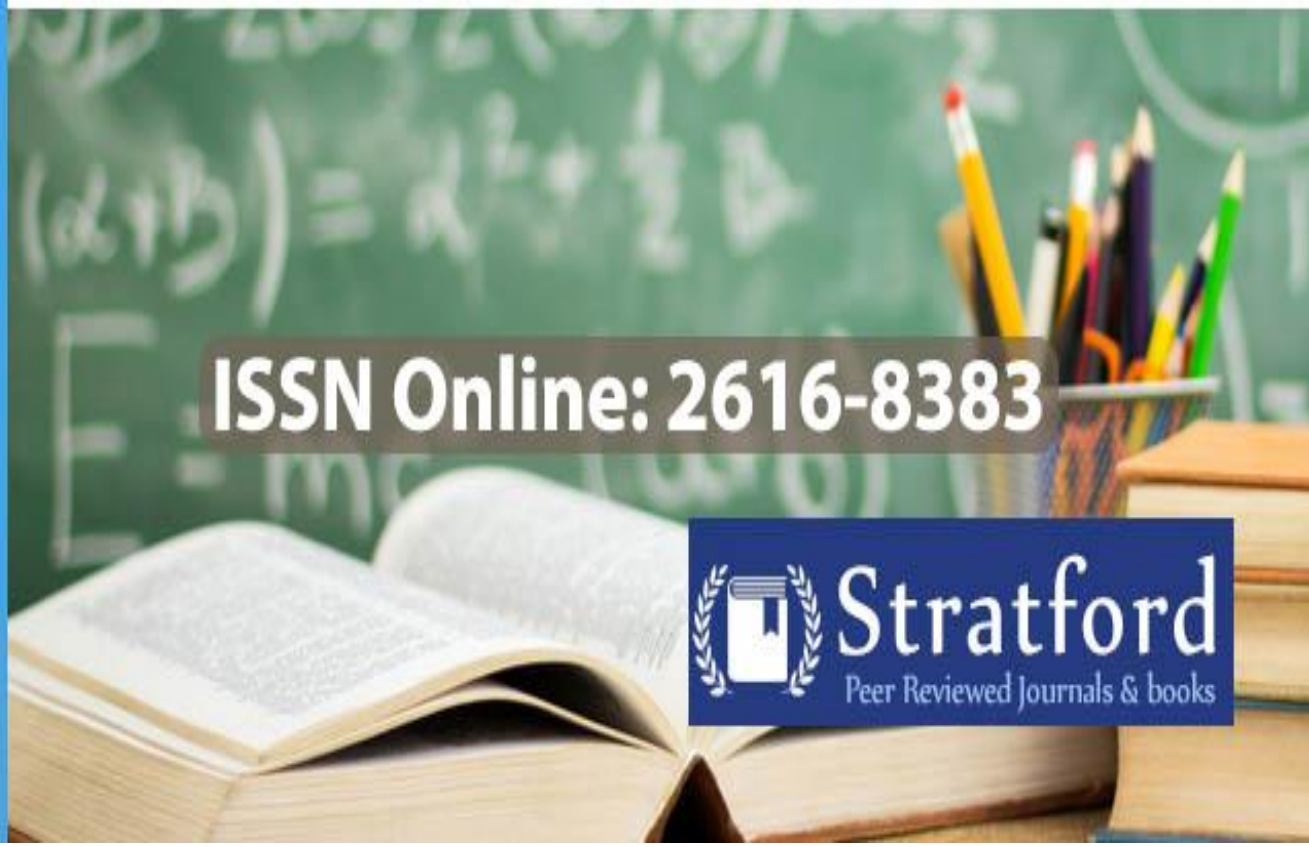
Journal of Education



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ISSN: 2616-8383

Stratford Peer Reviewed Journals and Book Publishing
Journal of Education
Volume 4||Issue 1||Page 51-75 ||May||2021|
Email: info@stratfordiournals.ora ISSN: 2616-8383

Information Literacy Competencies in Secondary Schools in Kenya

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***How to cite this article*: Gekara M. M., Namande B. W & Makiya C. R (2021). Information Literacy Competencies in Secondary Schools in Kenya. *Journal of Education. Vol* 4(1) pp. 51-75.**

Abstract

The knowledge economy is marked by an increasing need for information skills at all levels including schools, universities, workplace and ordinary life. Therefore, education stakeholders should campaign for the teaching of information literacy skills at all levels of learning since they are life skills. The state of information literacy competencies among secondary school students in Kenya has not been adequately investigated to determine their prowess. Therefore, this study was aimed at assessing information literacy competencies among secondary school students using Nakuru County as a study site. The study was premised on the Big6 Skills information literacy theory. The study was based on a pragmatic paradigm where both quantitative and qualitative approaches were adopted. Simple random sampling was used to draw teacher and student respondents while purposive sampling was used to select school/teacher librarians from the targeted population which comprised of 288 teachers, 1785 students and 12 school/teacher librarians from 12 sampled schools. This resulted to a sample size of 266 teachers, 1189 students and 12 school/teacher librarians. Data was collected using questionnaires and interview guide. Statistical Packages for Social Sciences was used to analyse quantitative data while thematic analysis was used for qualitative data. The findings of the study indicate that most of secondary students in Nakuru County were not information literate. They relied on teachers to help them understand class assignments. The study concludes that teaching information literacy skills to secondary school students may lead to effective and efficient use of school libraries and flourish

educational achievements hence turn around the dwindling standards of our educational sector. The study recommends that information professionals should be in the forefront in advocating for the inclusion of information literacy at all levels of education and for the incorporation of information literacy in the secondary schools' curriculum. It also recommends for teacher-librarian collaboration in planning information literacy issues. Therefore, information literacy should be included in the university curriculum in order to equip graduate teachers with these requisite skills which they will in turn inculcate to secondary school students. Finally, the study recommends for an IL programme to institutionalize information literacy in secondary schools.

Key words: *Information, Information Literacy, Information Literacy Competency, Secondary Schools*

1. Introduction

The information environment has become complex and is constantly changing due to technological developments that have made access and retrieval of information become complex. The changes have made information literacy (IL) to be recognized as the critical tool for the 21st century (Adeyemi, 2017). The author further suggests that secondary school students should be information literate for them to succeed in their academic endeavours. IL is considered as a tool to individual empowerment and community development. Therefore, it is important to equip information users with particular reference to secondary school students with IL skills to help them know when they need information, access, evaluate and use it ethically and morally in the construction of individual knowledge for immediate and lifelong learning. Contexts in which people use IL skills may vary from one user group to another. Stakeholders of an education system of a country among them information professionals, teachers, curriculum developers, parents, students and researchers all need to understand the role of information literacy in the lives of teachers and learners. Students need information literacy skills to help them supplement classroom learning with information that they can access and use appropriately. It may be unclear to some of the stakeholders about the manner in which information users in secondary schools navigate through the deluge of information in order to achieve their goals. Despite the acknowledgement that information literacy skills are necessary for learning, there is lack of a clear explanation on how this can be achieved in formal education (Meghann, 2015). People may experience a range of information related problems including the use of low quality information, information overload and inability to find the needed information if they lack the necessary skills to search, locate, process, evaluate and use information (Anyaoku, Anunobi & Eze, 2015).

2. Statement of the Problem

Information literacy is essential for information users in secondary schools especially in the knowledge economy as it equips them with skills to know when and where to locate information. Scholars (Adeyemi, 2017; Zulkifpeli, Yu, & Ismail, 2016; Malliari, Togia, Korobili, & Nitsos, 2014) have recognised the significance of information literacy in school contending that information literacy is of value to every aspect of a human being and a prerequisite in the learning process at all levels. Information literacy skills are important for secondary school students for successful learning in an information-rich future. However, research shows that majority of students graduate from secondary schools without adequate IL skills to enable them

be independent learners in their academic endeavours (Varlejs, Stec, & Kwon, 2014; Raish & Rimland, 2016; Saunders, Severyn, & Caron, 2017). Additionally, students' information literacy skills have been found to be weak in specific areas including inability to use Boolean operators, organize literature and identifying appropriate sources of scientific literature (Michalak, & Rysavy, 2016; Maurer Schlögl, & Dreisiebner, 2016). This study assessed information literacy competencies among secondary school students using Nakuru County, Kenya as a study site.

3. Research Objective

The purpose of the research was to assess information literacy competencies among secondary school students in Nakuru County, Kenya.

4. Theoretical Framework

A theoretical framework is part of a study that describes the research question and the line of inquiry and methodology used to answer it. There are different types of models that deal with IL facets including the PLUS (Purpose, Location, Use, Self-evaluation) model (Herring. 1990); the Information Search Process (ISP) (Kuhlthau, 1993); the Seven Faces of Information Literacy (Bruce, 1997); the Seven Pillars of Information Literacy Skills (SCONUL, 1999); and the Big6 Skills (Eisenberg & Berkowitz, 1990). The study was guided by the Big6 Skills for Information Literacy model. The Big6 Skills for information literacy was developed by Mike Eisenberg and Bob Berkowitz in 1990. It is a widely-used approach to teaching information and technology skills in the world particularly in higher education institutions, corporate and adult training programmes. The Big6 information problem-solving model is appropriate when people need and use information as it integrates information search and use skills along with technology tools in a systematic process to find, use, apply, and evaluate information for specific needs and tasks (Fisher, Erdelez, & McKechnie, 2006). The Big6 Skills is a six stage model that help people to solve a problem of make a decision using information. The six stages include task definition, information seeking strategies, location and access, use of information, synthesis and evaluation (Eisenberg & Berkowitz, 1990). Therefore, the Big6 Skills is a process model of how people solve an information problem.

i) Task Definition

At this stage the user analyses the information problem to enable him or her identify the information required to solve the problem. For example, a student gets to understand the question which enables him/her to categorize the specific information needed to help in answering the question. The stage entails the identification of key words and the recognition of the requisite type and quantity of information needed. Task definition will guide the researcher in understanding how students define their problems and information needs in accomplishing their assignments.

ii) Information Search/ Seeking Strategies

The stage involves determining the range of possible sources to be used and evaluating them to select the best sources for use. Users consult a variety of sources such as information professionals, teachers, fellow students and documentary sources. In this stage of information seeking strategies, students make decisions and select sources that provide information which

appropriately respond to the defined task. Search strategies will bring to light on how students determine the range of possible resources to be used for their assignments.

iii) Location and Access

Location and access involves users locating sources intellectually and physically to find information within the sources consulted.

Once the student has decided on the appropriate strategy, he or she employs IL skills to find sources from either the library or on the web, and locate the information within the sources. Information is sought for from the located sources using indexes, bibliographies or table of contents. Location and access will put into perspective on how students located sources of information and found information within these sources to carry out their work.

iv) Use of Information

In this stage, users engage with information through various ways. For example, once the students have been able to locate and access a source, they engage them (sources) either through reading, viewing, listening or interacting with the information and decide on what is valuable for their particular situation. It is important for students to understand the ideas of plagiarism, copyright and citation. Relevant information is extracted using notes, copies, making summaries, and doing citations of sources. Use of information stage, will assist the researcher in understanding how students engage with the located and accessed sources of information and on how they extract relevant information from them for their assignments.

v) Synthesis

This stage involves organising of information from multiple sources and presenting the information in response to the query being solved. Synthesis can either be simple (relaying a specific fact) or complex (involving several sources, a variety of media or presentation formats, and the effective communication of abstract ideas). In this stage is where real learning takes place as students organize all the collected information and combine it with their pre-existing knowledge and experiences. It is the stage where students decide on how to present their report, how will it look like and the medium to be used. The stage will enable the researcher to appreciate on how students organise information from multiple sources to realize their academic objective.

vi) Evaluation

Finally, evaluation determines how effectively and efficiently the information problem-solving process has been conducted. Effectiveness involves observing the progress throughout the process and also determining if the task has been successfully completed at the end. Efficiency is the judgement about the quality of the process in terms of time and effort which should take place at every step and also take into account of all the range of actions taken to address the sub-skills. At this stage in the process, students have time to examine and refine their final report. The evaluation stage, will bring to bear on how students evaluated the information sources they used in the accomplishment of the information problem.

The study applied all the six stages of the model since students go through all the stages in solving academic problems although the stages may not follow each other systematically. People may go through the stages intentionally or unintentionally when they seek or apply information to solve a problem or make a decision (Eisenberg & Berkowitz 2000). According to Eisenberg

(2008) it is not necessary to complete the stages in a linear or ordered procedure, and a given stage does not have to take a lot of time. The Big6 skills can be applied across situations to school, personal, and work settings. For example, students can use the Big6 Skills whenever they need information to solve problems, make decisions, or complete tasks. Integration of the Big6 Skills in a school curriculum would help students to learn and apply them in their studies. The Big6 Skills provides a framework for students on how to handle assignments and tasks. On the other hand, teachers use the Big6 skills when giving various tasks and assignments, talking students through the process for a particular assignment and asking key questions. The Big6 skills can be used as a framework for a set of diverse problem-solving skills. For example, it provides teachers a classic set of skills that students should master for them to be successful in any learning context. The Big6 skills was ideal to students and teachers in the context of learning, instructing and providing information literacy though Johnston and Webber (2003) criticise it for being too mechanistic. Similarly, Eisenberg *et al.* (2004) avers that the Big6 advances that users often lack well-formed statements of information needs. They are further recognisant of the fact that application of the model especially this time of information overload can easily overwhelm students. The Big6 as an information problem-solving model is applicable whenever people need and use information hence the reason for embracing it to guide this study. The study used the Big6 Skills model because it was relevant in explaining the necessary abilities secondary school students require to access, evaluate and use information in solving their tasks related to their studies. The model offers a simple, flexible and broadly applicable approach of learning and teaching essential IL skills

5. Literature Review

Information literacy skills helps students to identify their information need and directs them on how to manage the process in an efficient way. Assessing IL skills in secondary schools would provide the stimulus of understanding students' prowess in IL skills. Assessment may help in identifying students' strengths and weaknesses hence aid in the formulation of appropriate pedagogical changes and intervention programmes (Foo, Majid & Chang, 2017). Yesen, Guldina, Bektas and Indira (2017) observe that information competency is one of the inherent qualities of a person living in the knowledge economy. Information literacy competency includes skills of information handling, readiness and capability to use modern information and communication technologies. It is the possession of necessary knowledge, skills and attitudes to effectively apply information technology, to collect, analyse, assess, organize and synthesize information for problem solving.

Chang, Lian, Zhang, and Wang (2016) explain IL competency to be the capacity of people to recognize their information needs; locate and evaluate the quality of information; store and retrieve information; make effective and ethical use of information and apply information to create and communicate knowledge. Most commonly, information literacy competency has been defined as the ability to have knowledge on when and why information is needed, where to find and access it, how to evaluate, synthesize, use and transmit it ethically and legally (Anunobi & Udem, 2014). One has to have IL skills to determine the extent of information needed, access it, critically evaluate the needed information and its sources. Also be able to synthesize, use and communicate it ethically and legally; and attitude towards acquisition of these competencies. Information literacy competency therefore can be summarized as a combination of knowledge,

skills and attitudes towards recognizing when and why information is needed, where to find it, how to evaluate, manage and apply it, synthesize, use and communicate it ethically and legally.

There are three major IL assessment approaches including knowledge and skills tests, performance assessments and informal assessment (Foo et al., 2017). Knowledge and skills tests are widely used as they are less resource intensive and their results can be used for comparisons at different levels from the individual to institutional. Examples include Standardised Assessment of Information Literacy Skills (SAILS), Tool for Real-time Assessment of Information Literacy (TRAILS) and Research Readiness Self-Assessment (RRSA) (Foo et al., 2017). Although these tests were initially made to test IL skills for college and university students in the United States they have been adopted by other schools and institutions all over the world. These standardised tests permit testing of large number of students and can easily be adopted for use at other institutions. Performance assessment approach entails users creating products that will demonstrate their ability in IL through completing realistic chores under the observation of the investigator. It is aimed at testing higher level skills and it is more resource intensive. It includes methods such as bibliographic assessment, observation of student behaviour, and simulation (Oakleaf & Kaske, 2009). Informal assessments are the easiest as they integrate IL training sessions to assess various IL fields such as cognitive, affective and behavioural (McCulley, 2009). Assessing IL skills of secondary school students provides the avenue of understanding their IL prowess by identifying areas of strengths and weaknesses.

Majid, Foo and Chang (2020) investigated IL skills of secondary school students in Singapore. The authors observe that students have middle level IL competencies since they had an overall mean score of 52.6 per cent. Students perform well in defining information tasks and analysing information gaps whereby they had a mean score of 60.5 percent. However, they perform poorly in selecting information sources and appraising the information process and product with a score of 47.4 and 48 percent respectively. All education stakeholders have a role to play in ensuring the success of IL programmes in secondary schools. Similarly, Foo, Majid and Chang (2017) assessed knowledge of Singapore students' understanding and ability in basic IL skills. The authors note that students scored an overall mean of 53.39 percent, which was below the 60 or 70 percent recommended. The authors note that students perform poorly in synthesising and using information with a score of 45.89 percent and in seeking information from sources with a score of 48.81 percent. Students experience challenges in identifying vital information from an information task, inability to understand the use of reference sources and the librarians' role. Students were also unable to differentiate facts and opinions and experience difficulties in embracing best strategies of searching for information. In regard to gender girls performed better than boys with a mean score of 55.38 and 51.50 respectively. On the other hand students who have access to the Internet at their homes scored a mean of 53.67 while those without internet access had a mean score of 45.81 percent (Foo et al. 2017). On the contrary, Bakbak (2019) observes that gender or the duration of internet use has no effect on IL levels. Understanding strengths and weaknesses in IL competencies of students and the underlying factors would help Library and Information Science (LIS) professionals and education stakeholders in formulating intervention measures that may be used to rectify the situation.

Auditing IL skills of secondary school students Majid, Chang and Foo (2016) found out that students possessed middle level IL skills. Students' use of school libraries and information resources was low. The authors observe that majority of the students sought for help from their colleagues and friends in solving their information related problems and only a few consulted

library staff. The underutilization of these resources may be attributed to inadequate IL skills among students. Libraries are an integral unit of the learning process therefore their use should be encouraged by equipping students with IL skills. Foo *et al*. (2014) observe that school libraries in Singapore were underutilized as students were not using them when carrying out information tasks. Students did not consult librarians whenever conducting information tasks. Majority of the students possessed lower-order IL skills including task definition, information seeking strategy, and location and access as they were able to define their tasks. However, they performed poorly in higher-level skills such as information use, synthesis and evaluation since they could not effectively organize information (information synthesis). Students require IL skills in order to navigate through their studies successfully. Inadequacies in IL skills may affect students' learning process thus hindering their success. Therefore, school librarians in conjunction with teachers have a role to play in teaching IL skills in secondary schools. IL skills are necessary in any learning situation hence the need for this study on assessing of IL competencies among secondary school students.

Ngo, Pickard and Walton (2019) investigated IL capabilities of Vietnam's upper secondary schools and found out that students were ill-equipped with IL skills. The authors note that much work needs to be done to improve IL capabilities of Vietnam's upper secondary students. Salient differences in IL capabilities were observed with regard to gender whereby female students performed better than male students (Ngo, Pickard & Walton, 2019: Henkel, Grafmüller, & Gros. 2018). Chang et al. (2016) studied the influence of students' IL competency on creativity and found out that students' IL had a positive impact on their creativity. Students with good IL skills were more creative. Chan (2016) assessed IL skills of freshmen and second year students in Hong Kong Baptist University and found out that only 16% of the students scored 70 percent or more. However, the percentage improves to fifty percent in second year as a result of introducing IL education programme. Inclusion of IL into education programmes helps students to learn IL skills and understand the application of the skills in their learning process.

Adeyemi (2017) examined information literacy levels among secondary school students in Nigeria and found out that majority of the students were able to identify their lack of knowledge in a subject area. Students had the ability to articulate current knowledge on a topic. The author observed that students were unable to identify specialized search tools and incapable of using Boolean operators in their search for information. In addition the author notes that IL skills are important for every human being since information is of essence to everyone and for every walk of life. Therefore, IL skills should be imparted to secondary school students earlier in their academic lives to empower them become independent information users. Mckeever (2013) investigated IL skills of year-14 pupils and found out that they did not know what IL entails. However, to some extent they were aware of the importance of IL skills in their lives. The author also notes that students' IL competencies were undeveloped. Referring to Botswana, Dipetso and Moahi (2019) assessed IL skills of secondary school students and found out students performed poorly in the use of information, synthesis and evaluation of information. However they were of average performance in problem definition, information search strategy and location of information.

Information literacy skills are competencies for developing strategies that help in locating and assessing information (Terfa, Jacob & Helen, 2015). The authors summarize qualities of an information literate person to include: ability to recognize when information is needed, abilities to locate, evaluate and use of the retrieved information effectively. The authors also observe that

teaching of IL skills across the education system may produce information literate students. In addition, they note that IL skills were not being taught in secondary schools in spite of the initiatives and measures by the Federal Ministry of Education that was spearheading the integration of IL skills in the secondary education programme in Nigeria. It is the responsibility of the Ministry of Education to guide on the content of secondary school curriculum. Therefore, the onus of integrating IL in secondary school curriculum in Kenya squarely relies in the Ministry of Education docket.

Zhu, Yang, MacLeod, Yu and Wu (2019) investigated students' IL in China and found out that students' IL prowess is influenced by ICTs usage and interest by parents as well as teachers. The authors further note that students with ICTs interest had higher levels of IL. However, they observe that ICTs usage both in-school and out-of-school did not significantly influence students' IL levels. Parents and teachers embracing ICTs would have a positive impression on students' learning IL skills bearing in mind that ICTs is a subset of IL thus encouraging learning of IL practices. Heath (2015) highlighting the importance of IL of Jamaican grade ten students. The author found out that mastery of IL skills by students encourages students' voices to be heard from their work. For example, the skills empowers students to participate in making decision for their lessons. IL skills help students to fully participate in their learning process through encouraging participation hence they own the process.

Sawe (2017) examined IL skills of postgraduate students at Strathmore University and found out that there is a need for re-evaluation of the structure and content of IL programme being used with the aim of developing a programme which can assist in instructing IL skills among this group of people. She further observes that inculcating IL skills to postgraduate students would result to maximum utilization of information resources. Equipping learners with IL skills regardless of their level of education would help them to be independent learners as they would be able to use library resources and access online databases independently. Dorvlo (2016) investigated IL levels among postgraduate students of tertiary institutions in Ghana and found out that majority of them were not information literate. They were unable to use search strategies, search tools and incapable to effectively evaluate information. However, some of them knew to identify concepts and were conversant with copyright issue. Inadequacy of IL skills among postgraduate students in tertiary institutions may be attributed to lack of a proper structured IL programme at the undergraduate level. Embedment of IL programme in university education as a major course may help in equipping students with these requisite skills.

Okeji, Ilika and Baro (2020) assessed IL skills of undergraduate students in Nigerian universities and found out that majority of LIS final year students were of average standards. Students were assessed average since they were able to access journals, use internet information and online databases when carrying out research studies. The authors also note that students were cognizant that in evaluating online information resources they were to consider attributes including well-known author(s), current information, credible information, accurate and relevant information. Ability to organize information and integration of ideas from the consulted information was rated highly. However, students have challenges in correctly paraphrasing ideas to avoid plagiarism and citation and referencing styles. Equipping students with IL skills may assist them to learn aspects regarding intellectual property rights of information. This would enable students carry out research projects seamlessly.

Similarly, Israel (2018) assessed IL skills of LIS postgraduate students at Nnamdi Azikiwe University in Nigeria and found out that postgraduate students are information literate but experienced challenges in creating content in blogs, YouTube, and personal web pages for different audiences. The author recommends for an improvement of postgraduate students' publishing literacy skills. This may assist them to have skills that could help them acquire necessary skills of formatting and publishing research and ideas in textual and multimedia formats. The skills may perhaps support them in creating content on blogs, YouTube and personal web pages for different audiences. Additionally, Issa et al. (2015) conducted a study of assessing IL competencies of final year undergraduate students at the University of Illorin, Kwara State Nigeria. The study found out that for students to develop the ability to recognize, locate, evaluate and acquire the needed information they had to be information literate. The authors further observe that IL competencies were of significance to students as having IL skills students may successfully conduct research a process that involves reading, learning, generating of intellectual conversations, developing their own ideas and acknowledging ideas of others. IL has become a core requirement for all students in order for them to be grounded in the use of information for their studies and lifelong learning.

Islam and Rahman (2014) assessed IL competency of the faculty of arts students at the University of Dhaka in Bangladesh and found out that students have limited IL skills as a result of its exclusion from their academic course curriculum. The authors advocate for the incorporation of IL programme in the course curriculum and the inclusion of writing, discussion and any other relevant issues that may equip students with IL skills. Integration of IL programme in a course curriculum would enable students to learn IL skills. Somaratna, (2015) assessed credit based IL modules for science undergraduates and found out that majority of the undergraduate students did not possess skills of using different information resources of the library for their academic activities. However, students were noted to have expanded their quality of knowledge and retrieval of authentic and relevant information as a result of an IL programme. The underutilization of different information resources of the library may be attributed to a student's population lacking IL skills.

Investigating the status of IL among undergraduate students at Sultan Qaboos University, Oman (Al-Aufi & Al-Azri, 2013) found out that students IL skills in synthesising information were rated highly. Students have the ability to summarize, combine and link information, use consistent style of organization and different ways to display information. However, students were unable to locate and access information. Gowri and Padma (2018) investigated IL skills of engineering students of PSR Engineering College in India. The authors found out students have the aptitude to identify concepts and terms related to their information needs, ascertaining their information gaps, defining the scope of their information need, and using a variety of retrieval tools and resources. However, students have challenges in combining new and existing knowledge, using new tools, identifying controlled vocabularies and taxonomies to assist searching, and detecting when an information need has not been met and appraising and evaluating the findings. The inadequate IL skills amongst students may be taught by using the Big6 of Information Literacy model. Therefore, teachers and school librarians should embrace the models as a means of inculcating IL skills to students.

The situation of IL practices in secondary schools in Kenya is wanting. Kavulya (2003) found out that most of the students joining universities lacked skills of using libraries or ICT and felt intimidated by the huge university libraries. This may be attributed to the lack of IL training

while in secondary schools. Lack of IL skills affects students' academic work as they pursue studies at higher levels where courses are more research oriented. It is therefore necessary that IL skills are introduced to students at lower levels of learning so that they are well equipped when they move to higher demanding levels of education. Similarly, Kimani and Onyancha, (2015) investigated IL competencies among first-year undergraduate students at the Catholic University of Eastern Africa. The authors observe that students did not have the ability to search for information. The authors observe that students are unable to use various retrieval tools and how to apply them in their learning process. They further note that students are not aware of what constitutes primary and secondary sources of information and are not well acquainted with issues pertaining to intellectual property rights. However, the authors observe that some students are computer literate and familiar with both electronic and printed resources. These characteristics exhibited by first-year students may be attributed to lack of IL practices in secondary schools.

The displaying of computer literacy skills by some students is a clear indication of the different ICTs infrastructural developments in secondary schools. Embedment of IL practices in secondary schools' curriculum may provide an opportunity for the practices to be observed in all secondary schools. Additionally, Spielmann (2013) investigated information literacy levels of high school students in Kenya and found out that the frequency of access students had to ICTs and the Internet positively impact on their ability to evaluate information and its sources. The author recommends for teacher training in pedagogic techniques in the use of ICT.

Notably, there is lack of current literature on IL practices in Kenya specifically there seem to be little interest on the importance of IL with regard to secondary schools in Kenya. While Kavulya (2003) studied challenges facing IL skills in universities Spielmann (2013) studied IL levels with particular focus on ICTs competencies among students. The dearth of literature on IL practices in secondary schools in Kenya is a motivation for this study to bring to the limelight the problem bedevilling students who join higher learning institutions from secondary schools with regard to poor skills of identifying, locating, accessing and using information effectively. The literature gap is detrimental to the growth of an information society hence the study on IL practices as a tool for accessing and utilizing information in secondary schools. The study contributes to the body of knowledge with regard to IL in secondary schools in Kenya.

6. Research methodology

This study used descriptive survey. Descriptive survey was appropriate to collect data on opinions, attitudes and feelings of a population (Creswell & Clark, 2011). Pickard (2013) also agrees that descriptive surveys are appropriate as information is collected without manipulating the variables under study. Descriptive survey allows researchers a wide scope of investigating many aspects of phenomena at the same time in their natural environment. The study employed mixed methods approach combining quantitative and qualitative techniques. Combining both quantitative and qualitative techniques offers a better understanding of the research problem. The study was conducted in 12 public secondary schools within Nakuru County, which were purposively sampled based on their type to ensure that all types of schools: national, extra-county, county and sub-county schools were sampled. Secondary schools are grouped under four clusters namely; national, extra-county, county and sub-county these are categories each of the twelve identified school belong to respectively.

The target population consisted of 288 teachers, 12 school/teacher librarians and 1785 form four students of the year 2019. The study employed both probability and non-probability sampling for

the various types of different population categories. School/teacher librarians were purposively sampled as key informants as it was believed that the subjects had the required information with respect to the objective of the study. This yielded to a sample size of 12 school/teacher librarians. This is in agreement with Kothari (2004) who observes that purposive sampling does not need any condition for estimating the probability of each item in the population being included in the sample. Purposive sampling technique permits researchers to use cases that have the requisite information with respect to the objectives of a study. Teachers and students sample sizes for each school were determined using the Krejcie and Morgan (1970) sample size table for small samples resulting to sample sizes of 266 and 1189 teachers and students respectively. The main instruments used in the study were questionnaires and interview schedules. Questionnaires were administered to teachers and students while the interview schedule guide was for school/teacher librarians. The questionnaire had both open ended and closed questions and some questions were on a Likert scale whereby respondents were required to indicate their responses. The study used two sets of questionnaires. One set of questionnaire was administered to teachers while the second set was administered to students. On the hand the interview schedule was used to corroborate the data derived from the questionnaire. It was also designed to elicit further clarifications that the questionnaire may have left out. The study adopted semi-structured face-to-face interview with the school/teacher librarians. Data was analysed quantitatively and qualitatively to make deductions, interpretations, conclusions and possible recommendations. According to Kombo and Tromp (2006) data analysis refers to the examination of data that has been collected in a survey or experiment and making deductions and inferences.

Data analysis and interpretation helps in converting data into knowledge therefore data analysis is an important aspect in any research process as it enables researchers to manipulate information captured during the time of the study. Creswell (2003) observes that in mixed methodology quantitative and qualitative data are analysed separately. Quantitative data analysis uses statistical methods to analyse research variables in order to describe data and interpret characteristics of populations under study. Quantitative data from questionnaires was analysed using descriptive and inferential statistical techniques. These techniques were used to make inferences and draw conclusions and recommendations. The descriptive statistics assisted in indicating characteristics that were common to the entire sample and summarized data on a single variable. Quantitative data was analysed using Statistical Package for the Social Sciences Software (SPSS) version 22. The analysed data was summarized into tables and diagrams. Qualitative data was analysed using content analysis which is a systematic analysis of the occurrence of words, phrases, concepts in books, films and other kinds of materials (Connaway & Powell, 2010). Data collected was analysed to determine the frequencies of occurrences of the chosen content. The researcher took field notes and made audio recording during the interview sessions and through that major themes were identified. The recorded interview of key respondents was transcribed and while transcribing care was taken to avoid any misrepresentation of sentiments. The researcher then read through all the transcripts guided by the research questions and objectives, to identify themes describing what the respondents had articulated. The interview data was coded and analysed with an aim of identifying recurring themes. Coding process helped to organize raw information that had been collected and generally represented the first step in data conceptualization. Therefore a detailed and systematic examination of the content helped the researcher to identify themes based on the objectives of the study.

Stratford Peer Reviewed Journals and Book Publishing
Journal of Education
Volume 4||Issue 1||Page 51-75 ||May||2021|
Email: info@stratfordiournals.ora ISSN: 2616-8383

7. Results and Discussion

Out of the targeted respondents 1,180 students and 215 teachers participated in the research presenting a response rate of 99% and 81% respectively. While 12 interviews were conducted presenting 100% response rate. The overall response rate was 96%. The purpose of this study was to assess information literacy competencies among secondary school students in Nakuru County, Kenya.

7.1 Rating Students' Information Literacy Competencies

Teachers were asked to rate students' IL competencies. Teachers were asked to indicate if the students they taught were information literate. The aim of this question was to establish teachers' views with regard to students' prowess in IL. The responses are shown in Figure 1.

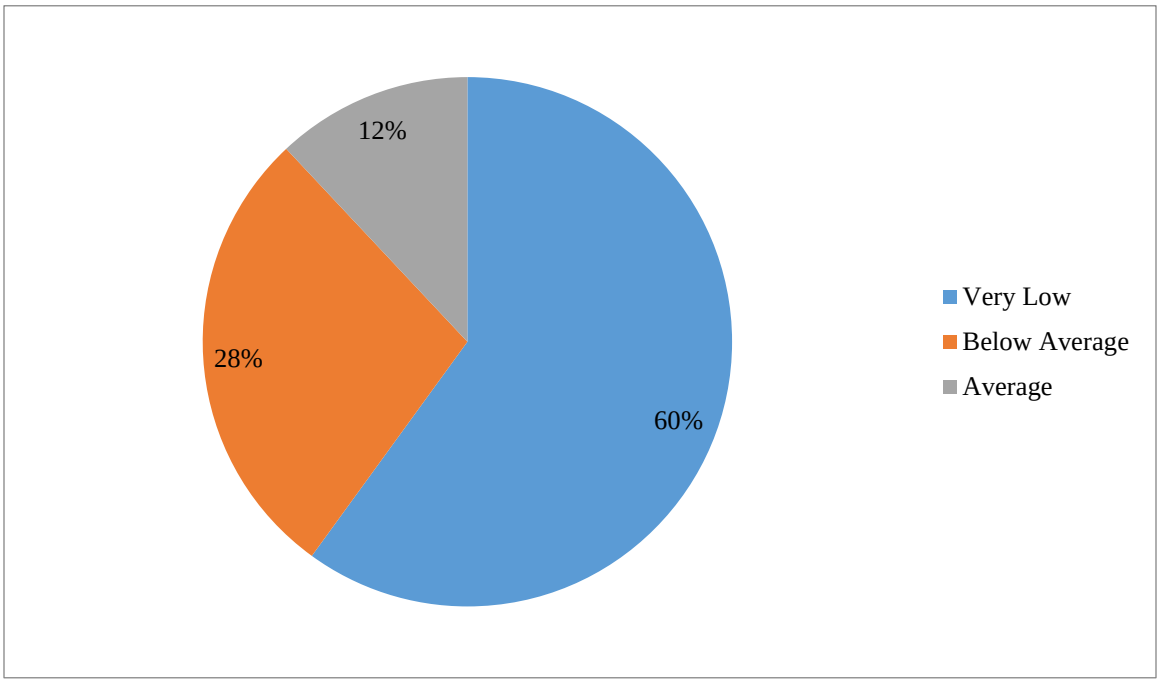

Figure 1: Students' Information Literacy Levels **Source:** Primary Data, 2019

Majority of the respondents 129(60%) indicated that students' IL levels were very low since they entirely relied on teachers to help them understand assignments, 60(28%) respondents indicated that students' IL skills were below average since students accomplished their academic work and the rating was based on individual abilities, while 26(12%) respondents observed that students' IL levels were average because they were able to engage in class discussions and could complete their assignments without difficulties. From the findings, it can be deduced that there were glaring differences in IL levels of students in secondary schools as no student was assessed neither above average nor very high. This may negatively impact on their performance since they may be unable to independently seek for information for their studies. This view is supported by Shao and Purpur (2016) contention that students' IL skills are positively correlated with their writing abilities and overall performance. Students' low IL skills may be attributed to lack of training in the subject matter and its non-inclusion in secondary school programme. The

integration of IL practices in secondary school education programme using the Big6 and seven pillars constructs may help impart IL skills among students.

Teachers were further asked to rate students on six IL aspects using a five point Likert scale, where a score of (1) indicated very poor while a score of (5) indicated excellent. The mean score was computed for the competencies and ranked as shown in Table 1.

Table 1: Teachers Rating Students' IL Competencies (N = 215)

Competency Levels	V. Poor (1)	Poor (2)	Aver. (3)	Good (4)	Exc. (5)	Score	Mean Score
Defining their information needs	0	41	78	80	16	716	3.3
Determining the range of possible sources of information for their tasks	10	38	88	65	14	680	3.1
Locating and accessing needed information	23	60	76	56	0	596	2.7
Using of the located information (ethically)	34	101	66	14	0	504	2.3
Organizing of information from multiple sources (synthesis)	34	131	46	4	0	450	2.1
Ability to judge information before using it (evaluate)	42	128	45	0	0	433	2.0

Source: Primary Data, 2019

According to Table 1, defining their information needs competency was leading with a mean of (3.3), followed by determining the range of possible sources of information for their tasks (3.1). Locating and accessing the needed information competency had a mean of (2.7) and using of the located information (ethically) (2.3). The least competencies were organizing of information from multiple sources (synthesis) (2.1) and ability to judge information before using it (evaluate) with a mean score of (2.0). The findings indicate that students were able to determine their information needs but did not have the ability to organize information from multiple sources and judge information before using it. The findings are consistent with Foo et al. (2014) who observe that students do well in task definition but poorly in information synthesis and evaluation. The authors propose that students require improvements in high-level skills such as information evaluation, information synthesis and information use as compared to low-level skills including task definition, information seeking strategies and information access.

The poor performance in synthesizing and evaluating information respectively may be attributed to lack of IL skills. Similarly, information explosion which allows access to a lot of information also confuses students. This may point to the absence of IL skills education in secondary schools and also teachers' inability to provide appropriate instructions on how to synthesize and evaluate

information. There is need to empower students with more IL competencies to enable them improve on these skills. Eisenberg and Berkowitz model (1990) of information literacy proposes that an information literate person should be able to define his/her tasks, effectively use search strategies, locate and access information, use information by integrating it in the existing knowledge base, synthesize and evaluate information. Findings reveal a gap in the six tenets where secondary school students are unable to synthesize and evaluate information. This may be attributed to the absence of IL in the secondary school programme which affects effective learning of students. The model proposes that a successful learner goes through all the six stages regardless of the order in which he/she progresses.

On the other hand students were asked to rate their competencies on eight IL aspects using a scale of 1 to 5. Responses were tabulated as shown in Table 2.

Table 2: Students Rating their Competencies on Specific IL Aspects (N = 1180)

Aspects of IL	Poor (1)	Aver. (2)	Good (3)	V. Good (4)	Exc. (5)	Score	Mean Score
Ability to use information effectively to solve problems	0	477	408	281	14	3372	2.9
Ability to locate sources of needed information	0	598	301	193	88	3311	2.8
Ability to determine when information is needed	0	652	227	235	66	3255	2.7
Ability to access information effectively	13	666	217	222	62	3194	2.7
Ability to understand the need to use information wisely	84	822	266	8	0	2558	2.2
Ability to retrieve information in any format from any source	99	913	84	84	0	2515	2.1
Ability to evaluate needed information	26	710	362	70	12	2164	1.8
Ability to understand ethical use of information	116	834	187	43	0	2017	1.7

Source: Primary Data, 2019

Results in Table 2 show that students have the ability to use information effectively to solve problems with a mean score of (2.9), ability to locate sources of needed information (2.8), ability to determine when information is needed and ability to access information effectively rated equally (2.7), ability to understand the need to use information wisely (2.2), ability to retrieve information in any format from any source (2.1). Further rating of the students' competencies reveal: ability to evaluate needed information (1.8) and ability to understand ethical use of information (1.7). The responses indicate that students' competencies on the use of information to solve problems, locating sources of needed information, ability to determine when information is needed, and ability to access information effectively were average. Results also indicate that some of the students were able to determine when information is needed, locate sources of

needed information, and effectively use information to solve problems. A less majority could not evaluate and use information ethically nor understand the need to use information appropriately. This meant that students were unable to select appropriate information sources and that they could in an arbitrary manner use information. This may be attributed to lack of information literacy component in the subjects taught in secondary schools. It may also be credited to the fact that students have not been taught on how to evaluate information from the various media of information. The results that students are of average competence in most of IL aspects corroborate Michalak and Rysavy (2016) observation that students would always inaccurately self-assess their IL competencies. Students' awareness of their actual IL is useful as it would assist in designing an effective IL instruction programme for them. The assessment would help in putting into consideration all the weaknesses discovered among students with regard to IL competencies

School/teacher librarians were also asked to rate the performance of students basing on different IL facets. Although some of them had challenges in rating the performance of students, most of those who were interviewed rated students on issues including knowing about different sources and formats, how to use the different sources, analysing information, synthesizing information, evaluating information and using information ethically. The results are detailed in Table 3.

Table 3: School/Teacher Librarians Rating Students' IL Competencies on IL Items (N=12)

Information Literacy Items	Frequency	Percentage
Knowing about different sources and formats of information	5	42
Knowing how to use the different sources and formats of information	4	33
Identifying the main ideas in information sources	4	33
Sorting and organizing ideas	3	25
Evaluating information for quality	2	17
Using information ethically	1	8

Source: Primary Data, 2019

Analysing the responses school/teacher librarians indicated in a decreasing order that students knew about different sources and formats of information with a frequency count of 5(42%), followed by how to use different sources and formats of information and then identifying the main ideas in information sources 4(33%). The least ranked were evaluating information for quality 2(17%) and using information ethically at 8%. Students' poor performance in synthesizing, evaluating and ethical use of information means that they are unable to select appropriate information sources. Thus students might retrieve inappropriate and unreliable information for their academic tasks. This may be attributed to the different environments in which users operate with regard to available facilities and resources. Librarians could be guiding information users on how to access information but they have never bothered to educate users on ethical use of information. It may also point to the fact that IL course is not embedded in

secondary schools' programme. The findings are in line with Foo et al. (2014) observation that students do not understand intellectual property regulations. The authors' further note that students would always copy and paste information from different sources without evaluating and acknowledging it thus disregarding the intellectual property rights. Synthesizing, evaluating and ethical use of information are important aspects that IL could deal with hence students could be made aware of their necessity if IL is embedded in secondary schools' programme.

7.2 Teachers' Contribution to the Development of Information Literacy Competencies among Students

Teachers were asked to indicate their contribution to the development of IL competencies among students. The question was structured in **"yes"** or **"not sure"** or **"no"** format. The teachers' responses are presented in Figure 2.

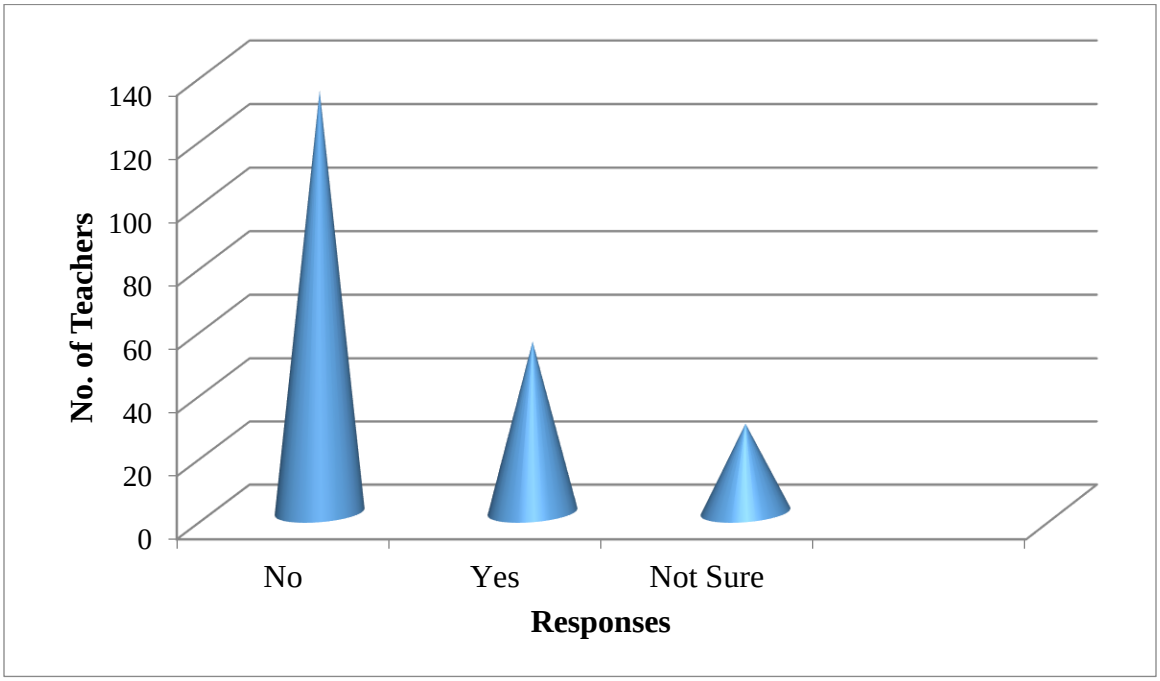

Figure 2: Teachers' Contributions to the Development of IL Competencies among Students
Source: Primary Data, 2019

Majority 133(62%) of the respondents stated that they did not contribute to the development of IL competencies among students, 54(25%) indicated that they play a role while 28(13%) were not sure of their contribution. Regarding to the teachers' contribution to the development of IL competencies among students the results show that teachers were not playing significant role which may be attributed to inadequate IL skills amongst them. The results contradicts Sanches (2018) findings that teachers play an important role in an information society including promoting learning of IL, imparting attitudes needed for the development and practice of skills to be better learners. Teachers' non-contribution to the development of IL competencies among students may be attributed to the high emphasis on examinable subjects and endeavour to complete the school syllabus. This results to students graduating from secondary schools and joining post-secondary education with low IL ability. This demonstrates that teachers' workloads limit them from contributing to the development of IL competencies among students. It may be

necessary for teachers to be enlightened on the merits of IL in the learning process in order for them to understand its value. Secondary school teachers can contribute to the development of IL competencies among students using the Big6 framework. This will assist students acquire IL skills as the model provides a systematic approach to information problem-solving and critical thinking skills.

8.3 Designated Libraries in Secondary Schools

School/teacher librarians were asked to indicate if they had designated libraries in their schools.

Out of the twelve schools 8(67%) had designated libraries. The other 4(33%) schools had rooms converted into bookstores with no reading space for users and no specific collection arrangement. While advocating for the establishment of school libraries IFLA (2015) underscores the role of school libraries in the development of students' IL skills to enable them be responsible participants in society. However, many school library structures do not follow IFLA specifications particularly in the building and planning since they are established as an afterthought (Durodolu, 2018). School library facilities need to be in tandem with IFLA guidelines in terms of space, furniture and equipment to provide an environment befitting their development.

School/teacher librarians were also asked to rate information literacy levels of library users. Majority 6(50%) of the respondents indicated that library users were not information literate, 4(33%) rated their users as literate while 2(17%) were unable to rate the users' information literacy levels. On scrutinizing the responses it was found out that users were rated as not information literate by the fact that they always sought for assistance whenever they visited the library or book store. Those who were rated as information literate may be attributed to the fact that they could visit the libraries and find the information resources they needed on their own. On the other hand, those who were unable to rate the users may be as a result of lack of knowledge on what IL entails. Library users should be information literate to be able to locate, access and use information in their learning process.

The study further sought to know how the school librarian rated the provision of IL to library users. The findings are illustrated in Figure 3.

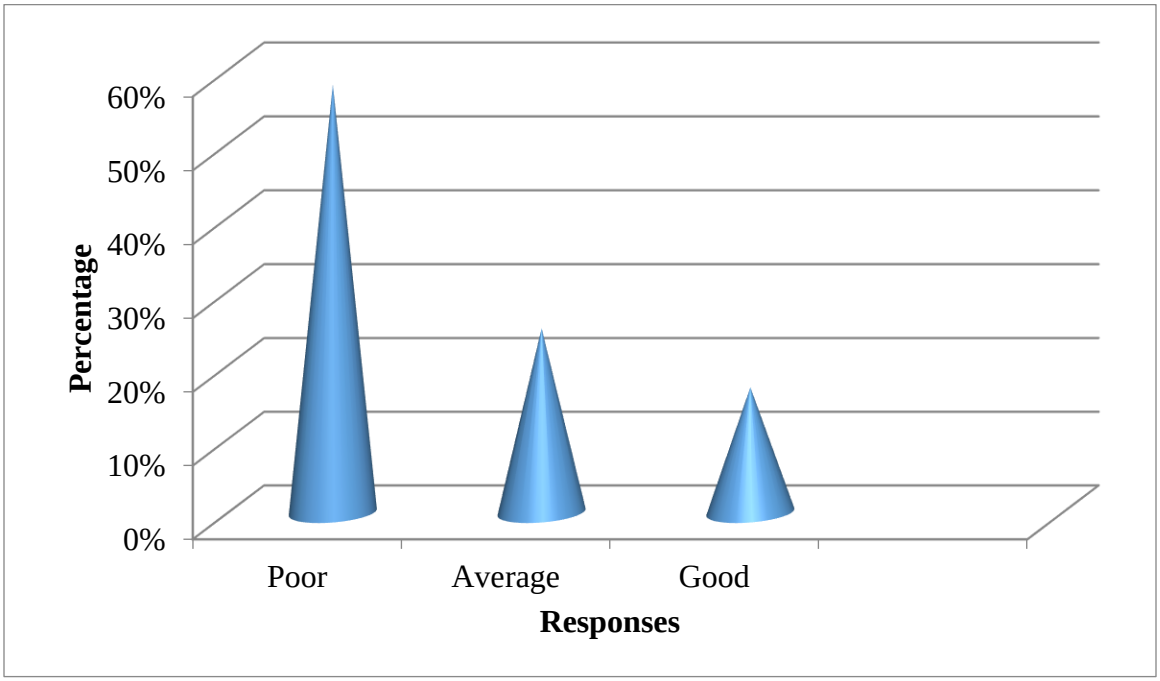

Figure 3: Provision of IL to Library Users **Source:** Primary Data, 2019

Majority 7(58%) rated IL provision as poor, 3(25%) indicated average while 2(17%) rated IL provision as good. This implies that IL provision by librarians was not adequate. Those who claimed to provide IL stated they guided users on how to retrieve the needed information but cited inadequate time to provide the service. Librarians were not providing IL programmes in their respective libraries but partially offer some kind of library instructions. These results reveal that school librarians do not provide IL skills instructions to library users. This may be attributed to lack of knowledge of the subject matter and those who claim to offer instructions did not cover all IL components. Jessy, Bhat and Rao (2016) argue that IL programmes in libraries of higher educational institutions are aimed at adding value to the learning and teaching process. The programmes assist in developing students' literature search skills in retrieving literature related to their studies from various information resources and in turn help to equip students with IL skills. Librarians should take their rightful position in inculcating IL skills to all library users. IL skills would result to increased utilization of library resources and services.

School/teachers librarians were asked to describe an effective information user/ information literate person.

Eight (66%) respondents described an effective information user as one who frequently uses the library and independently locates information materials. Two (17%) respondents described an information literate person as one who is able to accomplish his/her assignments on time. This description may be associated with teacher librarians who may be thinking that completion of an academic task qualifies one to be called information literate. The other two (17%) respondents did not respond to the question. This may be attributed to the fact that book stores do not provide open shelves where librarians would be able to assess how users locate, access and retrieve

information. Besides, the people managing book stores do not have knowledge of managing information resources hence incapable of assessing the information literacy of users. ACRL (2018) standards stipulate qualities of an information literate student to include: a student who can define and articulate the need for information; ability to access needed information, evaluate information and its sources critically and incorporate selected information to his/her knowledge base and value system. The student should also individually or as a group use information effectively to realize a specific purpose, and understands the economic, legal and social issues pertaining to the use of information hence accesses and uses information ethically and legally. These are the qualities secondary school students should possess if IL programmes are embedded in their learning process.

7.4 Ways of Improving Information Literacy Competencies in Secondary Schools

Teachers were also asked to suggest possible ways of improving IL competencies in secondary schools. The responses are presented in Figure 4.

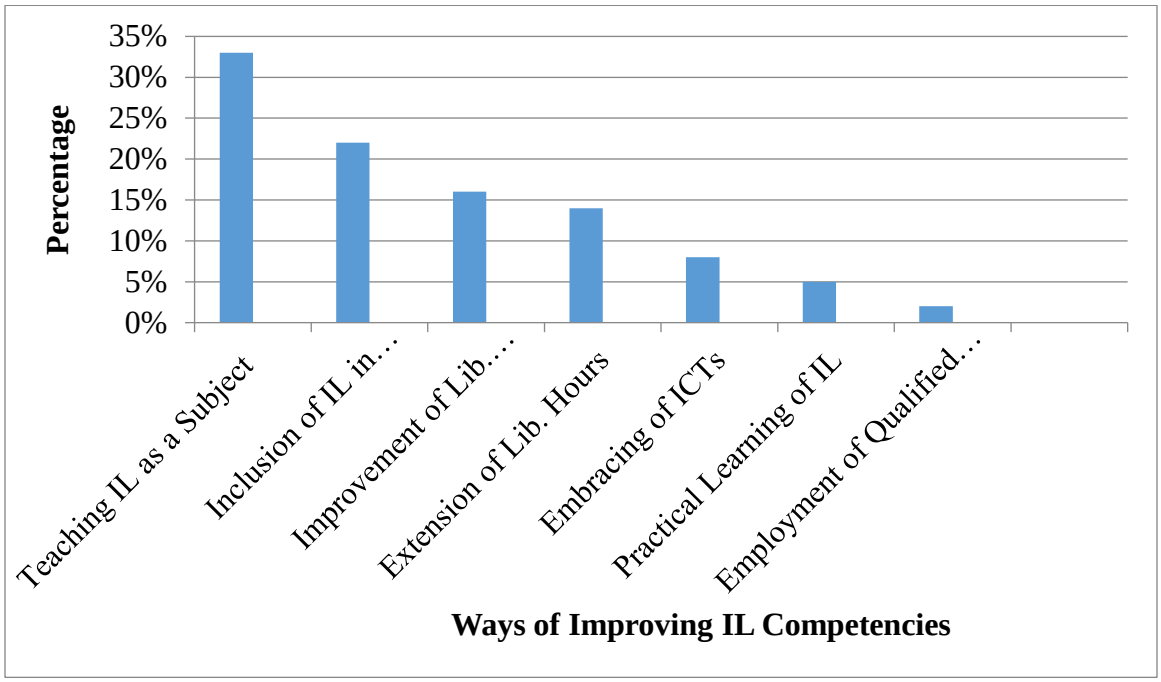

Figure 4: Teachers' Suggestions on Ways of Improving IL Competencies in Secondary Schools **Source**: Primary Data, 2019

The findings revealed that majority 71(33%) of the respondents were of the opinion that IL should be taught as a subject on its own, 47(22%) suggested that IL content should be included in specific subject areas so that learners can be taught, while 34(16%) opined for the improvement of library facilities. Thirty (14%) recommended for the extension of library hour time and 17(8%) suggested for embracing of information communication technologies in the academic programme. Eleven (5%) respondents recommended for more practical learning and research related programmes that expose learners to searching for information. Finally, 4(2%) respondents recommended for the employment of qualified personnel to manage libraries. A teacher from one school opined that it was difficult to achieve good results when helping

students to develop IL competencies when information resources in schools are kept in bookstores and managed by unqualified staff such as a storekeeper. The findings indicated that IL should be integrated in the secondary schools' curriculum. Echoing the sentiments of improving IL competencies in schools Tachie-Donkor and Dadzie (2017) aver that IL should be integrated in the teachers' curriculum as a means of equipping teachers with these requisite skills for them to be able to transfer the same to their students. The integration of IL in the teachers' curriculum would prepare them for the task of imparting IL skills to students.

On the other hand students were asked to suggest ways in which IL competencies could be enhanced in secondary schools. The responses are presented in Figure 5.

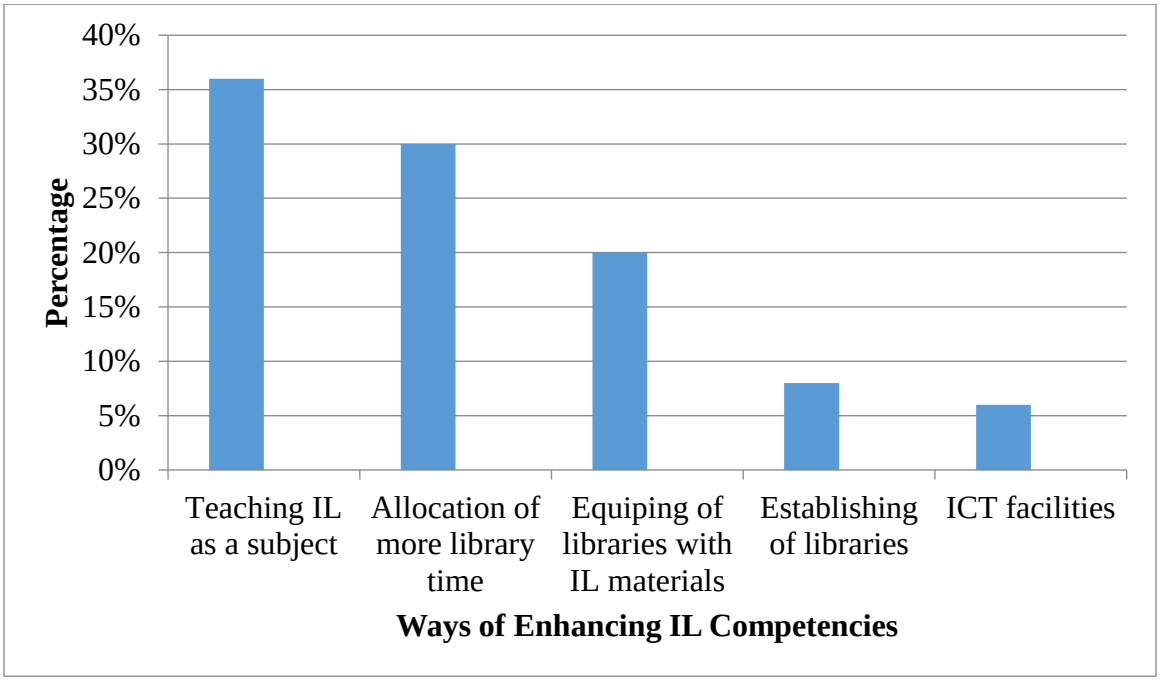

Figure 5: Students' Suggestions on how to Enhance IL Competencies in Secondary Schools
Source: Primary Data, 2019

Figure 5 show that 425(36%) respondents suggested that IL should be taught as a subject,

354(30%) opined for the allocation of more time for library use, 236(20%) suggested that libraries should be equipped with information materials on IL. While 94(8%) suggested for establishment of school libraries and 71(6%) respondents suggested for the acquisition of ICT facilities for learners to access more information. The results indicate that teaching of IL as a subject and exposing students to materials on IL may help in enhancing students' IL competencies. Students spending more time in the library they may interact with different information materials and will learn how to use them hence improve their IL competencies. Most libraries are found to be constrained in terms of space which denies more students access to library services. Hall and Kapa (2015) aver that library's space is an important aspect when dealing with promotion of library services to different library users. It can either cause satisfaction or dissatisfaction.

8. Conclusion

The assessment of IL competencies in secondary schools showed that most of secondary students were not information literate. Students relied on teachers to help them understand class assignments. It was also noted that although students were able to engage in class discussions, they did not have the ability to organize information from multiple sources and judge information before using it. They could not also effectively evaluate and use information ethically.

The study established that teachers were not contributing to the development of IL competencies among students. Respondents suggested that IL content should be infused in English and Kiswahili subjects so that learners can acquire some IL skills.

It also emerged that students needed to be introduced to more practical learning and research related programmes that would expose them to mechanisms of searching for information which would help them hone their IL skills.

While libraries are important components in enhancing IL competencies among users, the study established that most secondary schools did not have designated libraries and used bookstores to provide information services. It was noted that some schools that had libraries were ill-equipped hence students did not have a chance to learn and put into practice IL skills leading to the poor IL competencies among them. Consequently, respondents suggested that school libraries should be equipped so as to provide an opportunity for students to familiarize themselves with different information sources in their libraries which may help them to improve on their competencies.

9. Recommendations

There should be a programme for capacity building and continuing education in IL for teachers and school librarians. Otherwise, IL should be included in the university curriculum in order to equip graduate teachers with IL skills which they will in turn inculcate to secondary school students. Therefore, universities should implement CUE recommendation that IL should be taught in universities.

Schools should establish designated libraries and equip them with different information resources that will expose students to the challenge of finding the right sources hence contribute to sharpening their IL competencies.

Secondary schools should employ trained and qualified library staff to manage the school libraries and help in improving the students' IL competencies.

References

Adeyemi, I. O. (2017). An empirical study on the traits of information literacy level among senior secondary school students in Ilorin, Nigeria. *Library Philosophy and Practice (e-journal).* 1587. Retrieved October 4, 2018 from http://digitalcommons.unl.edu/libphilpra/1587

Al-Aufi, A., & Al-Azri, H. (2013). Information literacy in Oman's higher education: A descriptive inferential approach. *Journal of Librarianship and Information Science*, 45(4), 335-346.

Anyaoku, E., Anunobi, C., & Eze, E. M. (2015). Information literacy skills and perceptions of librarians in Colleges of Education in Nigeria, *Journal of Information and Knowledge Management. 5*(8), 83-89.

Association of College and Research Libraries. (2015). *Framework for information literacy for higher education*. Chicago IL: American Library Association.

Bakbak, D. (2019). Investing information literacy and the use of web 2.0 technologies in a faculty of architecture. *International Journal of Education and Practice*, 7(4), 418-429.

Chan, C. (2016). Institutional assessment of student information literacy ability: a case study. Communication in Information Literacy, 10(1), 50 – 61.

Chang, C, Lian, Y, Zhang, D, & Wang, S. (2016). The influence of students' information literacy competency on creativity under regulation of classroom climate. 17(11), 1-13

Connaway, L. S., & Powell, R. R. (2010). *Basic research methods for librarians*. Santa Barbara, California: Libraries Unlimited.

Creswell, J. W. (2003). *Research design: Qualitative, quantitative and mixed methods approaches.* Thousand Oaks, CA: Sage.

Creswell, J. W. & Clark, V. L. P. (2011). *Designing and conducting mixed methods research*. Los Angeles: Sage Publications, Inc.

Creswell, J. W. & Creswell, J. D. (2018). *Research design: Qualitative, quantitative and mixed approaches, 5th ed*. London: Sage Publications Inc.

Dipesto, C. M. & Moahi, K. H. (2019). Information literacy skills of high school students in Botswana: a case study of a high school in Gaborone, Botswana. *School Libraries Worldwide*, 25(1), 105-121. doi: 10.14265.25.1.006

Dorvlo, S. S. (2016). Information literacy among postgraduate students of the University of Ghana. *Library Philosophy and Practice (e-journal*), 1392.

http://digital commons.unl.edu/libphilprac/1392

Durodolu, O. O. (2018). Secondary school teachers' perceptions of information literacy skills. *Mousaion: South African Journal of Information Studies*, 36(1), 1-20.

Eisenberg, M., & Berkowitz, R. E. (1990). *Information problem solving: The big six skills approach to library and information skills instruction*. Norwood, NJ: Ablex Publishing.

Eisenberg, M. B. (2008). Information literacy: essential skills for the information age. *DEDIDOC Journal of Library & Information Technology, 28(2),* 39 – 47.

Eisenberg, M. B., & Berkowitz, R. E. (2011). The Big6: Information and technology skills for students' achievements. Retrieved April 2, 2017 from: http://big6.com/pages/about/big6-skills-overview.php

Eisenberg, M., Lowe, C. A., & Spitzer, K. L. (2004). *Information literacy: Essential skills for the information age*. Westport, Conn.: Libraries Unlimited.

Fisher, K, E., Erdelez, S., & McKechnie, L. (2006). *Theories of information behaviour*. New Jersey, American Society for Information Science and Technology.

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

Foo, S., Majid, S., & Chang, Y. K. (2017). Assessing information literacy skills among young information age students in Singapore. *Aslib Journal of Information Management*, *69*(3), 335-353.

Gowri, P. & Padma, P. (2018). SCONUL seven pillars model to test the information literacy skills of engineering students: a case study. *Library Philosophy and Practice (e-journal)*. 1996. Retrieved March 1, 2021, from http://digitalcommons.unl.edu/libphilprac/1996

Hall, K. & Kapa, D. (2015). Silent and independent: student use of academic library study space. *The Canadian Journal of Library and Information Practice and Research*, 10(1), 1 -38.

Heath, R. A. (2015). Toward learner-centred high school curriculum-based research: a case study. *Journal of Librarianship and Information Science*, 47(4), 368 – 379.

Henkel, M., Grafmüller, S. & Gros, D. (2018). Comparing information literacy levels of Canadian and German university students. *Içinde College & Research Libraries*, 78, 464–475. Retrieved June 1, 2020 from https://doi.org/10.1007/978-3-319-78105-1_51

Islam, M., & Rahman, A. (2014). Assessing information literacy competency of Arts faculty students at the University of Dhaka. *Library Philosophy and Practice* (e-journal). Retrieved January 5, 2019 from .http://digitalcommons.unl.edu/libphilprac/1110

Israel, O. (2018). Information literacy skills among library and information science postgraduate students of Nnamdi Azikiwe University, Awka, Nigeria. *International Journal of Library Science*, 7(2), 32-36. DOI: 10.5923/j.library.20180702.03

Issa, A. O., Amsuan, B. B., Olarongbe, S. A., Igwe, K. N. & Oguntayo, S. A. (2015). An assessment of the information literacy competence of undergraduate students at the University of Ilorin, Kwara State, Nigeria. *Annals of Library and Information Studies*, 62(2), 68-76.

Jessy, A, Bhat, S. & Rao, M. (2016). Assessing the effectiveness of information literacy instruction program: pre and post evaluation case study. *Library Philosophy and Practice (e-journal).* Retrieved October, 2, 2019, from http://digitalcommons.unl.edu/libphilprac/1434

Kavulya, J. M. (2003). Challenges facing information literacy efforts in Kenya: A case study of selected university libraries in Kenya. *Library Management*, 24 (4/5), 216 – 222.

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. *Innovation: Journal of Appropriate Librarianship and Information Work in Southern Africa*, 2015(51), 22-45.

Kombo, D. K., & Tromp, D. L. A. (2006). *Proposal and thesis writing: an introduction.* Nairobi: Paulines Publication Africa.

Kothari, C. R. (2004). *Research methodology*: *Methods and techniques*. New Delhi: New Age International (P) Limited Publishers.

Krejcie, R., & Morgan, D. (1970). Determining Sample Size for Research Activities. Educational and Psychological Measurement, 30, 607-610. Retrieved December 1, 2018 from: http://www.kenpro.org/sample-size-determination-using-krejcie-and-morgantable/

Majid, S., Foo, S., & Chang, Y. K. (2020). Appraising IL skills of students in Singapore. *Aslib Journal of Information Management*, 72(3), 379 – 394.

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

Malliari, A., Togia, A., Korobili, S. & Nitsos, I. (2014). Information literacy skills of Greek high school students: result of an empirical survey. *Qualitative and Quantitative Methods in Libraries (QQML)*, 1, 271-281.

Maurer, A., Schlögl, C. & Dreisiebner, S. (2016). Comparing information literacy of student beginners among different branches of study. *Libellarium*, 9(2), 309-319.

McCulley, C. (2009). Mixing and matching: assessing information literacy. *Communications in Information Literacy*, 3(2), 171-180.

McKeever, C. M. (2013). Information literacy skills in Year 14 pupils - are they ready for third level study? *Journal of Information Literacy*, 7(1), 99-106.

Meghann, W. (2015). Situated information literacy: history instruction at a high school early

Michalak, R. & Rysavy, M.D.T. (2016). Information literacy in 2015: international graduate business students' perceptions of information literacy skills compared to test-assessed skills. *Journal of Business & Finance Librarianship*, 21(2), 152-174.

Ngo, H. T., Pickard, A. J., & Walton, G. (2019). IL capabilities of upper secondary students: the case of Vietnam. *Global Knowledge, Memory and Communication*, 68(6/7), 453-470.

Ngo, H. T., Pickard, A. J. & Walton, G. (2019). An information literacy teaching model for Vietnam's schools. *Global Knowledge, Memory and Communication*, 68(3), 191-206.

Oakleaf, M., & Kaske, N. (2009). Guiding questions for assessing information literacy in higher education. *Libraries and the Academy, 9*(2), 273-286.

Okeji, C.C., Ilika, O.M. & Baro, E.E. (2020). Assessment of information literacy skills: A survey of final year undergraduates of library and information science in Nigerian universities. *Global Knowledge, Memory and Communication*. Retrieved 2, July 2020 from https://doi.org/10.1108/GKMC-10-2019-0130

Pickard, A. J. (2013). *Research methods in information*. London: Facet Publishing

Raish, V. V., & Rimland, E. E. (2016). Employer perceptions of critical information literacy skills and digital badges. *College & Research Libraries*, 77(1), 87-113.

Sanches, T. (2018). Required skills for teachers: information literacy at the top. Retrieved January 18, 2020 from https://link.springer.com/chapter/10.1007/978-3-319-74334-9 65.

Saunders, L., Severyn, J., & Caron, J. (2017). Don't they teach that in high school? Examining the high school to college information literacy gap. *Library & Information Science Research*, 39(4), 276-283.

Sawe, E. C. (2017). *Analyzing information literacy needs of post- graduate students at Strathmore University, Kenya*. Unpublished Msc Thesis, Moi University, Eldoret

Shao, X. & Purpur, G. (2016). Effects of information literacy skills on student writing and course performance. *The Journal of Academic Librarianship*, 42(6). 670 -678.

Somaratna, S. D. (2015). A credit based information literacy module for science undergraduates: an assessment. *Annals of Library and Information Studies*, 62(1), 19-26.

Spielmann, C. D. (2013). Information literacy of high school students in Kenya: The impact of teacher training (Master's Thesis). University of Hong Kong, Pokfulam, Hong Kong SAR. Retrieved January, 5 2017, from http:// dx.doi.org//10.5353/th_b5094863.

Tachie-Donkor, G. & Dadzie, P.S. (2017). Developing teachers' information literacy capabilities in secondary schools in Ghana: a comparative study of two best schools in the Central Region. *Library Philosophy and Practice (e-journa*l). Retrieved October, 2, 2019, fromhttp://digitalcommons.unl.edu/libphilprac/1573

Terfa, C. M., Jacob, T., & Helen, T. A. (2015). The need for integration of information literacy skills in the Nigerian secondary education curriculum, *International Journal of Digital Library Services*, 5(2), 26 - 36.

Yesen, B., Guldina, K., Bektas, B., & Indira, S. (2017). Development of information competency in students during training in Al-Farabi's geometric heritage within the framework of supplementary school education. *European Journal of Contemporary Education*, 6(3), 479-496.

Zhu, S., Yang, H. H., MacLeod, J., Yu, L & Wu, D. (2019). Investigating teenage students' information literacy in China: a social cognitive theory perspective. Asia-Pacific Edu Res 28,251 – 263. Retrieved December 2, 2020 from https://doi.org/10.1007/s40299-019-00433-9

Zulkifpeli, B., Yu, H., & Ismail S. A. (2016). The importance of information literacy skills among high school students. *Research Hub*, 2(2), 29-34.