Information Literacy Skills of High School Students in Botswana: A Case Study of a High School in Gaborone, Botswana

Christinah M. Dipetso (MLIS)
Naledi Senior Secondary School, Botswana

Kgomotso H. Moahi
University of Botswana, Botswana

In this study, we assessed information literacy skills of secondary school students in Gaborone, Botswana and established whether and how they are being taught IL skills. The study employed the Big 6 model and was a case study design in which qualitative methods were used. The findings showed that students had low to fair information literacy skills in problem definition, information search strategy, and location of information. Use of information, synthesis, and evaluation were areas of significant challenge. Teachers were aware of information literacy, but were not intentional in their teaching of IL skills. The recommendations are four-fold, a) that education authorities in Botswana should ensure that information literacy is an integral part of students' education by requiring subject teachers as well as teacher-librarians to be intentional in their approach to developing students' information literacy, b) collaboration between teachers and teacher-librarians for more coordinated information literacy initiatives, c) training of both subject teachers and teacher-librarians on pedagogies that integrate the teaching of information literacy.

Introduction

Information literacy (IL) is essential for learning, and development of human capital, and is fundamental to lifelong learning and knowledge generation. Information literacy is not only useful for learning in educational settings, but also for work and citizenship (Lloyd, 2003). An information literate person is defined as one who knows when they need information, knows how to search for and locate the information, is able to evaluate information sources, and effectively use the information that has been found (ALA, 1998). Mugabe (2003) maintained that skills relating to accessing, evaluating and effectively using information from a variety of sources can be taught and/or learnt, and once acquired, can be applied to diverse information situations or problems throughout one's life. IL is common to all disciplines, to all learning environments and to all levels of education. It enables learners to master content and extend their investigations, become self-directed learners and assume greater control over their learning (ALA, 2000). It is therefore critical that school librarians work with teachers to integrate information literacy into the curriculum to shape capacity for life-long learning. Foo, Majid, Mokhtar, Luyt and Theng (2014) argued that being information literate is necessary for students to enable them to effectively sieve through and identify relevant and reliable information from various sources (Internet, television, newspapers, and other sources) for their schoolwork. With this understanding, and based on concerns regarding information literacy skills of high school students in Botswana, we found it fitting to investigate the IL skills of secondary school students in a high school in Gaborone, Botswana (the capital city), as well as and the extent to which IL is taught in the school.

Conceptual Framework

Bruce, Edwards and Lupton (2006) proposed six frames of IL education. These frames identify different ways that educators approach IL education, based on their views of teaching, learning and information literacy. The six frames are identified as: content; competency; learning to learn; personal relevance; social impact; and relational. The frames are defined by six attributes: the individual's view of IL; view of information; curriculum focus; view of teaching and learning; view of content; and view of assessment (Bruce, Edwards & Lupton, 2006). What this means is that if one believes that learning is about developing thinking skills and the ability to learn, then they are likely to see teaching as encouraging active learning, and therefore frame IL education towards teaching students to learn. Of the six frames, the competency frame views IL as a set of competencies or skills; information is viewed as contributing to the performance of a task; the curriculum focuses on what learners should be able to do; learning and teaching focuses on students acquiring knowledge and skills of each of the stages; and assessment determines the level of skill that have been achieved in each stage (Bruce, Edwards, & Lupton, 2006). The competency frame informed this study. We wanted to establish the information literacy skills and competencies of students, and therefore began the study by first introducing the students to the steps of finding and using information using the six stages of the Big 6 model (Eisenberg & Berkowitz, 1995).

Literature Review

There is no one definition of information literacy (Bruce, et al. 2006). Cunningham and Williams (2018) conducted a study in a middle school that identified the different conceptions of IL amongst seven groups (teachers, students, parents, IT personnel, librarians, administrators and leadership), and came up with 27 different concepts. IL continues to evolve and to take many directions, for example Lombard (2016) introduced the concept of information fluency, which is computer literacy plus IL plus critical thinking. IL is indeed a rich area of study that continues to raise interesting debates and new ways of thinking about IL.

A number of studies on IL skills of students have been conducted. Typically, the findings have shown students to have generally undeveloped IL skills, especially those associated with using and evaluating information. For example, Chang et.al (2012), assessed students' IL skills in two secondary schools in Singapore using a combination of the six stages of the Big 6 model and six additional items to determine the students' information ethics knowledge; their collaborative information seeking behaviour; and their overall IL process. Their findings revealed that students scored the highest on the task definition stage and the least on the synthesis stage. This realization led the researchers to conclude that students tended to score higher on the earlier three stages of the Big 6 (task definition; information seeking and location; and access of information) and lower on the remaining three. Other studies, such as those by Foo et al., (2014) yielded similar results. Foo et al., (2014) studied Singapore high school students' skills in searching, evaluating, and using information, and found that school libraries were underutilized and IL skills of the students were generally unsatisfactory, although the score for task definition was better (Foo et al., 2014). Nielsen and Borlund (2011) found that high school students have poor information need developing skills and that concepts of IL and lifelong learning are not very well understood by the students. Other studies have found students to be challenged even at the initial stages of information seeking. Sundin and Francke (2009) in their study on information evaluation skills of students argued that they displayed unsophisticated search skills, especially in digital environments. Scott and O'Sullivan (2000) in a study designed to examine high school students' use of the Internet as a learning tool, revealed that students also demonstrate poor search skills, such as selecting search terms, evaluating web sites, and citing sources appropriately; this was corroborated by a study by Milliari et al., (2014) on IL skills in Greek high school students. Milliari, et al. (2014) found that while students professed to be

more comfortable and adept at retrieving information from the Internet, they were not well versed with using more advanced techniques of searching for information, and evaluating retrieved sources.

Other researchers (Foo et al., 2014; Merchant & Hepworth (2002) have established that for various reasons, high school students rarely use school libraries; some students reported that they felt that the school libraries are not well developed, and other students reported that the Internet was more convenient than using the school library. Rehman and Alfaresi (2009) studied female Kuwaiti high school students and found that the students did not use school library resources and were not very knowledgeable about the school library catalog. Specifically, Rehman and Alfaresi (2009) found that majority of high school students lacked skills in catalog searching and use, selection of information sources, formulation of search strategies, and selection of pertinent sources.

Ojedokun (2007) argued that information use can be affected by a variety of factors, like students' level of summarizing, paraphrasing, and other writing skills; for high school students, as well as higher students in higher education, this is an area of significant challenge. Kovalik, Yutzey and Piazza (2013) found that seniors at a high school in Ohio, USA voiced a need for help in deciding which sources are best to use and how to identify important information from those sources. Chang et al., (2012) found that secondary school students in Hong Kong struggled the most with information synthesis, a key IL skill. Furthermore, Chu et.al (2012) reflected that students' IL skills were below the anticipated learning outcomes as they were weak in using sources of information responsibly and ethically.

Information today is available in different formats making it difficult for students to assess the quality and authenticity of information. Evaluation skills are critical in this situation and Sundin and Francke (2009) found that students have a hard time evaluating the credibility of information they find on the Web. Julien and Barker (2009) studied the IL skills acquired by students in a secondary school that supported information literacy skills development. Specifically, Sundin and Francke (2009) analyzed the information seeking and evaluation skills of students by giving them a task and conducting an interview afterwards. Sundin and Francke (2009) found the students' skills on both counts to be lacking. One of the reasons proffered for this was pressure on teachers to complete the syllabus or teach to examinations (Julien & Barker, 2009). Teachers are an important component of information literacy education, despite the fact that historically, information literacy was the purview of academic librarians. IL as a tool for learning needs to be an integral part of what happens in the classroom.

However, several researchers have established that even with integrated IL teaching, students still do not become information literate. Majid, Chang and Foo (2016) undertook a study in eleven secondary schools in Singapore and found that students displayed a lack of IL skills despite the fact that IL skills are embedded into the curricula and taught by subject teachers. Majid, Chang and Foo (2016) surmised that teachers' level of preparedness may be a challenge, as well as the fragmentation of IL concepts in different subjects may cause co-ordination problems among teachers. Probert (2009) investigated teachers' understanding of information literacy and their associated classroom practices in three New Zealand schools. Probert's 2009 findings were that while some of the teachers had a reasonably good understanding of the concept of information literacy, very few reported developing their students' information literacy skills. Williams and Wavell (2006) sought to identify how information literacy is interpreted by teachers in relation to the learning tasks they design, monitor and assess, and the issues related to its integration into the curriculum; the results of the study indicated that teachers understood information literacy to be important for lifelong learning but did not feel able to effectively support the development of information literacy in their students within their current curriculum environments. Alvarez and Gisbert (2015) studied the information literacy levels of secondary school teachers in Spain, and concluded that information literacy is a skill that everyone, especially secondary school teachers

should develop, to function effectively in today's information rich and media-based society. In many countries information literacy skills are integrated into the curricula of secondary school students to enable students to be able to participate in lifelong learning. Examples of these countries include Botswana, Zimbabwe, Nigeria, South Africa, Canada, Australia, Singapore, and Kuwait, among others, but even then, students continue to display a significant lack of IL skills.

Method

On the African continent, many studies have focused on high school students. Tilvawala, Myers and Andrade (2009) in Kenya identified that one barrier to the efficient utilization of ICT in developing countries is the relatively low level of information literacy leading to inability to manipulate and use information effectively. The same sentiments were shared by other researchers in Nigeria (Issa, Blessing & Daura, 2009; Ilogho & Nkiko (2014); Baro & Eze, (2015). Kimani and Onyancha (2015) carried out a study on information literacy skills among incoming first-year undergraduate students in Kenya and found that the majority of students had limited knowledge of strategies used to search for information and were not familiar with the various retrieval tools. Sithole, Chisita and Jagero (2015) revealed that some students in Zimbabwe do not recognize that the information literacy skills they are learning are transferable and applicable to most areas of their studies. Other studies focused on the education of librarians. Baro (2011) surveyed information literacy education in library schools in Africa and established that few library schools offer IL as a stand-alone course in their curricula.

Some studies have been conducted in Botswana. Mutoroke (2009) argued in his study on the integration of IL skills in the Botswana Secondary Education Curriculum that information literacy skills are not taught in secondary schools in Botswana despite the initiatives and measures the Ministry of Basic Education (MOBE) has put in place. Jorosi and Isaac (2008) deduced in a study they undertook in Community Junior Secondary Schools that the teaching of IL skills is subsumed under traditional library instruction or orientation. Despite this, Isaac (2002) revealed that students at senior secondary schools did not have sufficient competence in translating information problems into information needs. Mugabe (2003) acknowledged in his study that in Botswana (North Region) the government has responded positively to IL such that there is a policy on the provision of computer literacy skills training facilities and the general acceptability of the information literacy education concept among the subject teachers, teacher-librarians, school administrators and education officers. This indicates that there is recognition at government level of the need to teach IL skills and efforts are being made in this regard. These efforts include the provision of a library in every school, the training of teacher librarians, library orientations and/or instruction, timetabled reading lessons, conferences and seminars (for teacher-librarians, librarians and School Heads), amongst others. But despite these efforts, problems remain as indicated in studies on the IL skills of undergraduate students entering university. Research by Mutula, Wamukoya and Zulu (2005) established that students who leave secondary schools enter the universities with absolutely no information literacy skills yet there are school libraries in all secondary schools in Botswana.

Most of the studies we reviewed involved researchers asking students questions using either a questionnaire or an interview (self-report) to determine their information literacy skills. Hollis (2018) stated that such studies do not really measure the IL of respondents, but rather are suitable for establishing how they feel about IL. Moreover, such studies may suffer from the Dunning-Kruger effect (Hollis, 2018), in which participants believe that their skills are superior to what they actually are. Our study is a departure in that students were assigned a task based on what they had been taught, and we used their responses to the task to determine their IL level. Further, we interviewed both students and staff.

Study Objectives

The study aimed at achieving the following specific objectives:
1. Determine the information literacy skills of students at Naledi Senior Secondary School (NSSS).
2. Establish how, and the extent to which, IL skills were being taught in the classrooms.
3. Identify possible solutions to address the problem of ensuring information literacy skills are imparted to students in secondary schools.

Study Setting

NSSS is one of 32 senior secondary schools in Botswana that cater for students studying towards their secondary school leaving certificate. The total enrolment of students is approximately 1822 and the classes range from Form 4 to Form 5 (the last two years of high school). The ages of the students range from 15 to 18 years. The school has 130 full-time teachers and 37 support staff. The school library has a teacher-librarian managing it. The teaching of IL is supposed to be integrated into the curriculum through the use of the library. The school library has interventions aimed at fostering IL skills among students such as school library visits, school library reading lessons and library orientation. In all these cases the IL program covers information searching, locating and access, and information evaluation, etc. Although the school library has mainly print resources, students do have access to the Internet.

Research Methodology and Data Collection

We used a single case study design, with the case being NSSS. We targeted students across all categories of the school. The NSSS students are divided into three main categories of triple science, science double and single science. The three main categories are determined by the students' performance in mathematics and science at junior secondary level. For example, a student who obtained an A in sciences and mathematics at junior school level, will do triple sciences while a student who got a D on the same will do single sciences. We obtained a list of students and selected every tenth student in each science category (two per category), for a total of 30 students. We gave the students a written task, followed up by an interview. Yager, Salisbury and Kirkman (2013) argued that using students' written assessment to evaluate their research skills is one mechanism by which students' IL levels can be measured. The students wrote an essay comparing the seven dimensions of religion, showing their similarities and differences. This was a topic that had been covered before in their religious education class. In responding to the question, they were asked to follow the six stages of the Big 6 model. The components of the model were explained to the participants before they began the task. Asking students to carry out their task in stages as defined by the Big 6 model enabled their ability on the different components to be assessed. Students were given one week to complete each stage, a process that took them 6 weeks. A marking key was used to score the students' answers. They were given a score between zero and five, with zero being the lowest and five the highest. The students were further interviewed after the task was assessed to obtain an understanding of how they progressed. Open-ended questions were used, and each interview took an hour.

Teachers were also included in the study. The study interviewed thirteen teachers (13) who were selected from a population of 130 using simple random sampling. The teachers were interviewed to establish their methods of teaching and assigning students' work in an effort to understand whether and how IL skills were taught. The interviews contained open-ended questions and the researchers administered them in accordance with prepared interview guides. The questions put to teachers included a) their understanding of information literacy, b) whether they teach IL skills to students, c) how often they assign work requiring research, d) whether they expect

or demand that students use the library or the internet, e) whether students are able to locate and extract information from sources, and f) whether the students are able to organize information and evaluate it. Each interview ran for about two hours per teacher, and the task was completed in 10 days. The interviews were conducted concurrently with those of the students.

Data Analysis

Analysis of both the task and interview data was conducted qualitatively; themes were identified inductively and coded according to the objectives of the study. The Big 6 model guided the focus of the research as it provided the framework for data analysis. For example, the questions to the students included their responding to how they had broken down the task question into concepts that they then used to search for information they needed. The task given to students, the student and staff interviews provided triangulation of data sources. Credibility of the task given to students was confirmed by other subject teachers and by contextualization of the study within the local educational curriculum. Transferability was addressed by the study's focus on a particular task that was consistent with regular class work. Generalizability beyond the local context could not be certain, except that results may be consistent with those reported broadly in the literature.

Findings

Overall performance of students

The task assigned to the students was graded on each of the six stages using a scale from zero to five points, five being the highest score. Table 1 presents the findings on the task.

Table 1. Summary of students' performance in the task

IL Stage	N Students Scored 3-5 points	N Students Scored 0-2 points
Definition of problem	15	12
Information seeking strategies	13	14
Location of information	14	13
Information use	10	17
Synthesis	7	20
Evaluation	5	22

As Table 1 shows, slightly more than half of the students were able to define the problem as depicted by their response to the question and their scores on the task. Whilst this was the case, about half of the students scored between three and five points on information search, meaning that half the students were able to identify and evaluate the sources they found. Our findings also revealed that despite being able to define their information need students did not demonstrate in-depth understanding of the problem. Most of them were not able to differentiate concepts even though they managed to identify key words; they compared religions instead of comparing the dimensions of religions. Others focused more on examples of religions and the importance of the religion to society. Again, slightly more than half of the students scored between three and five points on location of information. However, when it came to information use, synthesis of information, and evaluation of their work, the majority of students scored between zero and two points out of five, demonstrating that these three areas were the most challenging for the students.

Performance on Each of the Stages

Task Definition. Task definition is the first stage identified in the Big 6 model and involves being able to define the information problem and identify the information needed. This means reaching

an understanding of what one is expected to do. Generally, the students did not reach that understanding as indicated in the section above, they compared religions instead of comparing the dimensions of religion. The students did not do well in defining the key concepts of their written task.

Information Seeking Strategies. Information seeking strategies involve identification of relevant information sources either from the library or any information system. Students should be able to assess the value of various types of print and electronic resources. At this stage, the researchers expected students to identify relevant information sources on the dimensions of religion. Students reported consultation of sources such as, textbooks, Google, Internet, newspapers, magazines, dictionaries, classmate interviews, friends, family, encyclopedia, pamphlets, library books, class notes, teachers, and siblings. Their responses on the sources they used are shown in Table 2.

Table 2. Sources Used by Participants

Broad category	Student responses
Interviewed people (subject experts/ religious people)	*"I collected information from different religious institutions such as the Bahai Faith and Islam institution"* *"I consulted different religious organizations and most of them gave me pamphlets"* *"I asked my friends"* *"I asked my parents and siblings"*
Consulted the internet	*"I consulted the internet to get more information"* *"I searched the internet because it is the best source of information because all the information I needed was there"* *"I used Internet to develop ideas and realized that this was the information I needed because it was related to the question"*
Consulted Religious Education teachers	*"I asked my teachers because I believe they understand the dimensions of religion"* *"I consulted my religious education teacher because she has experience in the issues of religion "* *"My teacher was the best source I could find"*
Consulted the library	*"I consulted the library for information"* *"Consulted library books because they provided me with some background information about the origins of different religions"* *"I consulted the library because it has different sources of information such as newspapers, pamphlets, electronic sources and audio visual material"* *"I consulted the library because it is a convenient place to look for information without being disturbed"*
Consulted Textbooks	*"I consulted Religious Education textbooks and dictionaries because they more reliable"* *"I used my Form 1 Religious Education textbook"* I used my junior Certificate Book on religion because most of the information was there"* *"I used the Religious Education textbook because I believed they are authentic"*
Consulted class notes	*"I used my notebook because class notes are easy to understand"* *"I used my notes from religious education teacher"* *"I used my class notes because the answers I get from them are never wrong"* *"I used notes as provided by my class teacher because I trust the information given by my teacher"*

Class notes were the most frequently used by 14 students. It was important to follow the above question with another question on the justification for selecting particular sources. When students were asked to justify the information sources, the following were some of their responses:

"The class notes were easy to use, reliable, accessible, appropriate, accurate, and authoritative"

"Although the library is useful, some of the books in the library were too difficult for the students to comprehend "

"Preferred books - they are written by experts and can always refer back to them and cite notes where easy to use and summarized"

"I trust the notes that our teacher gave us"

"Class notes made my task easier"

"Most of the answers were available in the notes"

"Religious organizations were informative and they even have pamphlets which backed up their religion and their pamphlets are easier and simple to understand"

Location and Access of Information

This stage requires students to articulate search statements to enable them to locate resources that may contain the information they need. Then, they must engage each source and extract specific information from it through the application of note taking, highlighting, and summarizing. It is apparent from the outcome of the task that this process did not take place very well for some of the students as evidenced by their answers to the task. The researcher specifically asked students who scored low marks on the task what led to this state of affairs, and some of the responses were:

"I am not familiar with the way the library is organized"

"I was overwhelmed by so many responses from the internet"

"I just input the whole question into the computer "

"Locating the information from the textbook was difficulty"

Since some of the students indicated that they had used the library to find information, a question was asked as to how they located the materials from the library. Students in their quest to locate the information needed in the library did a number of things that included browsing the school library shelves (11 students); and use of the Internet (10 students); and use of the reference section (six students). Those who used books were asked how they located the relevant information in the books, and their responses were that they used the back of the book index and the table of contents.

Based on the results of the task, a good number of students did demonstrate some limited skills on locating information within sources, and the teachers confirmed this. The majority of teachers indicated that a few students were able to locate and access information from both library books and the Internet. They indicated that students continue to score low marks in projects and tests in their subject area as well as in class exercises. This is illustrated by the following quotes:

"My students do borrow library books which addresses some objectives of the syllabus but it's not working"

"I usually give them objectives and advise them to consult both the library and the internet'

"I always advise my students to read novels from the library but they continue to disappoint me"

"Before I start a new topic I take my students to the library for research on the previous topic through the use of the internet but still they fail"

Information Use

The ability to use information in IL means that a student is able to utilize the information they get from their sources. This stage involves the process of reading, writing and taking out relevant information from a source. It entails determining the authoritativeness, currency and reliability of

the information. In addition, the ability of students to summarize the relevant information in their own words and paraphrase or even quote important facts and details when necessary for accuracy and clarity. Students were asked whether the sources they found were useful in giving the information they needed, their responses indicated a sense of being overwhelmed, confused, and not knowing how to put the information together to answer the task question:

Table 3. Information Use

Broad category	Student responses
They were overwhelmed	*"Too much information not knowing how to use it answer the question"* *"Not able to organize my thoughts"* *"I couldn't summarize the information"* *"In attempting to answer the question I moved from one source to another and struggled to decide which source to use to answer a particular"* *"The information was difficult to get from different sources"* *"So many sources to be consulted"*
They were confused	*"I was confused I didn't know how to approach the question"* *"I could not properly organize my thoughts"* *"Some sources were confusing, I couldn't decide their relevance to the question"* *"The information on religion was too much such that I didn't know what to use or to leave it left me confused"* *"The information was too much I could not decide which information was most appropriate"* *"There so many sources especially from the internet, choosing the most authentic sources was a challenge"* *"Religious writers were not very open about other religion"*
They could not put the information together to answer the question and it was a tedious process	*"I simply found the whole process to be tedious and tough"* *"Summarizing and paraphrasing the information was not easy"* *"I simply copied the information because paraphrasing was going to take my time"* *"Organizing the ideas to answer the question was not easy"* *"I copied my class notes"*

Synthesis of Information

Synthesis of information calls for students to decide, to create a product, or formulate an answer. It requires them to organize information from multiple sources in a coherent, logical manner, and to present an answer that is well written and organized. The findings from the task given to students showed that seven students had an idea of how to synthesize the information they got from various sources even though they had challenges in citations and references. The majority, being 20 students, demonstrated poor organization of ideas, poor citation or referencing, poor paraphrasing of ideas, points were scattered all over without any logical flow, and finally, poor presentation of ideas. Their responses in the task showed that they could not use information accordingly as shown by extracts:

> *"Religion is three oneness concept, it is in the part"* and *"Information from my Dad Religion comes into been as people perceived their life"*
>
> *"There is no difference between the two religions they both have a congregations that celebrate festivals and ceremonies together and give to the need''*
>
> *"Christianity have a symbol of a crescent and star, they have a pulpit and they have wine, whilst Islam has the cross"*
>
> *"All religions agree that God exist and that people should treat each other well without hurting each other"*
>
> *"All religions would like to practice"*

Although the students consulted different experts and sources, they were unable to synthesize the information as evidenced by poor organization of thoughts and a lack of coherence. Most of the answers given by students in their task were correct but the ideas were just thrown in and lacked synthesis and logical construction. When asked what they do when they synthesize the information obtained during their research their responses were:

> "In most of my researches I just collect what I want so I normally do need to present my ideas effectively, I just summarize the important points "
>
> "I start by seeking information from primary source (my notes) and brainstorming them, my secondary sources include my text book and the internet."
>
> "I have learnt to select accurate information at Form 1 because we were taught only to extract the main points in the reading comprehension when the story was being narrated"
>
> "I invited many people in my presentation like my classmates, parents at home and other people to give me information"

Evaluation

Evaluation is about judging the effectiveness of the product, in this case how well they responded to the task. The overall performance of the students from the task given showed that they generally did not evaluate their final product to ensure that they were doing the right thing. The overall outcome shows that only five students actually evaluated their work (determined from the answers they gave in their task), and the majority (22 students), did not seem to have evaluated their final product in terms of whether they answered the question or how well they responded to the question. This does not only show a deficiency in students' information literacy skills but also in their ability to integrate information sources and to judge if what they produced was really the best in terms of responding to the questions posed in their assigned task. Confirmation of this was found in the following responses given by the students in the interview:

> "I thought it was the best"
>
> "I prefer to use textbooks because of their authoritative nature than magazines or pamphlets"
>
> "I leave the judgment to the teacher who is able to evaluate whether I did well or not"
>
> "Indeed I find the Big six skill very useful because with the steps I managed to answer my assignment despite the challenges that I faced in completing the exercise"
>
> "Information evaluation tools were not available"
>
> "The research was rightly set but I could not find enough information from various sources therefore was more time spent on finding different sources. At the end I decided to use my general knowledge and knowledge we are taught at school"
>
> "My teacher of religious education approved my work"

The Teaching of Information Literacy in NSSS

Teachers' Ability to Define Information Literacy Skills. When the teachers were asked to define the concept information literacy skills, their definitions varied from the very clear, to the not so clear, and finally to not knowing what information literacy was. It was important to establish whether the teachers had any idea at all as to what constituted information literacy. It was evident that the majority of teachers had an idea what information literacy was even though some of them were not very clear. Below are some of their responses to the question:

> "Ability to search and locate relevant information, evaluate and use it to solve a problem"
>
> "Ability to impart skills that enable learners to access information"
>
> "Ability to locate and use information to address an information need"
>
> "Ability to appreciate the need for information and locate and retrieve the information"

"Ability to use the advanced information search strategies, locate relevant information, determine the amount details required, synthesis and evaluate it."
"Ability to solve information problems"
"Ability to look for information from different sources"
"Ability to use the computers

Assigning Individual Work to Students Requiring Research. Teachers were asked whether they gave students assignments that require use of different sources of information. Most of the respondents (nine) were positive about giving student work requiring use of different sources of information while three teachers indicated that they assumed that students already know what to do. Out of these nine teachers who gave assignments, eight indicated that they gave assignments fortnightly. Four teachers indicated that they gave their students assignments once a week. It is apparent from the findings that a good number of teachers seem to be doing something that may lead to students developing information literacy skills.

Students Performance on Assignments. The teachers were asked if students performed well when given tasks requiring research. A total of 10 teachers indicated that students did not perform very well in these tasks, reflecting that most of the students can hardly synthesize and evaluate information. Moreover, it also came that most students require assistance in those tasks. Triple sciences students were among the few who performed better. Those who said students did not perform very well said:

"Students' work output in class exercises or assignment does not reflect possession of strong Information literacy skills apart from a few from Triple Science classes"
"Students cannot properly organize information well"
"I do give my students research work but for most of them laziness is reflected"
"Students cannot arrange their points logically"
"Students' access to the internet is limited "
"Lack of resources limit"
"When students do their research they do not input the right information"
"Most of my students are not computer literate"
Those who indicated that students performed well had this to say:
"Students from Triple science seem to know what they are doing"
"Students from triple science take their work seriously"
"Some students are organized"

When asked whether they try to impart IL skills to students in their daily teaching, teachers said:

"I give my students research "
"I give them the objectives of the syllabus and they present on them"
"At times I give my students reading exercises"
"As a teacher of English Language, I do encourage them to have vocabulary books as I want them to perform well in my subject"

Teachers were also asked whether they ever demand that their students should use the school library or the Internet when carrying out given tasks and they responded:

"I do emphasize to my students that they use the library and the internet so that they perform better"
"Development Studies has a project so they can't afford not to"
"The nature of the subject forces them to"
"I do unfortunately my students fail to organize their work"

Discussion

The results of the study show that NSSS students are not adequately skilled to define an information task because students did not go beyond simple definitions of the concepts and some misunderstood the question as evidenced by their focus on the value of religion in society, whilst others focused on comparing religions and not the dimensions of religion as required by the question. This further demonstrates that secondary school students often fail to interrogate the question before they attempted to answer or respond to the demands of the given task/ assignment. Nielsen and Borlund (2011) on Danish high school students revealed that students have poor information need developing skills. The findings from this study indicated that students failed to clearly define the differences between religions, and others emphasized more the comparison of religions but not the dimensions.

Information seeking strategy can be considered as the gateway to answering or addressing an information need. Yet the findings from the assignment given to the students in this study showed that the information seeking strategy of students was not very good. The over-reliance on a single source could be a threat to the students' future learning experience especially at a higher level as observed by Conley (2007). The assessment of the assignment given to students showed that the students were challenged in locating and accessing information as they experienced some difficulty in locating sources in the school library and on the Internet; their responses in the task also pointed to difficulties in finding appropriate information within sources. Although a good number of students consulted different sources, they focused on the broad concept of religion instead of narrowing it to dimensions of religion as required in the task assigned to them.

According to the Big 6 IL model, students should be able to articulate search statements to enable them to locate resources that may contain the information they need. These include resources such as books, magazines, reference materials, and find the information within each source through the use of tables of contents, indexes, and other resource-specific tools. Then, they must engage each source and extract specific information from it through note taking, highlighting, and summarizing.

The results of this study revealed that even though students were able to locate most of the information, they failed to make use of it. In fact, they were overwhelmed by the information, which translated into their inability to synthesize the information and to organize their ideas effectively and logically. Tilvawala, Myers and Andrade (2009) found that one barrier to the efficient utilization of ICT in developing countries is the relatively low level of information literacy leading to inability to manipulate and use information effectively. Issa and Daura (2009) reiterated that it is the lack of information location and evaluation skills, which impede its effective use. Chu et.al (2012) confirmed students were weak in using sources of information responsibly and ethically. In this study, very few students actually acknowledged the sources of the information they used by including citations in their answer. This study showed that although a few students did have an idea on how to synthesize information they got from various sources, the majority did not. Even with the limited information they were able to locate, students were unable to make use of it. In fact they were overwhelmed by the information, which translated into their inability to synthesize the information and to organize their ideas effectively and logically. The majority of the students demonstrated poor organization of ideas, poor presentation, and poor paraphrasing of ideas as points were scattered all over. Anafo and Filson (2014) confirmed that students have difficulty in identifying significant words, resulting in poor organization of their work. Interviews with the students confirmed this. Chang et.al (2012) confirmed in their study that the least scored skill was synthesis and this finding accorded with the findings of this study.

Although several studies confirm that evaluating information sources is an important part of the research process, results showed that the majority of students did not evaluate their final product (assignment), or how well they addressed the question put to them. The students indicated

that they relied on teachers to do the evaluation for them and some demonstrated lack of appreciation of how they are supposed to evaluate and even what the concept means. This further implies that students often lack the significant evaluation skills that are necessary in order to do well in responding efficiently and successfully to assigned work.

The Extent to Which Information Literacy Skills are Taught in the Classroom

The results from the study show that the majority of teachers were able to clearly define and appreciate the concept of information literacy skills. Probert (2009), who investigated teachers' IL understanding and their associated classroom practices, found that while some of the teachers in had a reasonably good IL understanding, very few reported developing their students' IL skills. This is indeed the case in this study. It is of concern to note that these teachers are the same people who are supposed to teach students IL skills. It is clear therefore, that teachers are greatly in need of IL skills themselves in order to be able to impart the same to students. It was also clear from the findings that although most teachers gave students tasks, it was not aimed at imparting IL skills, but at ensuring learning of content as dictated by the curriculum. Moreover, some of their answers showed them to be of the view that teaching IL skills was not in their purview, and that their focus was rather on completing the syllabus. Williams and Wavell (2006) reported that teachers understood IL to be important for lifelong learning but did not feel able to effectively support the development of information literacy in their students within their current curriculum environments.

Probert (2009) posited that the incorporation of IL skills in the curriculum by teachers is one possible solution for bridging the gap between understanding the need for learning such skills and the impact on information seeking from a young age. While school librarians may not have the time or opportunity to integrate IL skill practice into daily lessons and assignments, teachers, on the other hand, are rightly positioned to have this opportunity in their classroom, and yet they do not seem to be fully prepared for this role. Julien and Barker (2009) observed that leaving information literacy skill development to the post-secondary environment will not ensure that citizens are sufficiently skilled to participate fully in 21st century life, in workplaces or in their personal life contexts.

The centrality of the role of teachers in imparting IL skills was highlighted by Ranaweera (n.d.) who observed that IL programmes would be more successful if the school library staff were able to enlist the co-operation of the teaching and administrative staff. In concurrence, Mutula (2009) argued that secondary schools should be in the forefront in imparting IL skills because they provide a transition to higher education, and may also act as terminal points for most students who do not meet entry requirements to join the university or other tertiary institutions.

Recommendations

Educators in formal learning environments must assume responsibility for IL instruction to ensure that citizens are sufficiently skilled to participate fully in the 21st century life; Mutula (2009) argued that secondary schools should be on the forefront in imparting IL because they provide a transition to higher education, and may also act as terminal points for most students who do not meet entry requirements to join the university or other tertiary institutions. Education officials and school authorities must demonstrate a commitment to IL education (Lombard, 2016).

Teachers and school librarians should collaborate in imparting information literacy skills. Laverty and Reed (2006) highlighted that school librarian can support students learning of IL skills through creating authentic assignments in the form of research topics. Further, IL skills should be integrated into the curriculum. Collaboration could involve teachers and school librarians or in this case, school librarians teaming together to develop assignments that require students using library facilities and consulting with the librarians (Kovalik, Yutzey & Piazza, 2013; Lomard, 2016).

In view of the outcome of the study which highlighted the reluctance of some teachers in relation to IL skills teaching, it is recommended that relevant authorities should train more teacher librarians, who do not only possess an in-depth knowledge of educational pedagogies and a comprehensive appreciation of school curriculum, but are also well-informed about IL theory and practice. Furthermore, subject teachers should also be trained on pedagogy that integrates IL.

Conclusion

Our findings reveal that students had low to fair IL skills in problem definition, information search strategy, and location of information. A little over half of the students were able to define the task at hand in terms of the information required. Moreover, a closer look at the task definition by students also showed that although they were able to define the problem (in this case, the concept of religion), they failed to clearly define the differences within religion, and others emphasized more the comparison of religions but not the dimensions. Students used a number of information sources, although a little over half focused only on single sources of information. The students were challenged in locating and accessing information as they experienced some difficulty in locating sources in the library and on the Internet; their responses in the task also pointed to difficulties in finding appropriate information within sources.

Use of information, synthesis, and evaluation posed the more significant difficulties for the students. They scored lowest in evaluation, followed by synthesis, and finally information use. Furthermore, the results revealed that even though students were able to locate most of the information they failed to make use of it. In fact, they were overwhelmed by the information, which translated into their inability to synthesize the information and to organize their ideas effectively and logically. It also came out that although students demonstrated awareness of the concept of evaluating information sources, they still did not evaluate their work.

Whilst interviews confirmed that most teachers were aware of information literacy and knew how to define it, some showed elements of indifference and ignorance towards it. The study revealed that teachers assigned students independent work at different intervals as the majority of them gave students assignment on a weekly to monthly basis. However, it was also clear from the findings that although most teachers gave students tasks, it was not aimed at imparting IL skills, but at ensuring learning of content as dictated by the curriculum. Indeed, some of their answers showed them to be of the view that teaching information literacy skills was not in their purview, and focus was rather on completing the syllabus.

References

American Association of College and Research Libraries (2000). Information literacy competency standards for higher education. Retrieved from http://www.ala.org/acrl/standards/standardslibraries

American Library Association (2000). Information literacy competency standards for higher education. Retrieved from http://www.ala.org.template

American Library Association (2009). Presidential Committee on Information Literacy: Final Report. Retrieved from http://www.ala.org/acrl/publications/whitepapers/presidential

Anafo, P. and Filson, C. (2014). Promoting information literacy among undergraduate students of Ashesi University College. Library Philosophy and Practice. Paper 1032. Retrieved from https://digitalcommons.unl.edu/libphilprac

Baro, E.E. (2011). A survey of information literacy education in library schools in Africa. *Library Review, 60* (3), 202-217.

Baro, E. E. & Eze, E. M. (2015). Colleges of Education librarians in Nigeria: An investigation into the self-perception of ICT-related information literacy skills. *Communications in Information Literacy 9*(2), 198-209.

Brown, G. (2001). Locating categories and sources of information: how skilled are New Zealand children? *School Library Media Research, 4*. Retrieved from

http://www.ala.org/aasl/sites/ala.org.aasl/files/content/aaslpubsandjournals/slr/vol4/SLMR_Locating Categories_V4.pdf

Bruce, C., Edwards, S. & Lupton, M. (2006). Six frames for information literacy education: a conceptual framework for interpreting the relationships between theory and practice. Retrieved from http://www.ics.heacademy.ac.uk/italics/vol5-1/pdf/sixframes_final%20_1_.pdf

Chang, Y., Zhang, X., Mokhtar, I. A., Foo, S., Majid, S., Luyt, B. & Theng, Y. (2012). Assessing students' information literacy skills in two secondary schools in Singapore. *Journal of Information Literacy. 6*(2), 19-34. Retrieved from http://ojs.lboro.ac.uk/ojs/index.php/JIL/article/view/PRA-V6-I2-2012-2

Chu, C.B.L., Yeung, A.H.W. & Chu, S.K.W. (2012). Assessment of students' information literacy skills: a case of a secondary school in Hong Kong. Paper Presented at CITE Research Symposium, 2012, The University of Hong Kong. Retrieved from http://web.hku.hk/~samchu/docs/Chu-2012-Assessment-of-students-information-literacy.pdf

Conley, D. T. (2007). Redefining college readiness. Retrieved from http://www.aypf.org/documents/RedefiningCollegeReadiness.pdf

Cunningham, V. & Williams, D. (2018). The seven voices of information literacy (IL). *Journal of Information Literacy 12*(2), 4-23.

Eisenberg, M. & Berkowitz, R. (1995). The six study habits of highly effective students: using the Big Six to link parents, students and homework. *School Library Journal 41*(8), 22-25.

Foo, S., Majid, S., Mokhtar, I.A., Zhang, X., Chang, Y., Luyt, B. & Theng, Y. (2014). Information literacy skills of secondary school students in Singapore. *Aslib Journal of Information Management 66*(1), 54-76.

Gisbert, M. & Alvarez J-F. (2015) Information literacy grade of secondary school teachers in Spain - beliefs and self-perceptions. *Communicar 23*(45). Retrieved from: https://www.researchgate.net/publication/276114981_Information_Literacy_Grade_of_Secondary_School_Teachers_in_Spain_-_Beliefs_and_Self-Perceptions

Hollis, H. (2018). Information literacy as a measurable construct: a need for more freely available, validated and wide-ranging instruments. *Journal of Information Literacy, 12*(2), 76-88).

Ilogho, J. E. & Nkiko, C. (2014). Information literacy search skills of students in five selected private universities in Ogun State, Nigeria: A survey. *Library Philosophy and Practice*, Paper 1040. Retrieved from http://digitalcommons.unl.edu/libphilprac/1040

International Reading Association (2005). Improving the quality of literacy learning in the content areas. Situational analysis of secondary level education in Botswana. Retrieved from https://unesdoc.unesco.org/ark:/48223/pf0000142225

Issa, A. O., Blessing, A. & Daura, U. D. (2009). Effects of information literacy skills on the use of e-library resources among students of the University of Ilorin, Kwara State, Nigeria. *Library Philosophy and Practice*, Paper 245. Retrieved from https://www.ajol.info/index.php/njt/article/download/174988/164405

Isaac, G.G. (2002). Information literacy among form five students at the four government senior secondary schools in Gaborone, Botswana. Retrieved from https://researchspace.ukzn.ac.za/handle/10413/3325

Jorosi, B. N. & Isaac, G.G. (2008). Teaching information literacy skills in community junior secondary schools in Gaborone, Botswana. *Information Development, 24*(2), 123-134.

Julien, H. & Barker, S. (2009). How high-school students find and evaluate scientific information: a basis of IL skills development. *Library and Information Science Research, 31*(1), 12-17. doi:10.1016/j.lisr.2008.10.008

Kimani, H. N. & Onyancha, O. B (2015). Information literacy skills among incoming first-year undergraduate students at the Catholic University of Eastern Africa in Kenya, University of South Africa, Pretoria. Retrieved from http://hdl.handle.net/10500/14461

Kovalik, C., Yutzey, S., & Piazza, L. (2013). Information literacy and high school seniors: Perception of the research process. *School Library Research, 16*. Retrieved from http://www.ala.org/aasl/slr/volume16/kovalik-yutzey-piazza

Laverty, C., & Reed, B. (2006). Inspired teachers: Providing a classroom context for information literacy and practice. In T. Cooper T & D. Cook D (Eds.) *Teaching information literacy skills to education and social sciences students and practitioners: A second casebook of applications* (pp.68-83). Chicago IL: Association of College and Research Libraries.

Lloyd, A. (2003). Information literacy: the meta-competency of the knowledge economy? An exploratory paper. *Journal of Librarianship and Information Science, 35*(2), 87-92.

Lombard, E. (2016). Information fluency: not information literacy 2.0. *Journal of Academic Librarianship, 42*, 281-283.

Majid, S., Chang, Y. & Foo, S. (2016). Auditing information literacy skills of secondary school students in Singapore. *Journal of Information Literacy, 10*(1), 44-66.

Merchant, L. & Hepworth, M. (2002). Information literacy of teachers and pupils in secondary schools. *Journal of Librarianship and Information Science 34*(2), 81-89.

Milliari, A., Aspasia, S.K. & Ilias, N. (2014). Information literacy skills of Greek high-school students: results of an empirical survey. *Qualitative and Quantitative Methods in Libraries (QQML) 1,* 271 -281.

Mugabe, M.M. (2003). Information resources, information skills and education: an exploratory study of information literacy education in community junior secondary schools in the North-East district of Botswana and the role of teacher librarians and school libraries. Retrieved from https://open.uct.ac.za/handle/11427/10927

Mutula, S. M. (2009). Towards an information literacy framework for secondary schools in Botswana, BLA 2nd National Conference. Retrieved from http://www.bla.org.bw/event-details/eid/4/botswana-library-association-(bla)-2nd-national-conference/

Mutula, S. M., Wamukoya, J. & Zulu, S.F. (2005). An evaluation of information literacy competencies amongst library and information science students at the University of Botswana. *Journal of Interlibrary Loan, Document Delivery & Electronic Reserve, 15*(3), 77-93.

Mutula, S., Kalusopa, T., Moahi, K.H. & Wamukoya, J. (2006). Design and implementation of an online information literacy module. *Online Information Review, 30*(2), 168-187.

Mutoroke, A. (2009). The integration of information literacy skills in the Botswana Secondary Education Curriculum. Retrieved from http://www.bla.org.bw/event-details/eid/4/botswana-library-association-(bla)-2nd-national-conference/

Nielsen, B. G. & Borlund, P. (2011). Information literacy, learning, and the public library: A study of Danish high school students. *Journal of Librarianship and Information Science 43*(2), 106-119.

Pinto, M., Cordin, J.A. & Diaz, R. G (2010). Thirty years of information literacy (1977-2007): A terminological, conceptual and statistical analysis. Retrieved from http://www.sagepub.co.uk/journalsPermissions.nav

Prasad, H.N. (2000). Information needs and users. Retrieved from http://lemi.uc3m.es/est/forinf@/index.php/Forinfa/article/viewFile/33/34

Probert, E. (2009). Information literacy skills: teacher understandings and practice. *Computers and Education, 53*(1), 24-33.

Ranaweera (n.d). Importance of information literacy skills for an information literate society. Retrieved from https://core.ac.uk/download/pdf/11884153.pdf

Rehman, S. & Alfaresi, S. (2009). Information literacy skills among female students in Kuwaiti high schools, *Library Review, 58*(8), 607 - 616.

Scott, T.J., & O'Sullivan, M. (2000). The Internet and information literacy: taking the first step towards technical education. *The Social Studies, 91*(3), 121-126.

Sithole, N., Chisita, C.N. & Jagero, N. (2015). Information literacy evaluation: a case study of the Africa University, Mutare, Zimbabwe. *BJESBS 9*(4), 341-351

Sundin, O. & Francke, H. (2009). In search of credibility: pupils' information practices in learning environments. *Information Research: An International Electronic Journal, 14*(4), 418. Retrieved from http://informationr.net/ir/14-4/paper418.html

Tilvawala, K., Myers, M. D. & Adrade, A.D. (2009). Information literacy in Kenya. *EJISDC, 39* (1), 1-11.

Vietnamese German University Guide. Retrieved from https://vgulibguide.wordpress.com/info-literacy-skills/big6-model/

Williams, D. A. and Wavell, C. (2006). Information literacy in the classroom: secondary school teachers' conceptions. *Journal of Librarianship and Information Science, 39*(4), 199-212.

Yager, Z., Salisbury, F. & Kirkman, L. (2013). Assessment of information literacy skills among first year students. *The International Journal of the First Year in Higher Education, 4*(1), 59-71.

Author Notes

Christinah M. Dipetso is currently serving as a Senior Teacher 1 Library (Teacher Librarian) at Naledi Senior Secondary School where she also teaches Religious Education. She has had experience in heading various committees in the school such as Library Committee, School Environmental committee as well as the Traditional Dance team. Christinah is also an active member of the school intervention team, sports committee, anti-drug committee as well as the curriculum committee.

Kgomotso Moahi is an associate professor in the Department of Library and Information Studies, University of Botswana, where she teaches information science, health informatics, and information management. Kgomotso has researched on the use of ICTs in information management and librarianship; promotion and protection of indigenous knowledge; as well as health informatics. Kgomotso is currently researching on the state of secondary school libraries in Botswana and their impact on school leaving examination results.