

An Analysis of the Information Behaviour of Geography Teachers in a Developing African Country– Lesotho

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Abstract

Information behaviour studies have the potential to inform the design of effective information services that incorporate the information needs, information-seeking and preferences for information sources of target users; hence a doctoral study was conducted on the information behaviour of geography teachers in Lesotho with the aim of guiding the design and implementation of an information service model for these teachers. This paper focuses on the analysis of the information behaviour of geography teachers in Lesotho as a contribution of original knowledge on geography teachers' information behaviour. The analysis established the information behaviour of geography teachers using the information behaviour concept that encompasses information needs, information-seeking and information sources. Data were collected and analyzed through focus group discussions and conceptual content analysis respectively.

The analysis reveals that these geography teachers need current and accurate information covering a variety of aspects in teaching and learning, such as content, pedagogy, classroom management and learners' assessment. Owing to the increasing number of orphans in schools as a result of the HIV and AIDS pandemic, most teachers expressed the need for information on social assistance for orphans and vulnerable children. Recommendations include information literacy training for teachers and access to the Internet in schools, including the use of open access journals on the Internet by the teachers.

Keywords: geography teachers, information needs, information behaviour, information-seeking, Lesotho

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Introduction

One of the concerns for Information Science is the information behaviour of different target groups as users of information (Wilson, 2000) because an effective information service depends largely on understanding users' information behaviour (Hepworth, 2007; Wilson, 2006). According to Ingwersen and Järvelin (2005:21) information behaviour is the human behaviour dealing with the generation, communication and use of information and other activities concerned with information, such as information-seeking behaviour and interactive information retrieval. Fisher and Julien (2009:317) indicate that information behaviour focuses on people's information needs; particularly how they seek, manage, give and use information, purposefully and/or passively, in their varied roles in their everyday lives. Wilson (2000:49) describes information behaviour as the totality of human behaviour in relation to sources and channels of information, including both active and passive information-seeking and use.

Realization of the dearth of Information Science studies on teachers' information behaviour, particularly in developing African countries, led to a doctoral study on information behaviour of high school geography teachers in Lesotho. The study adapted the information behaviour concept that encompasses information needs, information-seeking processes and preferences for information sources (Fisher and Julien, 2009; Case, 2007). More detail clarifying the aim of this paper and the doctoral study is provided in the sub-section dealing with this.

Teachers in Lesotho

Teachers in Lesotho are in a situation marked by scarcity of adequate library and information services, while they have a high influx of learners in their schools as a result of free primary education, which started in 2000. Moreover, Moloi et al (2008) observe that overcrowding in Lesotho schools has been a problem for a long time. Furthermore, there is an increasing load of roles and responsibilities (see Bitso, 2011) on high school teachers who not only have to equip learners with knowledge and skills for employment, but also for tertiary education. Another emerging responsibility is sourcing of information for orphans and vulnerable children, as the number of orphans in Lesotho schools is increasing as a result of the HIV and AIDS pandemic (Nyabanyaba, 2009). Funding in schools is generally poor and this is coupled with overcrowded classes and lack of facilities such as laboratories, libraries and access to the Internet (Moloi et al, 2008). Teachers in Lesotho operate in a highly bureaucratic system of school governance, which resorts under different institutions, namely the government, churches and communities, each driven by different ideologies and priorities (Bitso, 2011). Government pays teachers' salaries,

formulates educational policies and reviews legislation and regulations for schools (Lefoka and Sebatane, 2003). In addition, it is involved in infrastructure and national curriculum development, supervision and inspection of teaching. Churches own schools, appoint teachers and are also responsible for the daily operations of the schools, while the community is mainly the parents who send their children to schools (Lefoka and Sebatane, 2003). It is unfortunate that the bureaucratic system within which teachers in Lesotho operate has an impact on beginning teachers because they often work without being paid for months as a result of an inefficient system. This could also be attributed to the fact that teachers' appointment is a process that goes through various offices that constitute the system.

The Context of Lesotho Geography Teachers

Lesotho geography teachers are highly challenged because their subject includes both the human and physical geography spheres, which are difficult to teach in a situation where teaching aids are lacking. Yet there is a need to cover both the local junior geography syllabus and the international University of Cambridge senior geography syllabus. Furthermore, as noted by Bitso (2011) and Bitso and Fourie (2011, 2012), most geography teachers in Lesotho graduate from the National University of Lesotho with BA Ed, B Ed or BSc Ed degrees. While BSc Ed teachers study mostly physical geography, BA Ed and B Ed teachers study mostly human geography and yet in the schools these graduates have to teach both human and physical geography, despite this knowledge disparity. They also operate with limited resources in the schools, especially taking into account the relatively better resources, such as books and journals, provided during their teacher training at university.

The Doctoral Study and the Aim of this Paper

In the midst of the challenges facing geography teachers in Lesotho, which the researcher has experienced as a former geography teacher, an in-depth doctoral study was conducted (Bitso, 2011), investigating the information behaviour of high school geography teachers in Lesotho to inform the design and implementation of an appropriate information service model for Lesotho geography teachers. This model might also serve as a prototype information service model for teachers across the curriculum in Lesotho, as well as other developing countries in a similar situation. This study was deemed important, as it would inform the design of an effective information service based on these teachers' information needs, information-seeking and preferences for information sources as an intervention to assist them with information. The information service model entails information literacy, information alerting services, document delivery and delivery of tailor-made information

packages (Bitso, 2011). This is because teachers in Lesotho generally operate with meager resources, including information material for teaching. Geography teachers in Lesotho might be worst hit by lack of resources, given that most of the topics they have to teach, such as landforms, are not found in Lesotho and are often abstract concepts for the learners to understand without information material such as videos, models, charts, etc. The doctoral study has been reported by Bitso (2011) and some of its parts by Bitso and Fourie (2011, 2012). While the work of Bitso and Fourie (2011) is an analysis of the information-seeking behaviour of Lesotho geography teachers based on the Leckie et al (1996) model, Bitso and Fourie (2012) propose an information service intervention for geography teachers in Lesotho based on the analysis of these teachers' information-seeking behaviour.

This paper aims to report part of the doctoral study, focusing only on information behaviour, that is, information needs, information-seeking and preferences for information sources as a contribution of new knowledge on geography teachers' information behaviour in the context of a developing country in Southern Africa – Lesotho.

Literature Review

The review covers information needs, information-seeking and information sources with the focus on teachers.

Information Needs

An information need is a function of the current knowledge state of an individual that may be stable and well defined, such as is often the case in selective dissemination of information, or may be vaguely stated or ill-defined, such as during exploratory search sessions (Ingwersen, 1999: 19). To corroborate this view, Kuhlthau (2004: 26) explains;

“an information need as an actual, but unexpressed need for information, or an ill-defined area of indecision which may be expressed in an ambiguous, rambling statement. Information need may start as a vague sort of dissatisfaction which is characterized by confusion and perplexing reaction to a vague new idea. This confusion increases and mounts until the person may be threatened by his/her lack of understanding”.

Furthermore, Ingwersen and Järvelin (2005: 20) state that ‘an information need signifies a consciously identified gap in the knowledge available to an actor. Information needs may lead to information-seeking and formulation of requests for information.’ Similarly, Krikelas (1983) points out that information needs may be

expressed, unexpressed or dormant; dormant needs are those that the individual is unaware of, but which may be potentially activated by an information service provider. These include unconscious needs that do not necessarily lead to action, which fits in with Wilson's (1999) passive information needs. Geography teachers may have uncertainties, which may develop into information needs that may be expressed, unexpressed, dormant or unconscious. Envisaging the complexity in investigating unexpressed, dormant or unconscious information needs, the study focused only on expressed information needs.

The literature suggests that teachers have various specific information needs relating to mastering the curriculum content and the structured behaviour required in their classrooms for a diverse range of learners (Mardis 2009: 1). De la Vega and Puente (2010: 317) indicate that teachers not only require sources of information on the curricular areas they teach, on pedagogy, didactics and information technology, but also on the issues students face. Lan and Chang (2002) found that biology teachers' information needs pertain to students, subject matter and pedagogical content, as well as knowing more about the students one teaches. Teachers have to establish the different learners' capabilities, interests and social behaviour, including their problems, because these are some of the things that may affect their learning and development (Lan and Chang, 2002). Passey (2006) analyses the use of information and communication technologies by primary and secondary pupils and points out that within the overall arena of knowledge handling, teachers are fundamentally concerned with subject knowledge and the curriculum, which could be factors associated with teachers' information needs (Passey, 2006: 146). European secondary school teachers' information needs include current information to keep up to date with current events, social and cultural information and specific information resources that are tailored to the needs of teachers and learners (Conroy et al, 2000). Similarly, Perrault (2007) refers to curriculum content, presentation materials, personal knowledge and individualized learning materials (for the learners) as some of the things on which teachers seek online information and resources. Patuelli (2008) notes that teachers' information needs are related to pedagogy, national curriculum standards and the syllabus, including examinations and knowledge of the subject matter to be taught. In South Africa, Snyman and Heyns (2004) investigated the information needs of Afrikaans language teachers and found that their information needs pertained to classroom activities, curricula and supportive study material. Snyman and Heyns (2004: 212) reveal several factors that have an impact on teachers' information needs, such as a changing curriculum, the nature of the subject, a high workload, extramural activities and pressure regarding examination results.

Information-Seeking

Information-seeking is part of information behaviour (Wilson, 1999) and can be active or passive (Wilson, 2000; Fourie, 2006). On the one hand, passive information-seeking occurs when part of people's information behaviour is to decide that they do not want to seek information, or they may be unaware of the fact that they might need information. On the other hand, active information-seeking takes place when people do everything in their power to seek information. This study focused only on active information-seeking.

Information-seeking is the purposive acquisition of information from selected information carriers, including examining the ways in which people find the information they require (Johnson, 2003: 737), such as how and where people look for solutions to information problems (Burke, 2007: 679). Information-seeking has been conceived as a process in which information needs are pursued, or in which problem-solving takes place in a particular context (Foster, 2004: 228). It is initiated by a recognized need for information and a decision to act on it (Byström and Hansen, 2005: 1055) and reflects the experiences of the information seeker (Foster, 2004: 234). Seeking information for lesson plans may be viewed as teachers' purposive information-seeking, which is also noted by Kahlert (2001), Lundh (2005) and Sánchez and Valcárcel (1999).

Information-seeking is not always initiated by information needs, but sometimes by incidental encounters with information or through everyday life interactions with information to keep up with the advancements in one's field, which is called serendipitous information-seeking (Foster and Ford, 2003; Spink and Cole, 2006: 27). Equally, people do not always personally go out to search for information, but may use others to seek information on their behalf, which is termed information-seeking by proxy (Fisher et al, 2004; Hyldegård, 2006; McKenzie, 2003). These proxies may be agents, gatekeepers or intermediaries (Hyldegård, 2006; McKenzie, 2003). Gatekeepers are people with the responsibility to look for information and forward it to colleagues in their teams such that the information recipients and the gatekeepers collaborate to find information (Allen, 1977). However, White et al (2009: 190) argue that the gatekeeper may restrict and/or permit access to information and therefore they advocate for a facilitator instead of a gatekeeper in order to eliminate the restrictive nature of the gatekeeper. Kirby and Bogotch (1996) and Uibu and Kikas (2008) indicate that teachers have the role of information provider and knowledge/information disseminator, respectively involving acquisition and distribution of information, thus becoming proxies for information-seeking. Sometimes one is not alone in the process of information-seeking but rather works with colleagues or peers (Fourie, 2006: 101), which is common in situations

of joint projects, authorship, team work and so on. According to Foster (2006: 330), 'collaborative information-seeking and retrieval is the study of the systems and practices that enable individuals to collaborate during the seeking, searching and retrieval of information.' Although Foster's review is mainly of studies on collaborative information-seeking in academia, industry, medicine and military settings, he alludes to the concept of information-sharing as 'an umbrella concept that covers a wide range of collaboration behaviors, from sharing accidentally encountered information to collaborative query formulation and retrieval' (Foster, 2006: 331).

Lundh (2005) found that during training, teachers mostly use scientific material through their academic libraries, but as they start to practice, their information-seeking becomes more related to their pupils, and colleagues are mostly used as an information source. Thus it is considered more important to find material that is useful in classroom situations rather than information from purely scientific sources. In essence, the most important criterion for material selection is its applicability in the classroom (Kahlert, 2001; Tanni et al, 2008). This is affirmed by Sánchez and Valcàrcel (1999: 509) when they state that all teachers claim to take students into account when preparing for lessons; they consider the level of the learners, age and general knowledge of the subject in question. In corroboration, Tanni et al (2008) indicate that when processing information, teachers choose only the parts of a document that will be understood by their learners, simplifying the vocabulary and reducing and synthesizing information and even finding appropriate ways of presenting the information to learners in a limited time while still maintaining their interest in the topic. It is evident that the teachers bear the learners in mind when they seek information for teaching purposes.

Shanmugam (1999) found information currency and relevance to be important considerations in information-seeking and preference for teachers. Wu et al (2005) also found that the teachers' choice of resources on the Internet was determined by the accuracy and currency of information, as well as the attractiveness of a web site. This is an indication that teachers opt for information that is not only accurate, but also current and attractive to capture the attention of the learners.

Tanni et al's (2008) study found that teachers' information-seeking was influenced by subject knowledge. This knowledge would determine what specifically to search for, what to deliver during the lesson and where to search for more information. Their study reveals that teachers often start by reading textbooks to familiarize themselves with the topic and to compare different views from the books. Depending on the outcome, they search for more information using Google

on the web. The Internet is mainly used if the information from the textbooks is inadequate or conflicting. The information found is used in the lesson plans to complement textbooks, exemplify, illustrate, maintain interest or raise discussions among the learners. Perrault (2007) found that teachers' information-seeking practices are influenced by the currency of information, the need to generate new ideas, gaining of personal knowledge and the availability of time. The main barriers in information-seeking and use are limited time and lack of ready local access to information (Williams and Coles, 2007a).

Information Sources

'Anything human beings interact with or observe can be a source of information' (Bates, 2006:1035). The information source is a medium in which knowledge and/or information is stored (Nikalanta and Scamell, 1990:25). In the workplace, Byström and Järvelin (1995:193) mention that from the workers' point of view an information source contains (or is expected to contain) relevant information. Fisher and Julien (2009:332) indicate that there are two types of information sources that dominate the literature in studies on information behaviour: the interpersonal and the Internet. Other related terms found include information carriers (Johnson, 2003) and information resources (Fidel and Pejtersen, 2004). In this study, an information source is understood as something that contains and/or stores information. This is affirmed by Tucker and Napier (2002:299) when they indicate that the information source provides content or expertise of interest to the information seeker. Leckie et al (1996:183-187) maintain that the sources of information used by professionals are colleagues, librarians, handbooks, journals and their own personal knowledge and experience.

According to Williams and Coles (2007a:816), teachers tend to rely on readily available resources, particularly those available in the school. They frequently use information sources such as colleagues, in-service events, newspapers and reports available in the schools. Kirby and Bogotch (1996:14) and Williams and Coles (2007b:201) indicate that sources of information available in the school environment are among the most popular. Therefore, it seems that to increase information use, teachers need a well-organized access point to information located within the school that would allow them to find the information that they want as quickly as possible.

Dias Gasque and de Souza Costa (2003) found that at the time of their study print sources were still predominant and new information technologies had not yet been used by teachers. Shanmugam (1999) found that teachers prefer informal and interpersonal sources of information and to use sources written in their vernacular to sources written in English. Tanni et al (2008) reveal that information sources used

by trainee teachers comprise both print and electronic documents such as textbooks, books, magazines, newspapers, compact discs, web sites and videos. Moreover, the teachers often use Google to search the Internet and they often use Wikipedia instead of a printed encyclopedia. Landrum et al (2002) found that teachers rate colleagues, workshops and in-service presentations as accessible, trustworthy and usable sources of information; professional journals were found to be less trustworthy, less usable, and less accessible when compared with information from colleagues. Sánchez and Valcárcel (1999) found that in general teachers use the textbooks prescribed for learners as the principal source of reference although they also consult magazines and other textbooks if the prescribed textbooks are considered to provide insufficient information or if the teachers do not agree with the information provided in the textbooks. In addition, the teachers use their subject knowledge and experience to make modifications or additions to the information found in the textbooks. Perrault (2007) states that sources teachers consult for planning purposes include personal notes and handouts, audio-visual materials and tests from previous years. Nwokedi and Adah (2009) found that teachers prefer textbook information to any other source of information and prefer to have information sources in their own specific subject areas.

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

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

Merchant and Hepworth (2002:82) indicate that teachers use different sources to satisfy different information needs. Print sources, with the exception of newspapers and magazines, are viewed as sources of information with which to build a framework for the topic, the theory behind what is to be taught, or for factual information. Alternatively, the Internet, television, subject journals, newspapers and magazines are considered to provide current and supplementary information to fill in

the gaps in the textbooks and to increase interest, which would engage pupils in the subject matter.

Research Approach

The paper focuses on the part of the completed study conducted on secondary level geography teachers in Lesotho in schools. The teachers not only offered geography at both junior secondary and senior secondary levels, but also participated in national examinations administered by the National Examination Council of Lesotho in 2009. This group was chosen in order to gain insights on the information behaviour of teachers who had experience of teaching both the local and University of Cambridge syllabi.

Data were collected through focus group discussions at the schools and analyzed through conceptual content analysis (Babbie and Mouton 2001). Content analysis includes the evaluation of the frequency and salience of particular words or phrases from the data text in order to identify keywords or repeated ideas (Namey et al, 2008:138). In simpler terms, it refers to the gathering and analysis of textual content (Struwig and Stead, 2001:14). It involves making inferences about textual data by systematically and objectively identifying special classes or categories within these in order to reduce the volume of textual material into meaningful information (Gray, 2009:500). Content analysis is a systematic, replicable technique for compressing many words of text into fewer content categories; it is a technique for making inferences by identifying specified characteristics of messages objectively and systematically, as well as a research tool with which to analyze the frequency and use of words, terms or concepts in a document with the aim of extracting the meaning (Bell, 2010:132). The data from the focus group discussions were analyzed by examining themes such that common trends were established and further constructed into narrative statements to represent the responses of geography teachers mainly based on the doctoral study's principal research question and its sub-questions (see Bitso, 2011).

Twenty-eight focus group discussions (two to six teachers in a group) were held with a total of 82 teachers from January to March 2010. One focus group was held per school, but of the 51 schools that qualified to be part of the study population at that time, only 28 participated in the study. Table 1 below shows the distribution of schools offering geography and the sample that participated in this study.

Table 1.
Schools and geography teachers that participated in the study (Bitso, 2011:88)

Category	Schools	Geography teachers
Schools offering geography at JC level only	40	124
Schools offering geography at COSC level only	18	72
Schools offering geography at both JC and COSC levels	51	138
Schools that participated in this study	28	122
Study sample percentage	28/51 (54.9%)	82/138 (59.4%)

Key: COSC = Cambridge Overseas School Certificate (it marks the end of the senior secondary phase), JC = Junior Certificate (it marks the end of the junior secondary phase)

Table 1 depicts categories of schools offering geography and the number of geography teachers in these schools, based on information gathered from the Examinations Council of Lesotho and the Ministry of Education respectively in 2008/2009 when the researcher was preparing for data collection for the doctoral study. The table concentrates only on schools offering geography, as the study focused exclusively on geography teachers. While reading the table, one need to note that geography is an elective subject in Lesotho schools, hence not all schools offer geography. Moreover, the number of geography teachers in Lesotho schools differs from school to school, because the distribution of learners, facilities and resources also differs from school to school. In addition, Lesotho secondary education is divided into three years of junior secondary education, which is often referred to as JC level because it ends with JC examinations. This is followed by two years of senior secondary education that is often referred to as COSC level, because it ends with COSC examinations.

The length of service of the participants ranged from less than six months to 31 years. The least qualified teacher had a diploma; the majority of the teachers had bachelors' degrees and a few had postgraduate qualifications in the form of postgraduate diplomas, honors degrees and masters' degrees. Some of these teachers were qualified professionals with ample geography teaching experience and they were therefore in the best position to provide accurate information pertaining to this study and also to advice on the elements essential for an information service for them. The categories of the participants are presented in Figure 1 below.

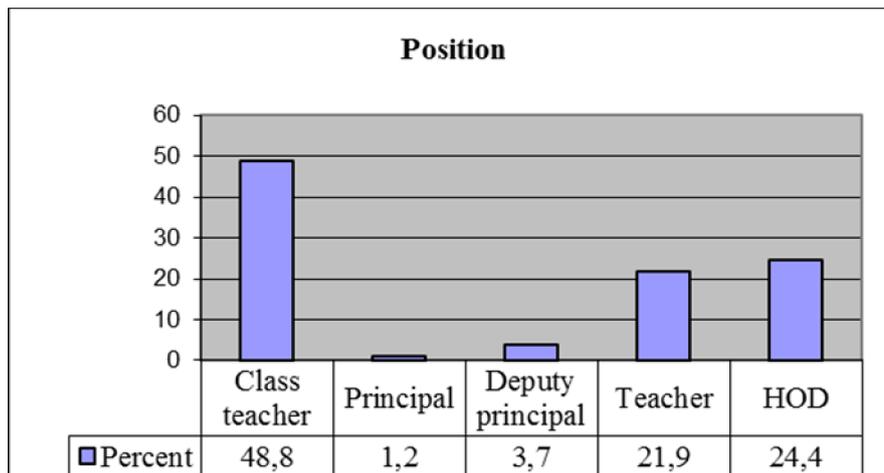


Figure1. Positions of the teachers that participated in the study (Bitso, 2011:120)

From Figure 1 it is evident that the participants were class teachers (48.8%; 40 of 82), heads of department (24.4%; 20 of 82), ordinary teachers (21.9%; 18 of 82), deputy principals (3.7%; 3 of 82) and principals (1.2%; 1 of 82). This distribution indicates a heavy work load, as the teachers have to teach and still perform administrative responsibilities. Although Moloi et al (2008:613) observe a lack of qualified teachers in Lesotho schools; the participants in this study were all qualified geography teachers.

Findings and Discussions

The findings are presented as a narrative summary of responses without any verbatim responses from the study participants. The full responses are outlined in the doctoral study (Bitso, 2011) and others by Bitso and Fourie (2011).

Information Needs

To establish the information needs of geography teachers, they were asked to mention the things for which they need information. The study found that the nature of information needed is current and accurate information for the content to be delivered in class. Conroy et al (2000) also found that one of the information needs for European secondary school teachers was current information, mainly because things are constantly changing in modern times, also regarding geography.

The geography teachers prefer information in print format because it is convenient, as it does not require any equipment to access it. It is intended mainly for their personal use. The audio-visual format is preferred for teaching materials for abstract physical geography themes. Dias Gasque and de Souza Costa (2003) and Merchant and Hepworth (2002) also found that teachers prefer information in print format. This might be the case, as the skills to utilize print sources are more widespread than those for using electronic sources (Julien and Michels, 2000:10).

The scope of information needed is mostly physical geography content for themes such as geology and geomorphology, plate tectonics, marine erosion, map reading, volcanism and related topics. Geography teachers expressed the need for information pertaining to teaching methods and accompanying teaching materials such as models, maps, and charts and so on, and how to motivate the learners in class, as well as previous examination questions and their marking schemes. Moreover, information needed also pertained to adolescents, testing and evaluation and classroom management. The nature and scope of secondary geography teachers' information needs as expressed by all the participants in this study were also noted in studies such as those reported by Conroy et al (2000), Lan and Chang (2002), Mundt et al (2006), Perrault (2007) and Shulman (1987). Rakumako and Laugksch (2010:140) also point to the key role of teachers' pedagogical content knowledge and skills in their subject area; they indicate that knowledge and beliefs regarding pedagogy, students, subject matter and curriculum are related to teachers' effectiveness.

Lesotho geography teachers also expressed the need for information on educational policies, regulations and legislation to perform their administrative and committee roles. It included knowing more about the curriculum standards and syllabus requirements because these are some of the things that are documented as policies. The Snyman and Heyns (2004) study identified the curriculum, classroom activities and supportive study materials as matters pertaining to the information needs of Afrikaans language teachers in South Africa. Of importance is the fact that some geography teachers pointed out the social responsibility and caregiving role they have in respect of orphans whose numbers are increasing owing to the high prevalence of HIV and AIDS in Lesotho (Nyabanyaba, 2009). Fulfilling this role requires information on social assistance for orphans and vulnerable children.

The geography teachers were asked to indicate if the information that they have satisfies their information needs. Prabha et al (2007) explain the information parameters within which users operate to determine what and how much information may meet their needs and indicate that users may decide that the information will be

sufficient to meet their needs after seeking and evaluating references, after identifying content that is of interest and relevance to them. The geography teachers in this study expressed dissatisfaction with the following:

- The information that they have is mostly outdated, since it is generally in the form of books that were published some years previously. It does not satisfy them because they need current information.
- There is a shortage of information generally to compare authors' views, clarify some topics and supplement textbooks' information where necessary.

Using the Prabha et al (2007) model of information needs satisfaction, one deduces that the information parameter of secondary level geography teachers in Lesotho is characterized by the need for current information and a variety of information sources to compare and contrast different views.

Information-Seeking

This section covers information-seeking patterns, information-seeking styles, factors that influence Lesotho geography teachers' information-seeking and the barriers to information-seeking that they experience.

Information-seeking patterns

The geography teachers were asked how they usually find the information for teaching when they have to start a new topic in class. The results showed that their information-seeking processes differ. Some geography teachers (mostly inexperienced ones) start with the syllabus to establish all the details that need to be covered for the new topic and then move on to books. Others start with books, and then consult colleagues such as fellow geography teachers, as well as science, agriculture and development studies teachers, if the topic is related to any of these subjects. There were some geography teachers who mentioned the use of the Internet, which is an indication that geography teachers in Lesotho are beginning to take advantage of information and communication technologies. The use of the Internet was reported mostly by younger teachers in the urban schools. Depending on the complexity of the topic, some geography teachers go to neighboring schools and/or their associations. The information-seeking behaviour of geography teachers in Lesotho is mapped in Figure 2.

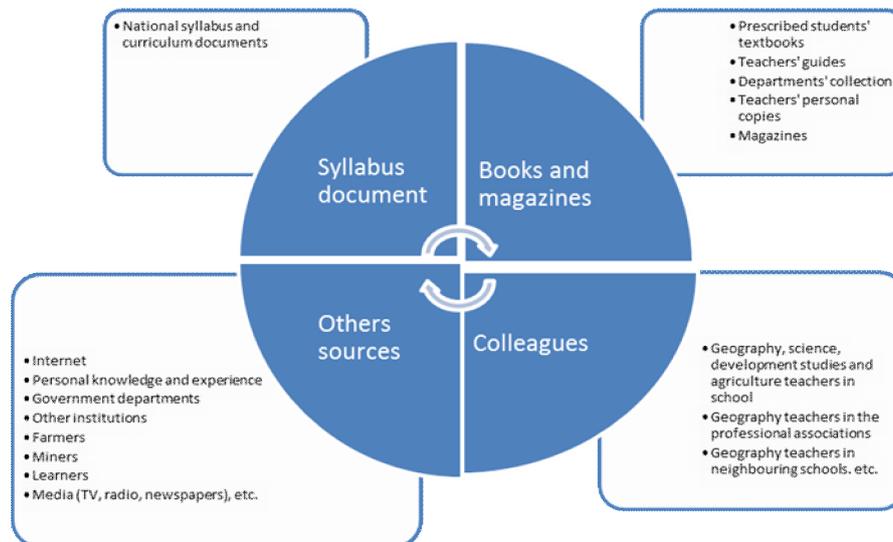


Figure 2. *Secondary level geography teachers' information-seeking pattern (Bitso, 2011:190)*

Figure 2 indicates that geography teachers' information-seeking for the teaching role starts with the syllabus (particularly inexperienced teachers), then the learners' textbooks; if the information is still inadequate or conflicting, more books and magazines are consulted. This is followed by consulting colleagues at school. Some younger teachers in the town 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. Throughout the information-seeking process, personal knowledge and experiences are used mainly:

- As a source of information to critique the information that is found;
- To guide the process of teaching; and
- To guide the information-seeking process, that is, which sources are likely to be useful, given the task at hand.

The information-seeking pattern above affirms Sánchez and Valcàrcel's (1999) study, which found that in general teachers used the students' textbooks as the principal source of reference, although they also consulted magazines and other

textbooks if the students' textbooks were considered to provide insufficient information or if the teachers did not agree with the information provided in the students' textbooks. Heavy reliance on books by teachers is also revealed by Nwokedi and Adah (2009) and Tanni et al (2008), while Noh et al (2004:1276) mention that teachers procure teaching and learning resources by various means, such as obtaining the materials distributed by local educational institutes, exploring the Internet and subscribing to magazines.

Information-seeking styles

Geography teachers in Lesotho engage in four information-seeking styles. The first is purposeful information-seeking, which is embarked on by individuals for lesson planning. It is also undertaken when there is a problem to be solved in the committees or tasks to be carried out to fulfill administrative roles. Serendipitous information-seeking is engaged in through interaction with the media, in particular television (TV), radio and newspapers, to keep up to date with the latest developments. Mundt et al (2006:9) point out that for keeping up to date with local and international affairs, mainly in the form of everyday life information-seeking, teachers use newspapers, magazines, TV, educational journals and the Internet. In addition, Conroy et al (2000) found that the teachers use the press and TV because they cover current affairs. Collaborative information-seeking is done through team teaching, and the activities of the geography teachers' associations where they prepare schemes and plans of work together, set the examination questions, including their marking schemes, and hold seminars. Therefore, the geography teachers' associations seem to be settings in which information is gathered for collaborative purposes and where teachers collaborate for information-seeking. Deaney and Hennesey (2007) also mention collaborative efforts among secondary level geography teachers in the United Kingdom, such as collaboratively developed schemes of work and sharing of resources.

Information-seeking through a proxy occurs when information is sought through someone else or some intermediary. Considering the view of Kirby and Bogotch (1996) and Uibu and Kikas (2008) that teachers have the role of information provider and knowledge/information disseminator, involving acquisition and distribution of information, it is not surprising to find that the geography teachers use other people to find information on their behalf. They use proxies such as the heads of departments, learners, younger teachers, family and relatives such as children, nieces and nephews and sometimes farmers and miners in the communities. It is not surprising to find that colleagues are often consulted because such consultation involves information-sharing and giving among professionals, as

noted by Baker (2004). This behaviour might be interpreted as another form of collaborative information-seeking and information-seeking through proxies.

Factors that Influence Lesotho Geography Teachers' Information-seeking

The geography teachers were asked for the factors that they consider when selecting a book/document for teaching geography and they mentioned the following:

- The contents should address the syllabus.
- The language should be appropriate for the level of the learners.
- Colorful 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.
- The date of publication is crucial because current information is considered to be vital in geography.

The need for the contents to address the syllabus concerns the relevance of information to teaching requirements. This need is affirmed by Shanmugam (1999). The notion of considering the language level of the learners is also supported by Tanni et al (2008), and colorful illustrations to enhance understanding and to attract learners' attention are mentioned by Wu et al (2005). Lundh (2005) emphasizes the applicability of the information to the classroom situation. Information can be applicable in the classroom if it is relevant, uses language that is appropriate for the learners, is associated with activities that will enhance learning and also has colorful illustrations; these are also the factors that the secondary level geography teachers in Lesotho mentioned. Currency of information was expressed under information needs and it is also indicated as a factor to consider when selecting information for teaching. This requirement is also acknowledged by Shanmugam (1999) and Wu et al (2005).

Information-seeking may be influenced by different factors, such as the personality of the information seeker (Heinström, 2005:229), the urgency of the information need, the context or situation of the information seeker and the availability of information sources, the sources of information and awareness of information (Leckie et al, 1996). In the study reported here, age and career stage were not considered because they were perceived to be aligned with teaching experience. The other factors pertinent to the geography teachers, such as their schools' geographic location and their qualifications, were also taken into account as factors influencing information-seeking. Gender is a variable that affects information-seeking (Hargittai and Hinnant, 2006), and it was evident that more

female geography teachers reported the use of TV compared to male teachers, while more male teachers reported using newspapers than female teachers.

There was no evidence that geography teachers' qualifications have any influence on information-seeking. The researcher had initially thought that the teachers with a science education background would be seeking more human geography-related information, while the teachers with a humanities background would be seeking more physical geography-related information in view of their National University of Lesotho training background. However, it transpired during all the focus group meetings that the geography teachers needed more physical geography information and teaching material, irrespective of their qualification. The reason could be that the science education students at the National University of Lesotho do not take the geography educator course and therefore lack the pedagogy for the subject. In addition, the physical geography content that they study is too abstract for the learners, making it difficult to apply in the classroom. As noted earlier, it is important for teachers to find information that is applicable in the classroom.

Barriers to information-seeking

Williams and Coles (2007a) indicate that the main barrier in information-seeking and use for teachers is limited time. Shanmugam (1999) also mentions barriers to information-seeking among educators as shortage of time, inadequate library facilities, unavailability and inaccessibility of information and inability to locate up-to-date information. The geography teachers expressed the challenges they faced as lack of resources such as time and money, telephones and the Internet. Other challenges are the heavy teaching loads and too many learners in a class that make it difficult to find time for exhaustive information-seeking. These challenges are coupled with a general lack of variety of information sources. A heavy workload was also pointed out by Snyman and Heyns (2004) as a factor affecting the teachers.

Information Sources

Leckie et al (1996) articulate that the sources of information used by professionals are colleagues, librarians, handbooks, journals and their own personal knowledge and experience that they gained while training for their profession. It transpired that the geography teachers mostly use colleagues, personal knowledge and experience, books, media and resource persons such as farmers, miners and institutions that have information related to geography. The Internet was reported to be used by younger teachers in the town schools. There was very little indication that these teachers used journals. In fact, only two focus groups reported access to and use of journals, while others reported lack of access. They indicated that they last used journals when they

were training at the university. It was also noted that the younger teachers who indicated that they used the Internet were not yet fully taking advantage of free journals on the Web.

Landrum et al (2002) found that teachers generally rated colleagues, workshops and in-service presentations as accessible, trustworthy and usable sources of information and professional journals were found to be less trustworthy, less usable, and less accessible when compared to information from colleagues. In this study, it was found that the in-service teachers trusted their colleagues and their professional associations for information. It transpired that the in-service teachers only attend the workshops that are organized by their associations because it has been a long time since the Ministry of Education and Training organized any workshops for them. It was evident that the teachers' associations were active in organizing workshops and seminars and thus provided and facilitated a lot of information dissemination and sharing. However, the associations do not document the activities of these events into reports, which are deemed as important sources of information that could be consulted by teachers at a later stage. This omission could be attributed to lack of proper documenting and report-writing skills. In a situation of shortage of information sources, all efforts must be made to document things properly by producing reports, which are potential sources of information. Information can be made available in different forms and formats, and can be accessed through different means.

The geography teachers were asked about information sources that were not available in their schools but that they felt they needed. They mentioned the Internet, maps, charts, models and videos as the resources that they really needed. The teachers regard the Internet as a source of current information that is needed by both the teachers and the learners. Lesotho geography teachers put great emphasis on the Internet, as though they perceive it to be a solution to many information-related problems in their schools. A similar perception about the Internet was noted by Perrault (2007:3), who noted that many teachers are convinced that the Internet can help with instructional planning and the creation of learning activities for learners. While the Internet has the potential to offer the resources the teachers seek, some teachers' experience with the Internet is that it is time-consuming and they express frustration with the quality of the results, while others are overwhelmed when a search yields thousands of results (Perrault, 2007). In addition, Lesotho geography teachers may also not access the information they want adequately because they lack the necessary skills to use the Internet efficiently and effectively. Most of the experienced geography teachers (who are older) indicated that they had never used the Internet because they had never had any guidance in using electronic databases.

This finding is an indication of lack of Internet navigational skills among these teachers. Therefore, the availability of the Internet should be assured, along with information literacy training.

As pointed out earlier, Lesotho geography teachers need maps, charts, models and videos, and they regard these as teaching materials or aids that will enhance the understanding of abstract physical geography among the learners. There was a clear indication that it is frustrating to teach some physical geography topics without these sources. One notes that Borgman et al (2005:651) also identified maps, photography, census data and images as primary sources of information for geography educators.

Conclusion and Suggestions

The **nature** of the information needed is current and accurate for the content that teachers have to deliver in class. The **format** of information needed is mostly audio-visual for teaching aids and materials for use in class to clarify abstract foreign geographical features and principles of geography to the learners, and print format for teachers' personal use. The study found that the participants all have the main educator role of teaching geography. Consequently the **scope** of information needed covers geography content with more emphasis on the physical geography sphere. The scope of information needs also covers pedagogy or teaching methods, classroom management, learners' academic assessment and specific information pertaining to their social background, including information concerning youth and adolescence issues generally. It transpired that the participants also have roles that require institution-specific information, such as education policies, syllabus and curriculum documents, teaching regulations, national examinations and educational legal frameworks, including information on social assistance for orphans and vulnerable children.

The use of colleagues in schools (own and neighboring) and in geography teachers' associations by older and experienced teachers is an indication of established social networks. The teachers in rural schools tend to consult the farmers and miners in their communities, which is an indication of good working relations between the rural schools and their communities. Traditional sources of information, such as books, magazines and colleagues, are predominant among Lesotho geography teachers because they do not generally have access to the Internet, libraries and journals. It is also evident that there are less confidence among Lesotho geography teachers in their ability to seek information using modern information communication technologies such as the Internet and that they lack information literacy skills in the digital environment.

The study's findings make it clear that at the very least, information literacy training for teachers in Lesotho is imperative; as well as access to the Internet in schools for teachers to access vast resources on the Internet, including open access journals through platforms such as the Directory of Open Access Journals and the International Network for the Availability of Scientific Publications.

The paper is viewed as a contribution of new knowledge on the information behaviour of geography teachers in a developing African country from a study that intended to guide the design and implementation of an information service for geography teachers based on their information behaviour. Therefore, the literature reviewed focused on teachers' information behaviour. There is a noticeable gap in geography education literature. It might be worthwhile to do an analysis of geography education and the information behaviour of geography teachers.

Biographical Statement

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