected, analysed and presented, as well as the literature reviewed for this study and the proposed information service model presented in Chapter Six (Figure 6.3), provided the current study with the basis to conclude that delivery of an information service for secondary level geography teachers in Lesotho is not only necessary, but also feasible. Of importance is that this study has addressed all the research questions that were outlined in Chapter One (section 1.2) and this is evident in section 7.2.2. The study shed light on the working environment of secondary level geography teachers in Lesotho, their information needs and whether these information needs are met by the information that is available to them. The study established the information format(s) that the secondary level geography teachers prefer.

Moreover, the results of the study shed light on the information-seeking patterns of secondary level geography teachers in Lesotho, including their styles of information-seeking, the factors that influence their information-seeking and the difficulties they encounter when seeking information for teaching. In addition, the data were able to inform the researcher about the information sources that secondary level geography teachers in Lesotho use, including their preferred information sources, order of using the information sources and the information sources available and accessible in their schools.

Furthermore, the study was able to determine the information communication channels that the secondary level geography teachers in Lesotho often use and to incorporate these channels into the proposed information service model. Finally, suggestions for an information service for secondary level geography teachers in Lesotho were solicited from the study's participants. These suggestions and other factors, such as the prevailing conditions in the country, the resources available, the information needs and information-seeking patterns of these secondary level geography teachers, were considered to guide the design and implementation of an information service for them. As a result, the study (in Chapter Six) was able to propose an information service model for secondary level geography teachers in Lesotho and even suggested how the service may be implemented and evaluated.

7.2.2 Findings based on the research questions

This section presents the findings of the study in relation to each research sub-question. Each question is addressed individually, based on the results of the study.

Sub-question 1 – What are the information needs of secondary level geography teachers in Lesotho?

Conroy *et al* (2000) and Shanmugam (1999) found that the currency and relevance of information were very important considerations in information-seeking among the teachers they studied. Similarly, secondary level geography teachers in Lesotho specified the need for current and accurate geography content. It emerged that physical geography, in particular geology and geomorphology topics such as landforms and plate tectonics, as well as marine erosion and map reading, etc., were some of the areas where they need information most urgently. In essence, information related to physical geography is needed most, and should mostly be in audio-visual format.

The teachers indicated that obtaining information on the following is important to them:

- Teaching methods or pedagogy.
- Classroom management.
- Audio-visual teaching materials such as maps, videos, models and charts.
- Educational policies, regulations and legislation.
- Learners' assessment and social background, talents, interest and capabilities.
- Adolescence social problems.
- Social assistance for orphans.

The above information needs are in line with reports from the literature review, e.g Conroy *et al* (2000), Lan and Chang (2002), Mardis (2009), Pattuelli (2008), Shulman (1987) and Snyman and Heyns (2004).

The study found that the information that the secondary level geography teachers in Lesotho has does not always satisfy their information needs. The reasons are:

- Information that they have is mostly outdated, since it is mostly contained in books that were published some years ago; they need current information.
- There is a general shortage of information to compare authors' views, clarify some topics and supplement the textbooks' information where necessary.

It was also found that the secondary level geography teachers in Lesotho mostly prefer their information in print format. The in-service geography teachers indicated that print format is convenient in the sense that it does not require any equipment to access. Similarly, Dias Gasque and de Souza Costa (2003) also indicated that the teachers they studied in Brazil preferred print format in the form of books and newspapers and had not yet fully used new information technologies in teaching. However, considering advancements in modern information and communication technologies, the discussions on information services also consider internet and mobile access to information sources.

Sub-question 2 – What are the information-seeking patterns of secondary level geography teachers in Lesotho?

From the literature review, it was found that information may be sought for a specific purpose (Johnson, 2003), while it may also be found incidentally as one interacts with information sources (Foster & Ford, 2003). It was learnt that sometimes people seek information through other people (agents/proxies) and also collaborate to find information (Fisher *et al*, 2004; Hyldegård, 2006; McKenzie, 2003). It was found from the literature that the teachers generally seek information from sources that are readily available in their schools (Williams & Coles, 2007b). Moreover, the teachers prefer to seek information that is not only current, but also relevant and applicable to teaching (Mundt *et al*, 2006; Sánchez & Valcàrcel, 1999). The textbooks are the first point of information-seeking for the teachers (Nwokedi & Adah, 2009; Sánchez & Valcàrcel, 1999). 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 (Sánchez & Valcàrcel, 1999).

This study found that secondary level geography teachers in Lesotho engage in the following styles of information-seeking:

- Purposeful information-seeking is done by individuals for lesson planning. It is also done when there is a problem to be solved in the committees or tasks to be carried out for administrative roles.
- Serendipitous information-seeking was mentioned to be done through interaction with the media, in particular TV, radio and newspapers, to be up to date with the latest developments.
- Collaborative information-seeking is done through team teaching, and the activities of the geography teachers' associations where they plan their work together, set the examination questions, including their marking schemes, and hold seminars. Therefore, the geography teachers' associations could be viewed as settings in which information is gathered for collaborative purposes and where teachers collaborate to engage in information-seeking.
- It was found that information-seeking through proxies is done when the secondary level geography teachers in Lesotho use proxies, such as their heads of department, students, younger teachers, family and relatives such as children, nieces and nephews and farmers and miners in the communities to find information on their behalf.

A typical information-seeking pattern of the secondary level geography teachers in Lesotho was presented in Chapter Five (Figure 5.1). The study found that the secondary level geography teachers' information-seeking pattern starts with the syllabus (particularly inexperienced teachers), then the learners' textbooks, and if the information is still inadequate or conflicting, more books and magazines are consulted. This is followed by consulting colleagues in the school. Some younger teachers in urban schools use the internet, while experienced teachers consult colleagues in other schools or in their

associations. Depending on the topic, the teachers in rural schools consult the miners and farmers in their communities.

The study found that secondary level geography teachers consider the following factors when selecting books/documents for teaching geography:

- The contents should address the syllabus.
- The language should be appropriate for the level of the learners.
- Colourful illustrations in the form of diagrams, photos and maps are important.
- Provision for learners' activities is considered because these enhance understanding of the concepts and principles.
- The date of publication is of importance, because current information is vital in geography.

The study found that the difficulties that secondary level geography teachers encounter when seeking information to enhance teaching were:

- Lack of information sources and relevant information that could address the syllabus demands and lesson plan requirements, as well as lack of up-to-date information, which is pertinent in teaching and in any other profession.
- Lack of resources such as time and money, telephones and the internet.
- Heavy teaching loads due to too many learners in a class, many streams and many teaching periods per week, which make it difficult to have time for exhaustive information-seeking. This constraint is coupled with a general lack of variety of information sources in the schools.

Accessibility and availability of information, limited time, inadequate information search skills, information overload, high workload and task complexity were also factors identified in the literature as affecting information-seeking. A few examples are Conroy *et al* (2000), Gardiner *et al* (2006), Landry (2005), Leckie *et al* (1996), Prabha *et al* (2007) and Vakkari (1993).

Sub-question 3 – Which information sources do these teachers mostly use?

Secondary level geography teachers in Lesotho mostly use books, colleagues, personal knowledge and experience, media (i.e. television, radio and newspapers) and resource persons such as farmers, miners and institutions that have information related to geography. In the study being reported, the internet was found to be used by younger teachers in the urban schools. There was no indication that the teachers use journals, mainly because most of them do not have access to journals.

This study found that various colleagues were consulted by secondary level geography teachers in Lesotho in the following manner:

- All participating teachers in a school consulted one another, sharing and exchanging information.
- Some of the teachers also consult teachers from other schools, mostly through associations. However, a few indicated that they never consulted teachers from other schools.
- It transpired repeatedly that sciences, agriculture and development studies teachers are also regularly consulted for information regarding topics related to these subjects.

In this study, it was found that the in-service teachers trusted their colleagues and their associations for information. It transpired that the in-service teachers mostly attend the workshops that are organised by their associations because it has been a long time since the MOET has organised any workshops for them.

Most of the above issues were also noted from the literature. For instance, Leckie *et al* (1996) indicate that professionals use colleagues, personal knowledge and experience because they underwent training to master skills and knowledge. Similarly, Williams and Coles (2007a) point out that the teachers mostly use colleagues, in-service events and newspapers because these are readily available sources. In the same vein, Landrum *et al* (2002) found that teachers generally rated colleagues, workshops and in-service presentations as accessible, trustworthy and usable sources of information, whereas

journals were found to be less trustworthy, less usable, and less accessible when compared with information from colleagues. The use of information sources is predicted by its accessibility, trustworthiness and reliability (Julien & Michels, 2000).

Sub-question 4 – Which information sources are available and accessible to secondary level geography teachers at schools?

This study found that in Lesotho information sources' availability and accessibility differ from school to school because there is no policy guiding schools on how to access funding, for example how much has to be paid in school fees. Furthermore, there is no policy guiding the acquisition and development of infrastructure and facilities in schools. As a result, in Lesotho some schools have more resources while others have limited resources. The accessibility of resources to teachers also differs, depending on the number of resources and the number of teachers and learners that have to share the resources. The situation in respect of specific resources in Lesotho schools is:

- Internet penetration in Lesotho is still very low; the situation is worse in schools owing to limited funds. Where the internet is available it is shared by many teachers and learners. Internet access is available in the computer laboratory and in the offices, not in the staff room. One of the three NEPAD e-schools that participated in the study had one computer in the staff room with internet access, but it had to be used by 26 teachers.
- Books, textbooks and teachers' guides, as well as dictionaries and encyclopaedias, are available in schools. However, most of the teachers criticised the encyclopaedias for being outdated.
- Some schools have libraries, while others do not. The participants mentioned that their libraries have outdated books, are not functioning because of a staff shortage, and generally lack geography books and material. These are some of the factors that prevent them from using their school libraries. Lack of access to libraries also means no access to modern databases and e-resources.
- Teachers and learners are the human information sources that are available and easily accessible to teachers in the schools. Occasionally, farmers, miners,

teachers' younger family members and relatives are consulted, but this happens outside the school premises.

- Telephones, photocopiers, printers, fax machines and computers are some of the technologies available in the schools that can be used to access information resources. However, the teachers have limited access to them or no access at all to some of these resources, but this differs from school to school.
- Almost all the teachers have their own cell-phones, which they use for making phone calls and communicating by SMS to access and exchange information, including organising activities for geography teachers' associations. It was suggested that it was time for the secondary level geography teachers in Lesotho to use their cell-phones optimally to access the internet.

Sub-question 5 – Which information communication channels are preferred by these teachers to access and exchange information?

This study found that the secondary level geography teachers in Lesotho mostly use word of mouth, telephones and SMS. However, they would like to have various channels of communication in order to send and receive information fast and easily. They emphasised that the use of the communication channel depends on the following:

- The amount of information being exchanged; if one wants some documents or just a brief explanation of a concept.
- The distance from the person with whom one would like to communicate.
- The information being communicated; some information may be sensitive and confidential.
- The urgency of the information need.

Sub-question 6 – What kind of information service can be recommended for the geography teachers in Lesotho?

There are many strategies that could be employed for a secondary level geography teachers' information service. The establishment of an information service for the secondary level geography teachers in Lesotho should be a collaborative effort between the Ministry of Education and all its constituencies, the schools as learning environments,

tertiary institutions involved in teacher training and private and non-governmental organisations.

According to all participants in this study, an information service for Lesotho secondary level geography teachers could be improved by making the internet available and accessible to these teachers. The study found that secondary level geography teachers in Lesotho perceive the internet as a source of a variety of information that is also current.

It was found that an information service that will provide secondary level geography teachers in Lesotho with information that is not only accurate but also current in their preferred format is really necessary. Such information should be relevant to the syllabus and appropriate for the level of their learners so that it could be easily used in the classrooms. In addition, the information should be made available in their schools for easy access and use. This is very important for teachers working in remote rural schools. Moreover, the study found that secondary level geography teachers in Lesotho need audio-visual information materials such as maps, models, charts and videos that address most of the topics related to physical geography and therefore should be served with such materials.

It was found that some teachers acknowledge that Lesotho is a developing country that is faced with limited resources. As a result, they suggest information resource-sharing through the clustering of schools and through resource centres, because in their opinion the government may be unable to afford to provide each and every school with all the resources that it needs.

The establishment of geography rooms, which are perceived as geography laboratories that could address the information needs of the secondary level geography teachers, was also suggested for the improvement of the information service.

Chapter Six outlined the factors that should be borne in mind when designing an information service for the secondary level geography teachers in Lesotho. The chapter proposed the information service model for these teachers, including how the information service may be implemented and evaluated over time.

7.2.3 Implications for an information service for secondary level geography teachers in Lesotho

The title of this study is: **The information needs and information-seeking patterns of secondary level geography teachers in Lesotho: implications for information service.**

It is imperative to draw implications for an information service for the secondary level geography teachers in Lesotho that emanate from this study. These implications focus strongly on issues pertaining to the design and implementation of an information service for secondary level geography teachers in Lesotho and were mostly discussed in Chapter Six, which proposed the information service model for these teachers. In order to avoid unnecessary repetition, this section only presents a summary of implications from Chapter Six.

When designing the information service, one has to address secondary level geography teachers' information needs and information-seeking patterns (Agosto & Hughes-Hasell, 2005; Hepworth 2007; Kuhlthau, 2004), and also the technologies and the infrastructure in place (Chattopadhyay *et al*, 2006; Chiware, 2008; Underwood, 1990; Woodsworth & William II, 1993). Chattopadhyay *et al* (2006) indicated that it is important to appoint an information specialist when designing and implementing an information service and the study suggested that the information specialist should have insight, knowledge, expertise and the interest to function as an information specialist. The study equally realised the significance of the implementing agency that will be responsible for the delivery of the information service for the secondary level geography teachers.

In view of Chiware's (2008) suggestion of a task team, including various stakeholders that should be involved in the design, implementation and evaluation of information services, efforts were made to include geography education specialists in the proposed model in Chapter Six (Figure 6.3) to serve the purpose of such a task team.

Secondary level geography teachers' preference for both print information and technological advancements such as the internet implies that the proposed information service should include traditional print services and electronic services and that these have to involve:

- Defining the goals and objectives of these teachers' information service;
- Designing and implementing a relevant information service to be delivered to these teachers;
- Developing policies and regulations and mobilising resources, including fundraising to help improve the service and its sustainability;
- Evaluating the information service for its impact, value and relevance from time to time;
- Knowing the users of the information service who are the secondary level geography teachers in Lesotho, in particular their information needs, information-seeking patterns and information communication channels, as well as the location of their schools;
- Developing marketing strategies for the information service so that the users know about it;
- Identifying the resources, such as human resources, required for the establishment of the information service, as well as the technology and infrastructure requirements;
- Checking resources' availability to the implementation agency as the service provider and to secondary level geography teachers as the users of the service. These resources include human resources, time, information, technology and existing networks, and information resources; and
- Recognising the prevailing poverty in Lesotho.

7.3 FINDINGS RELATED TO THE LECKIE *ET AL* (1996) MODEL

This study is guided by the Leckie *et al* (1996) model as its theoretical framework (see Chapter Two, section 2.2). Chapter Five interpreted the data based on the Leckie *et al* (1996) model; this section presents the findings of the study related to the theoretical framework.

The Leckie *et al* (1996) model proved useful for investigating the information needs and information-seeking patterns for teachers studied including their work environment and work roles. These teachers not only have heavy workload, but also additional roles and

responsibilities such as preparing learners for employment and committee roles that involve caring for orphans as a result of HIV and AIDS even though their schools have limited resources. It was found that these teachers seek information serendipitously, collaboratively and sometimes through proxies such as younger teachers, learners and family members; making their information-seeking more complex to be revealed by the Leckie *et al* (1996) model alone. Supplementing the Leckie *et al* (1996) model with other everyday life information-seeking models such as the one suggested by Savolainen (1995) might be necessary in future. Furthermore, it was evident that the Leckie *et al* (1996) model alone would not help to guide the design of the information service for these teachers hence other information service related models such as RUSA (2000) and Tarby and Hogan (1997) were used for guiding the information service model proposed in Chapter Six.

More findings related to the Leckie *et al* (1996) model are presented in Table 7.1 below, which covers all the components of the model as presented in Chapter Two (Figure 2.1) and other salient features as discussed by Leckie *et al* (1996). The work roles emanating directly from the data and those added through interpretation as discussed in Chapter Five (section 5.2.3) are outlined the Table 7.1.

Table 7.1: Findings related to the Leckie *et al* (1996) model

Leckie <i>et al</i> (1996) model	Findings of the study
Five work roles identified as student, researcher, administrator/manager, service provider and educator.	Eight work roles identified as student, researcher, committee, administrator, educator, service provider, caregiving, information provider/disseminator, resource provider.
Tasks given are assessment, counselling, supervising, report writing.	Tasks found in this study are assessment, reading, report writing, developing personal notes, records management, counselling, information-seeking, decision-making, supervising.
Information needs are influenced by intervening variables such as demographics, context, etc.	There was no evidence of any of these factors influencing the information needs in this study. All the teachers expressed similar information needs. Demographics such as age, gender, career stage and geographical location had an influence on the selection of information sources, the style of information-seeking and information-seeking patterns.
Sources of information for professionals are colleagues, librarians, handbooks, journals, personal knowledge and experience.	Geography teachers in Lesotho use information sources such as syllabus documents, books, colleagues in their schools (geography, science, development studies, agriculture teachers) and colleagues in neighbouring schools and their professional associations. They also use other sources such as the communities (farmers and miners), personal knowledge and experience, internet, media, government departments and other institutions. They use neither journals nor librarians.
Awareness of information – knowledge and perception of information sources play a role in the overall information-seeking process.	Knowledge of information sources determines whether they will be used or not. For instance, the school libraries and librarians are not used because the teachers suspect these are respectively inadequate and incompetent. Farmers and miners who are perceived to provide correct information are consulted and even invited to the classroom.
Other factors influencing use of information sources are familiarity, trustworthiness, packaging, timeliness, cost and quality.	In this study these factors still influenced the choice of information sources. For instance, colleagues and books are heavily used because of familiarity, trustworthiness and timeliness. The teachers' preference for information in print format and audio-visual format impinges on packaging. However, the study's participants consider: <ul style="list-style-type: none"> • The contents should address the syllabus; • The language should be appropriate for the level of the learners; • Colourful illustrations in the form of diagrams, photos and maps are important; • The learners' activities are considered because they enhance understanding of the concepts and principles; and • The date of publication is crucial because current information is considered to be vital in geography.
Outcome and feedback is the results of the information-seeking process such as completing tasks, meeting information needs and realising the operational benefits of achieving professional development goals.	Outcome is the result of information-seeking realized through completing tasks and meeting the information needs. They are diverse and depend on the roles and tasks that led to the need for information. A few examples of the outcomes for the teachers studied include completing a topic in class, learners passing examinations and tests, solving problems, finding social assistance for orphans, etc.

7.4 LIMITATIONS OF THE STUDY EMANATING FROM DATA

During data analysis it was noted that the formulation of sub-question 4 (Which information sources are available and accessible at schools to these teachers?) was not adequately addressed on its own; it was rather answered from the data collected for sub-question 3 (Which information sources do these teachers mostly use?). This was unfortunately not noted during the pilot study or during data collection. This shortcoming might, however, be addressed by a study in progress on renewal of secondary education in Lesotho that is being conducted by the IE at the NUL. The study aims among others to establish suitable facilities and infrastructure in the schools. The task team for the information service proposed in Chapter Six may have to consider the relevant findings of the renewal of secondary education study once the study has been completed.

7.5 RECOMMENDATIONS

There are several approaches to the development of an information service. The aim of this study was to investigate the information needs and information-seeking patterns of the secondary level geography teachers in Lesotho and then guide the design and implementation of an information service. Based on the findings, the study makes the following recommendations:

7.5.1 Implementation agency for the proposed information service

Given that the provision of the information service for secondary level geography teachers in Lesotho is not only essential, but also feasible, this study recommends an implementation agency that will carry out the establishment of this information service to the secondary level geography teachers in Lesotho. As indicated in Chapter Six, such an implementation agency should appoint an information specialist and a task team to spearhead the process and modalities for implementing an information service for the teachers. Considering the information service proposed in this study, the implementation agency should undertake a feasibility study to determine, among others, the cost of creating and maintaining websites and identify cost-effective strategies for the delivery of such information.

Chattopadhyay *et al* (2006), Kaur and Rani (2008), Madden (2008), RUSA (2000), Underwood (1990) and Woodsworth and William II (1993) show that human resources (staffing), resources and equipment are major components of information services. The feasibility study recommended above should therefore also identify the staffing, information and equipment needed for the long-term provision of this information service. This is because it is evident that the proposed implementation agency will have to provide more staff dedicated to this information service, especially when the demand for the service increases. This is important given that the government of Lesotho is building schools to increase access to education. All these new schools offer geography, and therefore it is expected that there will be an increasing number of geography teachers demanding the proposed service.

7.5.2 Collaborative approach for the delivery of information service

Taking into account the complexity of information needs and information-seeking patterns and processes leading to the design and implementation of an information service, this study recommends that the proposed implementation agency collaborates with relevant bodies in providing the information service and also for training of school librarians and secondary level geography teachers. In this instance, a partnership programme can be undertaken by the university, relevant constituencies of the MOET, the secondary level geography teacher trainers and the secondary level geography teachers. This was mentioned in Chapter Six (6.3.2) as a task team. Gresham and Van Tassel (2000) advocate educational partnerships between academic libraries and public schools. Similarly, Chiware (2008) proposes a team of stakeholders for the implementation of information services for small and medium enterprises in Namibia, while Tarby and Hogan (1997) provide a model for collaborative development and implementation of patients' information services in a hospital. Collaborations, particularly for developing information literacy, have been advocated in the literature (e.g. Crouse & Kasbohm, 2004). This is only to show that there are already a few cases of collaboration that can be followed or adapted.

7.5.3 Allowance for traditional print and modern electronic information formats

Given that the teachers still prefer their information in print rather than electronic format, but recognising that the internet plays a crucial role in the development of digital information resources, bringing about important changes in libraries in terms of access and storage of information is unavoidable (Garibay *et al*, 2010:125). It is recommended that the information service consider both the print and electronic environments. Baruchson-Arbib and Bronstein (2007) advocate designing information service and sources that support both print and electronic environments because they will support traditional practices of users while also adapting information technologies. To corroborate this view, Brophy (2000:162) indicates that there is growing consensus that a more effective approach to information services, at least in the short or medium term, may be to develop services that draw on the best of both the traditional (meaning print) and the electronic worlds.

7.5.4 Compiling and disseminating tailor-made information packages

Secondary level geography teachers have relatively heavy workloads resulting from the number of learners per class, number of streams in the schools and number of periods per week. This gives them limited time to seek the information that they need exhaustively. Therefore, easily accessible information is crucial. Perrault (2007) maintains that searching for and verifying information poses a challenge to teachers already pressed for time. Landry (2006) also notes time and information overload as factors hindering information-seeking. It is therefore recommended that all possible efforts be taken to provide the teachers with the information that they need for teaching in their respective schools. Firstly, the availability of geographical information that is appropriate for the learners at secondary education level is very important. Such information should address the needs of the syllabus and should have colourful illustrations that will enhance understanding, and must be applicable in classrooms. This information is vital to supplement the learners' textbooks and teachers' guides. Perrault (2007) indicates that teachers consult sources such as notebooks or folders containing items such as lecture notes, hand-outs, audio-visual materials and tests from previous years when preparing for lessons.

Secondly, it is recommended that the geography education specialists mentioned in the proposed model in Chapter Six (Figure 6.3) be part of the task team that may help to serve as a consultative body for information on secondary level geography education, particularly for reviewing information that will serve as personal notes for the teachers, which will be disseminated to teachers through the channels they prefer. The notes may be posted on the internet, be available on CD or printed. This is because most of these teachers indicated that they prefer to have information in print format because of lack of the right equipment. Nevertheless, these teachers have to embrace technological advances and their opportunities because these are unavoidable (Garibay *et al*, 2010).

7.5.5 Availability of information resources

Given that secondary level geography teachers mentioned that they need audio-visual information materials, more financial resources should be available for the procurement of these information materials. The bookshops and publishers in Lesotho should stock the information materials that the teachers need so that those who can afford it may purchase them. Mundt *et al* (2006) suggest that librarians can help gather classroom resources and curriculum materials on a particular subject in the same place for easy access. Therefore, it is recommended that where school libraries exist, the librarians should make an effort to stock audio-visual material for geography and make it easily accessible to these teachers. In addition, the school librarians should be proactive to get information for teachers. For instance, regular visits to government departments and other organisations that these teachers often consult for information may help the teachers. Instead of these teachers going out to find the information, school librarians should source such information for them. Some of these institutions were mentioned in Chapter Four (section 4.2.5.2) under information sources used by the teachers. Mundt *et al* (2006) further propose that those running libraries should also consider putting together web resources on an easy-to-navigate platform and publicise these to teachers. In principle, it is recommended that audio-visual geography material requested by the teachers should be made available through various modes.

7.5.6 Building up personal files and information collections

Personal knowledge and personal files and information collections are some of the important sources of information for various professionals. This is evident from the work of Du Preez and Fourie (2009), Leckie *et al* (1996) and Perault (2007). Realising the challenges of information shortage in their schools and the value of information collection for teaching, in-service geography teachers who participated in this study emphasised the importance of buying books and laptops during professional training with book allowances from their sponsors. It was noted that there is too much dependency on library books and journals at university, so much that students do not build up their personal collections. Yet, access to university library services stops immediately they complete their studies. It is consequently recommended that professionals start building up personal files and collections during training in institutions of higher learning and this should continue even in the world of practice. Secondary level geography teachers, like other professionals, should also develop strategies to raise funds to purchase books, computers and relevant information materials needed for teaching. These teachers should also build up their personal notes, files, hand-outs and the audio-visual information materials that they need. If necessary, the information literacy training suggested for secondary level geography teachers must include skills for audio-visual material production. In addition teacher training curriculum needs to include development of teaching and learning resource packs in multimedia.

7.5.7 Easy access to syllabus documents

The teachers indicated that they consult the syllabus documents when seeking information on teaching. During this study, it was found that on the one hand the JC syllabus is available on the internet on the MOET website, which makes it easier to access. The same syllabus is also available at the NCDC because it is produced and developed there. On the other hand, the COSC syllabus for Lesotho is developed and produced by the University of Cambridge as geography syllabus 2223. Although syllabus 2223 is on the internet, at the time of data collection for this study it could only be accessed by certain people who had the right user names and passwords. Yet, other geography syllabi, such as 2217, which are studied in other parts of the world, except Southern Africa and Brunei, which study syllabus 2223 and 2230

respectively, are on the internet and can be accessed by everyone. Furthermore, geography syllabus 2217 documents for the years 2010, 2011 and 2012 are all on the internet, including past question papers and the examiners' reports. This puts Lesotho and the rest of Southern African countries that are still using the University of Cambridge examination system at a disadvantage. It is recommended that geography syllabus 2223 be made available on the internet in the same way syllabus 2217 is available. At the time of reporting on this study, syllabus 2223 could only be accessed at ECOL as a print copy.

7.5.8 Introduction and maintenance of alerting services

Secondary level geography teachers in Lesotho indicated that they need current and accurate information and obviously these teachers do not have anything in place to keep them up to date in their field. As a result, current awareness services are recommended for secondary level geography teachers in Lesotho. A system of alerting services may be similar to the one noted by Fourie (1999, 2003) incorporating materials that are freely available on the internet, such as newsletters and journals, including table of contents services from publishers, journal platforms, book alerting services and email notifications from publishers and vendors, as well as other alerting services from search engines. In addition, alerting may also be done through existing facilities in Lesotho, such as noticeboards, free radio programmes and printed newsletters available to teachers.

Fourie (1999:379) maintains that current awareness services have been used by information specialists as a method of keeping selected groups of users up to date with new information. Fourie (2003:184) notes current awareness services as a system for notifying current documents to users of library and information services and also as a service which provides a recipient with information on the latest development in his/her subject area, as well as a selection of one or more notification systems on new materials. It is recommended that studies on current awareness services for different professionals should be considered when developing current awareness services for secondary level geography teachers in Lesotho. One may consider Fourie and Bakker's (2009) study on current awareness services for oncology nurses in both the Netherlands and South Africa, Fourie and Claasen-Veldsman

(2007a, 2007b) for oncology nurses in South Africa, Rossouw and Fourie (2007) for the legal profession and Fourie (2003) for acquisition librarians.

7.5.9 Documentation and dissemination of information for the activities of geography teachers' associations

Mundt *et al* (2006) observe that professional development is a key factor affecting teachers' information universe, such that teachers attend workshops and work together as a team to integrate ideas and methods learnt in the workshops. Empirical data also point to secondary level geography teachers trusting their associations and these associations are actually active in disseminating information to the teachers through letters, workshops, excursions and meetings. However, these geography teachers' associations are not producing any reports for their activities and do not publish any annual reports other than those of the president and treasurer. It is therefore recommended that all the activities of the associations be documented in the form of written reports because these could create a wealth of information that can keep teachers up to date and be a future information source of reference. The reports will then be disseminated to members.

7.5.10 Formation of a national geography teachers' association

During data collection, it was also noted that all the geography teachers' associations function as separate bodies with no interaction with one another and yet they operate in a small country with meagre resources. It is recommended that the geography associations in the various districts join together to form one strong national geography association comprising different chapters at district level that can even develop a newsletter for the dissemination of information. This model of operation is used by the Lesotho Science and Maths Teachers Association (LSMTA). Mathematics and science are compulsory subjects in all schools. Teachers of these subjects form the biggest group when compared with elective subjects such as geography and yet they have one national association. It is imperative for geography teachers to join together to form one big national association so that they could perform their activities on a larger scale and be in a better position to mobilise resources and raise funds. LSMTA not only produces a newsletter, but also holds national functions, such as the science fair, which are well known. Newsletters are important because they are an effective tool that can provide teachers with the latest information (Fourie, 2003).

Furthermore, if the Information and Documentation Centre of the Institute of Education, National University of Lesotho is ultimately considered as the implementation agency for the establishment of an information service for secondary level geography teachers, it should resuscitate its newsletter, called *IE NEWS*, and have a section for events and news pertaining to secondary level geography teachers.

7.5.11 Sustenance of the information service

In order for the proposed information service model outlined in Chapter Six to be sustainable, training, marketing, fundraising and lobbying for resources are crucial. It is therefore imperative for the implementation agency to develop strategies on training, marketing, fundraising and mobilising of resources. Marketing strategies for the information service proposed in this study, outlined in Chapter Six (section 6.2.2.3), are recommended. The study also recommends the training strategies outlined in Chapter Five (Table 5.1), including the appointment of an information specialist and a task team that will help with fundraising and mobilising of resources. It is equally important to consider follow-up surveys for the evaluation of this information service to determine if it needs to be discontinued, modified or improved. This is because the literature, for example Chattopadhyay *et al* (2006) Cloutier (2005), Ju (2006), Kaur and Rani (2008), Madden (2008) and RUSA (2000), points out that evaluation of information services is vital. There is a need to re-examine the information needs of secondary level geography teachers constantly because information needs are not static and there are other factors or intervening variables that affect them (Leckie *et al*, 1996). It is recommended that the process of re-examining these information needs become part of the evaluation that is proposed in Chapter Six (section 6.5). Brophy (2005) provides a model of information service evaluation that can be used for the evaluation of the geography teachers' information service.

7.5.12 Exploration of mobile devices for information access

Arguments supporting mobile technology as a solution include the fact that mobile technologies are ubiquitous, affordable and easy to use (Chigona *et al*, 2008). Kinshuk (2005) acknowledges that with recent developments in mobile technologies, further possibilities are emerging to provide information services through mobile phones, hand-held

computers and personal digital assistants (Griffey, 2010). Chigona and Mbhele (2008), Chigona *et al* (2008) and Chigona *et al* (2009) deal with the prospects of mobile internet in South Africa among socially excluded people and students and the role of the internet in alleviating social exclusion. Similarly, Parsons (2010) considers information access and information provision through mobile devices within higher education libraries. These studies provide possible ideas to consider when exploring mobile devices for information access for Lesotho teachers.

Underwood (2007:3) asserts that the growth of the information society and the networked culture in South Africa is apparent. Cell-phones are ubiquitous and easily outnumber fixed-line installations; the technology has provided telecommunication services for many communities that would be unlikely to be connected to a fixed-line service. According to Chigona *et al* (2008), there has been a significant increase in the diffusion of cell-phones in South Africa and much of the world, such that cell-phone technology has advanced rapidly and continues to do so. As a result, cell-phones have become one of the most important communication, social, business and entertainment devices of the 21st century. This increase in cell-phone connectivity is also realised in Lesotho. In this study, teachers frequently referred to the use of cell-phones that they use mainly for phone calls and SMS. It is recommended that secondary level geography teachers consider using their cell-phones to access the internet. This is because the teachers indicate that they need the internet because they believe it will provide them with a variety of information that is current and yet they cannot access the internet in their schools, mainly because it is not available. It is of paramount importance for schools' principals to make an extra effort to make the internet available and accessible to teachers in their schools because in this era, internet accessibility has become a necessity. James (2010) offers affordable alternatives, such as communal institutions that share the cost of using the internet across a large number of people and internet kiosks, for accessing the internet in rural areas in developing countries.

It is further recommended that once teachers access the internet, they should take full advantage of platforms and facilities for communication and information access available through the internet, such as instant messaging. Nielsen (2009) explains instant messaging as

a facility that could be considered for today's library and information service users as they not only look for information on the internet, but also take part in conversations, sharing and producing their own information on the internet. Instant messaging has developed as a result of the growing conversational pattern of communication on the internet. Therefore, the secondary level geography teachers may have to embrace such technological advancements. This calls for them to access information by using many platforms such as Facebook, blogs, wikis and instant messaging of clients, most of which can be accessed through cell-phones.

7.5.13 Introduction of inter-library lending through school libraries consortium

The empirical data showed that secondary level geography teachers use books heavily as some of the information sources readily available in their schools; they also trust some of the information from books. But it is also evident from the data that all the schools do not have all the books that they need. It is therefore recommended that schools start inter-library lending systems through a school libraries consortium. According to Taole and Dick (2009:5), library consortia have been established in many parts of the world in response to an increasing demand for information and the inability of libraries to have all resources on site. It was found during data collection that some informal inter-lending of books and other sources of information is already happening among the individual teachers and through their associations. It is recommended that this be formalised into proper information resource-sharing with clear policies and guidelines. If school libraries form a consortium, its functions, goals and objectives, as well as the policies and guidelines, may be learned from the Lesotho Library Consortium, which is an existing consortium of academic, national, public and special libraries in Lesotho (Taole & Dick, 2009). Another resource-sharing approach worth considering for Lesotho schools is the clustering of schools strategy noted from Mokgaboki (2002) and Nzimande and Stilwell (2008). However, Nzimande and Stilwell (2008:235) caution that not all cluster communities will be the same and a community's preparedness to embark on clustering is likely to differ from one area to the next.

7.6 SUGGESTIONS FOR FUTURE RESEARCH

The investigation of secondary level geography teachers' information needs and information-seeking patterns is the first study of its kind in Lesotho. This study went further to guide the design and the implementation of an information service for these teachers. Concerns that have emerged from this study require further examination regarding an information service for secondary level geography teachers in Lesotho.

- This study did not address the information literacy levels of secondary level geography teachers, nor did it determine if these teachers have the necessary skills to use the internet effectively, as well as various multimedia information resources available today. It was found that there are some teachers who have used the internet, while others have never used it. Therefore, studying the information literacy levels of these teachers and assessing their internet skills are important.
- Comprehensive stocktaking of all the information resources in various sectors that could help secondary level geography teachers in Lesotho is foreseeable. It is important to know who has what in order to identify gaps and avoid duplication of efforts in the midst of limited resources and poverty in Lesotho.
- Comparative analysis in terms of accessing the internet on cell-phones and computers is essential. This is important in order to establish how large amounts of information will be downloaded from cell-phones.
- E-readiness in Lesotho schools and various modes of internet access, including their cost and effectiveness for schools, also need to be studied.
- A feasibility study on clustering of schools for information resource-sharing and a feasibility study on school libraries consortium are equally important. These studies can shed light on effective means of information resource-sharing within schools.
- A study on teachers' information-seeking behaviour in non-work contexts using Savolainen's (1995) everyday life information-seeking model might help to gain

more insight on the teachers' information needs and information-seeking behaviour, which might better inform an information service. Such a study may be a comparative analysis of the Leckie *et al* (1996) model with the Savolainen (1995) model on teachers' information behaviour because it might yield insights that would improve the information service proposed in Chapter Six, especially when considering findings on information needs related to the teachers' roles such as the caregiving role in the midst of HIV and AIDS prevalence in Lesotho, and the student role as discussed in Chapter Five (section 5.2.3).

- The high prevalence of HIV and AIDS in Lesotho and increasing number of orphans calls for a study on information-seeking behaviour of other caring professions such as counsellors, nurses, orphanage managers and social workers (De Vos *et al*, 1998) to develop their new or adapted information-seeking model and their information service. For teachers, further studies may focus specifically on the caregiving role identified in this study.

7.7 CONCLUSION

This chapter presented the findings on the principal question and its sub-questions that were originally outlined in Chapter One (section 1.2), as well as the Leckie *et al* (1996) model that was used as the theoretical framework in this study. Based on the findings, the chapter also made recommendations that would help to improve and sustain information services for secondary level geography teachers in Lesotho. Moreover, recommendations for further relevant research were also outlined.

Some of the concluding remarks for this study were presented earlier as research findings on the principal question in section 7.2.1 and there is no need to repeat these. Nonetheless, the researcher concludes this chapter by pointing out that the study achieved its goal of investigating the information needs and the information-seeking patterns of secondary level geography teachers in Lesotho. The study has also shown the importance of understanding fully the information needs and information-seeking patterns of the targeted users if a proper information service is to be developed and established. It has also demonstrated that the prevailing conditions of the country, the intended users of the information service and all the

resources that are available have to be considered when designing the information service. The study also indicated that it is significant to determine the information literacy levels and the internet skills of the secondary level geography teachers in the light of the proposed electronic information service.

The provision of an appropriate information service to secondary level geography teachers in Lesotho is important, particularly at this stage where the government of Lesotho has embarked on building schools in order to increase accessibility to education. The majority of these government schools offer geography, and this means that the government is acknowledging the importance of geography in education. It is anticipated that there will be an increase in the number of geography teachers. In the academic year 2009/2010, NUL has seen a noticeable increase in the number of students studying to be geography teachers. As a result, access to information for secondary level geography teachers is imperative. It is crucial to point out that access to information is not the only factor that will make a contribution to effective teaching and learning.