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An examination of information literacy instruction on the information-seeking skills of primary school children in Jamaica: an experiment using grade six students

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Abstract

This article outlines an assessment of the impact of information literacy (IL) instruction on grade six students' information-seeking skills. It was the view of the researcher that if students were actively taught IL at the early stages of their natural and cognitive development, they would acquire skills that would not only be fruitful but life-changing. The quasi-experimental method was used in carrying out this research. The findings presented were those of a pre-test and then a post-test done after intense IL instructions were given to grade six students (children aged 11-12 years). The results showed that there were marked improvements in the quasi-experimental group's use of reference resources and in their overall research skills. The recommendation is made that greater emphasis should be placed on IL instruction at the primary level in Jamaica in order for students to be more efficient information-seekers as they move up the education system within the country.

Keywords

information literacy, primary school, Jamaica, pedagogy, information-seeking, reference resources, classification.

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1. Introduction

In this era, information is growing at such an unprecedented rate that it can now be considered imperative for all students to become information literate. That is, they must possess the ability to recognise the need for information and be able to locate, access, evaluate and organise this information for practical application (Spritzer et al, 2004). The need for these skills is further strengthened due to ever-changing technological developments that affect how people work, do business and conduct their everyday lives. Martin (2011, p. 268) states that the "flood of information created and dispersed through new media creates an urgency for the study of IL and bolstering of IL practices by all people, but particularly by students".

The Jamaican situation leaves much to be desired given the importance IL in contemporary society. IL skills have not been fully recognised as an important tool for learning, and neither has the vital role that the school librarian can play in helping students to master these skills. The need for IL education is becoming more evident as Jamaican society moves into the information age where skills of accessing, evaluating and using information are increasingly important. Based on various reviews of the education system at different times, the government has undertaken several reforms. These include the revision of the primary school curriculum, the introduction of resource-based instruction, better engagement with technology and a general move to a more student-centred approach to learning. Despite all these changes, however, little has been done on a national scale to improve the state of school libraries, including the teaching of information skills.

In 1998 the government reformed the primary education system through the Primary Education Improvement Project (PEIP). This new curriculum was aimed at developing the learner through teaching strategies such as co-operative learning alongside group and project work. The reforms were designed to foster the exploration and sharing of ideas among students as they worked together to identify and solve problems in keeping with the realities of the world of work (Ministry of Education 2004). As a result of these changes students must constantly carry out research in order to acquire new information. This requires a tremendous amount of information processing, making IL essential to educational development.

Under the PEIP libraries in 120 primary schools were established - in those institutions identified as having the greatest need. However, this only represents a small number of the 445 such schools in Jamaica (Ministry of Education 2004). At present there is inequity regarding the quality of library services in primary schools, mainly due to the failure of the Ministry of Education in the establishment of uniform standards for these services. The national public library service currently operates a school library service available to all public schools offering primary education on behalf of the Ministry of Education (MOE). This has been the case since 1952; this consists primarily of establishing libraries as the need arises, acquiring, processing and distributing resources and the provision of training for school library personnel (Jamaica Library Service 2007). According to 2013-14 academic year statistics from the Ministry of Education there are only 55 trained school librarians in public schools offering primary education (Dykes 2014). Limited financial resources and the absence of firm policies for the establishment and maintenance of these facilities make the service in many schools less than adequate. Therefore, although some schools have a fairly reasonable standard of service, including a professional librarian, the majority have ad hoc collections stored in any available space, under the supervision of any available person, usually a teacher.

The implementation of IL instruction in the Jamaican educational curriculum is most visible at the tertiary level. In the 2011-12 academic year a stand-alone IL course was introduced in all teachers' colleges on the island. This course is taught to all first-year teachers-in-training. IL is also taught at the University of the West Indies (UWI), as a stand-alone course for final-year students in the Faculty of Humanities and Education (UWI 2014). An evaluation of the Jamaican grade six curriculum indicated that students were exposed to some aspects of IL, for example cross-referencing, summarisation, note taking and alphabetisation, as part of the language arts curriculum (Ministry of Education and Culture 1999). However, the focus placed on these skills

by the language arts teacher is geared towards students completing tasks required by this subject area and not on developing IL skills.

Of major concern to this study is the absence of a national curriculum for IL skills. The result is an ad hoc approach to the topic. In some schools with trained library personnel these skills are taught based on a curriculum developed by the librarian with a focus on the location of and access to information in the standard reference sources like dictionaries and encyclopaedias. The schools that have library facilities, but no librarian, have some form of limited instruction from teachers based primarily on the contents of the language arts curriculum. This inconsistent approach will certainly not produce information-literate students who are able to function effectively in the information society. Therefore, in light of the absence of any coherently-structured IL programme, this study sets out to:

- Identify the information skills needed by grade six students (children aged 11-12) to complete class assignments,
- assess the level of knowledge of these information skills overall, and
- compare the information-seeking skills of two groups of grade six students for differences that might have occurred based on one group receiving IL instructions and the other receiving none.

2. Literature review

The emergence of the information age has presented all nations with tremendous challenges. Information is growing at an exponential rate; the technologies for storing, organising and accessing information are developing and changing at an ever-increasing pace. People who are able to locate, evaluate and use information can function as productive information users while those unable to do so remain on the fringes, unable to participate fully in all the facets of the information society. Therefore, educating citizens to become information literate should be an important goal in all societies, as stated by the Alexandria Proclamation. This also urges governments to incorporate IL instruction as a vital component of their educational programmes at all levels, a necessary move to ensure that their citizens are equipped to function effectively in the global information environment (International Federation of Library Association/ UNESCO 2005).The Partnership for 21st Century Skills (2013) sees IL as a key component for the successful navigation of modern society.

Much research has been conducted internationally on various aspects of IL. However, within the Jamaican context, there have only been a few studies in relation to this research. The earliest research done on this topic by Morant (1987) took the form of an experiment focused on finding the differences between two groups of students in their ability to use reference sources like the encyclopaedia, dictionary and atlas. The results showed that there was a marked improvement in the mean score of students who received information skills instruction compared to the control, and that these students found information faster, and were more comfortable using reference resources. On the other hand, Byfield-Stewart's (2003) research looked at how many secondary schools had an information skills curriculum and at the method of instruction used in these schools. The findings showed that most high schools taught information skills in grade seven and, to a lesser extent, in grade eight. It was also found that, of three possible

approaches (isolated, related and integrated) to the teaching of information skills, the related approach was more frequently used, indicating that there was very little consultation and collaboration between teachers and the librarian.

A paper by Fowles (2003) examined college faculty's knowledge and use of the library and their perception of the importance of IL. Fowles found that faculty mainly used the library to identify resources for students and for their own personal use. They used their personal collections and the internet more frequently than the library for academic purposes. However, the study also revealed that faculty believed IL should be included in the college curriculum.

2.1 Grade six IL syllabus

Several information skills curricula have been developed on a regional and an international scale. Only two such were identified for the Caribbean – one from Trinidad and Tobago, and another from St. Lucia. Essentially all curricula tend to cover the same areas with different levels of detail and some variation as to exactly what is to be taught at a given grade.

After examining several syllabi the following were chosen for further study: Clarkstown Central School District New York Information Literacy Curriculum (2000); Ontario School Library Association curriculum (1999); and Tri-District Library/Information Literacy Curriculum (Connolly 2011). The similarities in topics to be covered that were cited in these curricula for grade six are as follows: use of the dictionary and other reference sources; use of the catalogue; Dewey Decimal Classification Scheme (DDC); indexes; cross references; compilation of a simple bibliography; the parts of the book; use of copyright date; and use headings and subheadings.

Although these skills are basic, they are important for future learning. Research done at the college level found that students who enter college have many weaknesses in areas that should have been covered at the grade six level (Labelle and Nicholson 2005). Students were found to lack basic information-gathering skills and to be unfamiliar with the structure and contents of the library catalogue. They were found to be unaware of the concepts of controlled vocabulary tools and their usefulness in locating meaningful search results. They also demonstrated an inability to identify a bibliographic citation associated with periodicals. These weaknesses were found to render them incapable of functioning well in the library, as stated by Hart (1999).

The objective of IL instruction is to influence students' information-seeking skills and this will now be looked at.

3. Methodology

To determine the impact of IL instruction on the information-seeking activities of grade six students, the experimental method was chosen because this would allow the researcher to identify any causal relationship between an independent and a dependent variable. In this case the variables were information skills instruction and information-seeking activities respectively. More specifically, a quasi-experimental approach employing a non-random control group with a pre-instruction and post-instruction test was decided upon. Existing classes had to be used since it was not possible to randomly select the members of both groups - this would have led to

severe disruption of the school's programme. Choosing to use non-random samples meant that all the confounding variables could not possibly be controlled and so their probable effect must be taken into consideration when interpreting the findings. It also meant that generalisations could not be made from the findings.

The other challenge was to try to establish equivalency between both groups, and an attempt was made to do this with regard to the student's academic abilities by having the teachers rank all students within each class on the basis of the Ministry of Education Literacy and Numeracy Scale. This graded students based on their performance in reading, language arts and mathematics in the following manner:

- Mastery = 70-100% (reading at or above grade level)
- Near-mastery = 50-69% (reading at one level below grade level)
- Non-mastery = below 49% (reading at two or more levels below grade level, including non-starters)

There were three grade six classes in the school, totalling 99 students, with an average class size of 33 students. Two of the three classes were chosen as there was similarity in their size and in their literacy and numeracy averages. To determine equivalency with regard to knowledge and exposure to IL, the researcher had discussions with class teachers as to the children's exposure to information skills instruction, and their likely knowledge of the topic. From this discussion it was established that they were not exposed to IL apart from the topics taught in their language arts curriculum. A further check was made to identify students who had joined the school after grade one since there was the possibility that they might have had formal IL instruction at their previous school. It was found that only one student was transferred into the school after grade one. This student was interviewed and it was found that she had received no IL training, therefore she was included in the population.

The two most closely-matched classes were chosen for the experiment. Both had a mix of students of varying abilities and each had approximately the same proportion of boys to girls, although gender was not considered as a significant variable in the study. A pre-test was applied to both groups and subsequently the quasi-experimental group was given six classes or four and a half hours of IL instruction based on the demands of their curriculum. Later, a post-test was administered to both groups to identify increase in learning. The basic strategy was to measure the quasi-experimental and control groups on the dependent variable both before and after the treatment in order to compare the difference in scores for each group. The findings were expected to give some indication of the possible effect of the independent variable – IL skills instruction - on the dependent variable, information seeking skills.

3.1 Data collection instrument

A pre-test and a post-test instrument were used as the means for collecting data on the sample. The contents were based on what students are expected to know at the grade six level. From the literature reviewed, grade six students are expected, among other things be able to: use reference books; identify and use the parts of the book; identify reference sources and select the appropriate source of information for assignments; understand and use sub-headings, use guide words, work with cross-references; use call numbers to locate materials on the shelves of

the library; begin classifying materials by literary genre; understand the concept of indexing; use dictionary aids; compile a bibliography on a subject;; present information in alternative formats; and exhibit ethical use of information including respecting copyright restrictions (Connolly 2011).

The pre-test post-test format did not cover all these areas as it was impossible to include all of them given the time available and the absence of some of the resources needed for instruction from the library. Therefore, the most basic skills along with a model of the research process were presented. The Big Six Skills is one of the best-known (Shelley-Robinson 2006) and this was used to identify the key steps in the information search process, thereby providing a generic approach for tackling any information problem in an educational setting or otherwise. The other basic skills, gleaned from several information literacy syllabi, included use of reference books (encyclopaedia, dictionary, atlas, directory); use of the catalogue; and the Dewey Decimal Classification Scheme. It was expected that exposure to these skills should affect pupils' information-seeking activities and the outcome of their information inquiries. The data gathered from the pre-test informed the researcher as to the overall IL skills level of all the students at the time of the research and also provided a standard by which to gauge their performance. The pre-test instrument consisted of fifteen test items reflective of the curriculum for grade six students.

The post-test was a modified form of the pre-test and so had the same number of items. Modifications were applied to reduce the chance of either group answering correctly due to previous knowledge of the content. Thus, while the nature of the questions remained essentially the same, the contents were changed in some cases. Students from the control group received no instruction, while the quasi-experimental group was given six lessons, each lasting approximately forty-five minutes. The lessons were mainly taught by the librarian after consultation with the class teacher. However, there was collaboration in the teaching of three topics – alphabetisation, summarisation and finding the main idea in a passage. These also formed a part of the language arts curriculum and the teacher had much practice in these areas. After the treatment was applied to the quasi-experimental group, both groups were given the post-test, and the results were then compared with the pre-test scores to identify any difference in the performance of both groups that could possibly be ascribed to the instruction given in IL.

3.2 Population and sample

The subjects of the study were grade six students from a single school chosen because they were about to enter the secondary school system where the mastery of IL skills becomes increasingly more important. The sample was confined to a single school because the researcher found it more manageable and convenient to monitor the activities of both the quasi-experimental and the control groups during the study. The research was conducted single-handedly and required a great amount of staffing and time to administer the tests and carry out the teaching of the lessons to the quasi-experimental group. The sample was drawn from a population of 99 sixth-graders consisting of three classes. In reality, two intact classes were used to form the control and quasi-experimental groups because the school did not have another room to accommodate an extra class for the purposes of the study and because it would lead to a disruption in the activities of the whole sixth grade if the children were randomly selected from the three classes to participate.

4. Data presentation and analysis

4.1 Pre-test results

4.1.1 The research process

Q.1a. When you go to the library to look for information on a topic that is new to you, what do you usually do first? Q. 1b Why?

Table 1: What students do at the library with an unfamiliar assignment

Responses	%
Ask the Librarian	56
Did not know	39
Never been to the library	5
Total	100

The majority (56%) of students asked the librarian for help at this stage and, when their reasons were examined, most said they did so because they knew the librarian would be able to help them find what they wanted. This answer appears reasonable since the students were usually taken to the school's library facilities (rather than being sent on their own). Therefore, many students might not really know how to find information independently. In keeping with this practice, it is not surprising that as many as 39% did not know exactly what to do when faced with a new assignment. For the 5% of the students in the sample who stated they had never been to the library, this possibility existed because of space limitations in the library and the absence of a librarian at the school to ensure regular scheduled visits took place.

Q. 2. Name two places besides the library from where you can get information on your school assignments.

Table 2: Number of places for finding information for an assignment

Places	%
Did not respond	52
Computer labs	7
Bookstore	3
Bank	1
Office	11
Ministry of Education	2
Community centre	3
Home	21
TOTAL	100

A majority of students did not respond to this item (52%). This seemed to indicate that the children did not know any other place apart from the library, or they did not want to answer the question. The former, however, seemed more likely based on the responses of the other students. The most-frequently cited place was 'home' (21%) and this response may be due to the presence of knowledgeable older siblings or parents who were able to assist with assignments. The office (11%) was cited in second place but it was not clear exactly what was meant. The reference to the computer (7%) could mean use of the internet. Overall, students seemed largely unaware of the many sources of information outside of school.

Q. 3. Which of the following do you usually do after you have finished your school assignment? (Tick the ones you do):

(a) Read it over to check for any spelling or other mistakes
(b) Check to see if I did everything the teacher asked me to do
(c) Ask someone else to check it over for me
(d) Hand it in just as it is

Table 3: Steps taken by students to evaluate their work

Steps Taken to Evaluate Work	%
Check to see if I did everything the teacher asked	43
Read over and check for errors	34
Ask someone to check it	10
Hand it in just as it is	13
Total	100

43% of the sample said they would check to see if they had done everything the teacher asked. At this level, based on the curriculum, students are usually given questions with multiple parts, and it is stressed by the teachers that they must complete each part in order to maximise their grades. Of importance is the fact that 34% of students stated that they read over their work to check for mistakes. At the various grade levels, and more so at grade six, students are asked by teachers to always check over their work in this way. A small portion of the sample (13%) said they just handed in their assignment as it is. Therefore, in general, it would seem that most of the students carried out some type of evaluation before handing in their work.

4.1.2 Reference books

*Q. 4. Which of the following reference books do you think is the **BEST** one to find the answer for each of the questions below? (Write the letter for the type of book you choose on the line beside the question):*

Reference books: (a) Almanac (b) Atlas (c) Dictionary (d) Index (e) Directory (f) Encyclopedia (g) Handbook

(i) The longest river in the world
(ii) The address of the Nigerian High Commission in Jamaica
(iii) The part of speech of a word
(iv) An introduction to a topic
(v) Statistics on cricket

Table 4: Response to selection of appropriate reference resources

Reference Sources	Pre-Test		
	Correct	Incorrect	Total
Atlas	75%	25%	100%
Dictionary	72%	28%	100%
Directories	56%	44%	100%
Encyclopedia	14%	86%	100%
Almanac	13%	87%	100%

Most students in the sample were very familiar with the contents of the atlas (75%) and the dictionary (72%), and (to a lesser extent) the directory (56%). These results were not surprising since students were usually required to own an atlas and a dictionary which are used regularly as part of the curriculum from as early as grade three. From observation by the researcher, the classes in the sample all had telephone directories, which are often used by the students. The low score (14%) for identifying the encyclopaedia was to be expected since the students in the sample did not go to the library frequently enough and so might not know what kind of information this resource contained. Furthermore, even if they had to resort to using encyclopaedias, the volumes in the library were outdated. The almanac was incorrectly identified 87% of the time which could be because of its unfamiliarity to most students. In Jamaica the word “almanac” usually refers to a calendar or a guidebook used by farmers to know when to plant crops. In addition, this library had only one outdated copy.

4.1.3 Parts of a book

Q. 5. Choose the correct word from those given in bold and write it on the line beside its meaning below:

(a) Appendix (b) Bibliography (c) Biography (d) Contents page
(e) Edition (f) Glossary (g) Index (h) Title page

(i) an alphabetical list of keywords in a book along with their page numbers
(ii) a list of unfamiliar words and their meaning used in a book
(iii) the page with information on the name of the book, its author and publisher
(iv) additional notes at the end of a book
(v) a list of the titles of the chapters along with the page numbers
(vi) a list of books used to write an essay

Table 5: Students' knowledge of the parts of the book

Parts of a book	Pre-Test	
	Correct	Incorrect
Contents page	59%	41%
Bibliography	45%	55%
Glossary	39%	61%
Title Page	38%	62%
Appendix	38%	62%
Index	22%	78%

Most surprising was the fact that most of the students between 64% and 78% gave incorrect answers in identifying the various parts of the book, except for the contents page which only 59% got right. This may be due largely to the absence of formal information skills instruction in the school and the failure of the teachers to teach students about things like the index, glossary and title page which are in many of the textbooks used at this level and which are essential for understanding and finding information in a book.

4.1.4 Note-taking

Q. 6a. Identify two of the main points the author is making in the paragraph below:

Table 6: Students' ability to find main points in a passage

Number of points found	%
Did not respond	38
Able to find one	31
Able to find two	31
Total	100

38% of students did not respond to this question at all, perhaps suggesting weaknesses in their reading and comprehension abilities. Some were actually identified as reading below their literacy level. An equal number (31%) of students were able to find one point or two points. Therefore it can be assumed that 62% were able to take some form of notes reflecting the essential points from a passage containing the information they needed.

Q. 6b. Summarise the passage given in three short sentences.

Table 7: Ability to summarise a passage

Responses	%
Did not respond	55
Correct	25
Incorrect	20
Total	100

Even more students (55%) than in the previous question did not respond to this assignment and only 25% correctly summarised the passage. Such a large number of negative responses seems to further reinforce the idea of a weakness in reading and comprehension skills in the group.

4.1.5 Alphabetisation

Q. 7. Write the following names in the exact order in which they would appear alphabetically in the library catalogue:

Manning, Peter; Mann, Janet; Mayne, Angella; Manet, James; Mann, Horace.

Table 8: Students' alphabetisation skills

Responses	%
Correct	13
Incorrect	87
Total	100

87% of students were unable to correctly alphabetise the names of the persons given to the fourth letter, a task they should have been able to carry out quite easily at this level. Clearly, this goes beyond the matter of information skills to the broader issue of literacy levels among the students. Weakness in this area would also pose difficulties in their search for information in dictionaries, encyclopaedias and the catalogue all of which organise information primarily in alphabetical order.

*Q.8. In an encyclopaedia volume marked **AMEN - ANTH** which of the following words would not be included in this volume. (Circle your answer):*

a. Amish b. Anthropologist c. Anemometer d. Antwerp

Table 9: Alphabetising using guidewords

Responses	%
Correct	34
Incorrect	66
Total	100

66% of the students were unable to answer this question correctly. The results for the previous question on alphabetisation yielded similar results and this could be for the same reasons already cited. Considering the fact that an encyclopaedia is one of the most common sources of general information used by students, the findings point to a need for more exposure of the students to such a resource by their teachers as well as the library staff.

4.1.6 The Dewey Decimal Classification Scheme (DDC)

Q9. The Dewey Decimal Classification Scheme is used in the library to group:

(a) Biographies with the fiction books
(b) Books on the same subject together
(c) Magazines and audio-visuals together

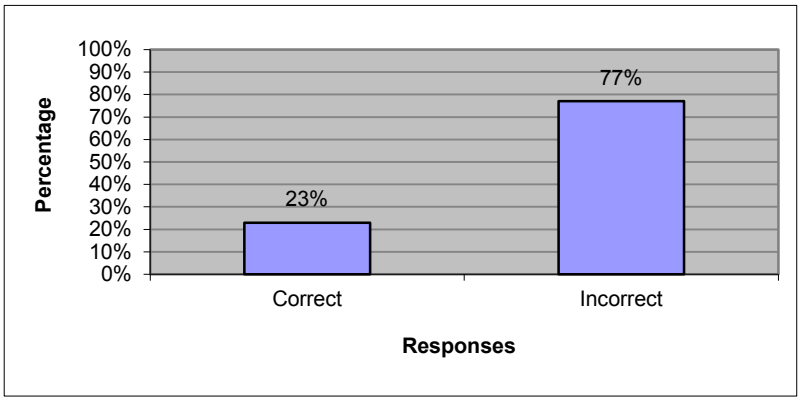
Table 10: Knowledge of the DDC

Responses	%
Correct	48
Incorrect	52
Total	100

The scores were nearly equally divided between those who got it right (48%) and those who did not know (52%). The latter result is in keeping with the reality that the books in the library were not classified using DDC. The positive responses could have arisen from children generally being taught that libraries stock two types of books – fiction and non-fiction - and that the latter are arranged by subject using DDC. In the library, the books were arranged broadly by subject although DDC was not used for classification. It could therefore mean that the students were used to non-fiction books being grouped together in this manner.

*Q10. A book about **animals** would be found under which of the following Dewey Decimal classification numbers?*
(a) 300 (b) 500 (c) 500 (d) 900

Figure 1: Knowledge of the main DDC classes



77% of students were unable to answer this question correctly which, no doubt, reflects a lack of teaching on the topic. Given the absence of a librarian, and the books not being classified using DDC, it must be assumed that the 23% who got it right picked up their knowledge from elsewhere.

4.1.7 The catalogue card

Q. 11. Use the catalogue card given to answer the following questions:

11a. The catalogue card above is:
(a) an author card (b) a subject card (c) a title card

11b. If you wanted to look for this book under its subject, what would you look under?
11c. What series does this book belong to?
11d. What would you use to find this book on the shelf?
11e. Does this book have any pictures?

Table 11: Identifying items on a catalogue card

Q. 11	Responses	Correct	Incorrect
11a	Type of card	19%	81%
11b	Subject Headings	9%	91%
11c	Series Information	3%	97%
11d	Classification Number	3%	97%
11e	Illustration	8%	92%

The majority of the students (81-97%) were unable to identify the different items of information on a catalogue card. Only 19% were able to identify the type of card and for the remaining four

items between 3% and 9% of the sample were able to answer the question correctly. This can be attributed to the fact that the school did not have a catalogue or a librarian, and so the students would not have been exposed to a catalogue much less the details on the card.

4.1.8 The use of cross-references

See also

Q. 12. The following information is given at the end of an article on marijuana in an encyclopaedia. What does it mean? [Tick only one]

Marijuana: See also Drugs and Narcotics

(a) There are other articles related to marijuana in the encyclopaedia
(b) Drugs is a subheading for marijuana
(c) Marijuana is not a very important topic
(d) The encyclopaedia is not arranged alphabetically

Table 12: Students' understanding of 'See also' cross-reference

Students' responses	%
There are other articles related to marijuana in the encyclopaedia	23%
Drugs is a subheading for marijuana	50%
Marijuana is not a very important topic	20%
The encyclopaedia is not arranged alphabetically	7%
Total	100%

23% of students were able to answer this question correctly, while 50% of the sample responded that drugs is a subheading for marijuana. The selection of that answer may be due to the fact that students understand that marijuana is classified as a drug, and the association of words in the sentence seemed to influence their choice of answer. Surprisingly, 6% of the students stated that the encyclopaedia was not arranged alphabetically. The combined negative responses would seem to be due to their unfamiliarity with the nature and arrangement of information in an encyclopaedia. This was also demonstrated by the large number of students (66%) at Question 8 who did not understand the use of guide words nor seem capable of using the alphabet to find information in this very common reference source.

See cross-reference

*Q. 13. You are looking in the catalogue for information on **Dreadlocks** and you found this:*

Dreadlocks See Rastafarians

What is this telling you to do?

Table 13: Students' understanding of the instruction 'See cross-reference'

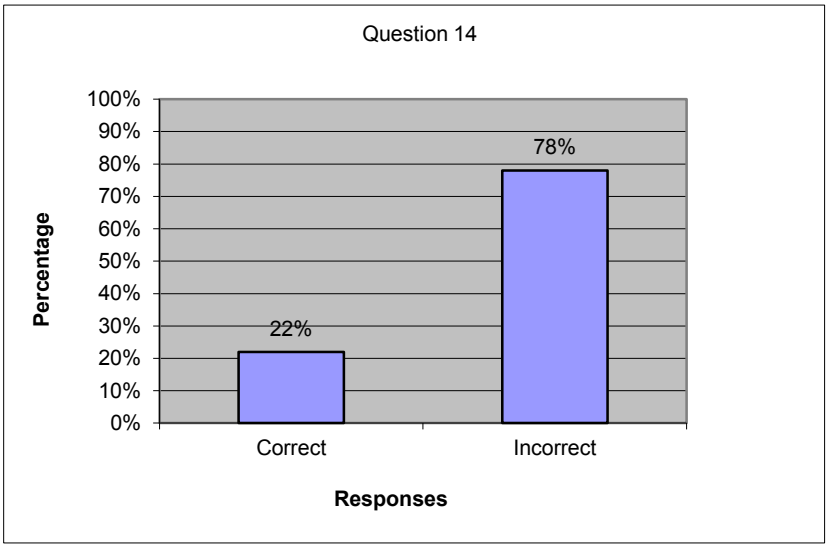
Students' Response	%
Correct	11
Incorrect	89
Total	100

89% of the sample responded incorrectly to the item, making the results similar to those of the 'See also' reference. The results may be due to the lack of information skills and the absence of a qualified school librarian and also to either the ignorance or indifference of teachers who, for one reason or another, do not teach these things.

Q. 14. Use sample index given to answer the following question:

On what pages would you find information on cow ponies?

Figure 2: Students' ability to use 'See also' reference in an index



78% of students were unable to complete the activity correctly. The results for the previous question on the 'see' cross reference were similar. It appears that students are not only unable to transfer learning from one context to another, but also unfamiliar with references in whatever context they appear.

4.1.9 Writing a bibliography

Q.15. How would you write out the information about the following book to show your

teacher that you used it to get some of the material you included in your essay?

A book called ***Social Studies: a revision for Jamaican schools,*** *written by Andrea Brown, and published by Ian Randle Publishers located in Kingston, Jamaica during 1998.*

One of the requirements for responsible and ethical use of information is for the researcher to cite sources consulted when doing an assignment. Therefore, students need to recognise and adhere to these principles in order to avoid plagiarism and to respect intellectual property rights. Interestingly, none of the students attempted to answer this question and so the sample would appear to be completely ignorant of how to cite an information source used for an assignment, much less conversant with the ethical issues surrounding information use.

From the results of the pre-test it can be seen that the students in the sample lacked basic information-handling skills. This should be viewed in the context of the absence of a school librarian, and the library resources needed for them to be information literate, and thereby proficient information seekers. The ratio for school libraries to school librarians is 8:1. The area of most significance was in regard to reference sources, where students did well on the items dealing with the atlas, dictionary and directory. This was as a result of the frequent use of these resources in the primary school curriculum from grade three. Another area where students did well was in regard to the purpose of DDC in the library. This may have been due to their library being arranged according to general subject headings, and to the explanations given to students by their classroom teacher whenever they visited the area designated for the library.

4.2 Post results

The post-test was carried out after nine topics, selected from the grade six information literacy curriculum listed above, were taught to the experimental group by the researcher and the classroom teacher over a three-week period. The choice of the items was governed largely by the nature of the assignments students had to do in class and their need to be conversant with some of the basic skills relating to the location and use of information. The information search process was also included as it related to how they should actually go about finding the information they needed for task accomplishment.

4.2.1 The research process

Q. 1a. When you go to the library to look for information on a topic that is new to you, what do you usually do first? 1b. Why?

Table 14: What students do first with an unfamiliar assignment at the library

Responses	Quasi-experimental Group	Control Group
Ask the person in the library	80%	44%
Do not know	0%	47%
Never been to the library	0%	9%
Use the catalogue	20%	0%
TOTAL	100%	100%

The open-ended nature of this question allowed students to give more than one response. Therefore, while 80% of the treatment group said they would ask the librarian, 20% further indicated that they would also check the catalogue. Both of these responses reflect what was taught. The option of using the catalogue was not mentioned in the pre-test and the smallness of the number who also included this answer could be due to the largely theoretical nature of the lesson (the library did not really have a catalogue). On the other hand, only 44% of the control group mentioned the librarian while the majority did not know (47%). 9% had never been to the library.

Q. 2. Name two places beside the library from where you can get information on your school assignments

Table 15: Finding information stores within a community

Places	Quasi-experimental Group	Control Group
Did not respond	8%	47%
Office	22%	2%
Police station	22%	0%
Bank	16%	0%
Health centre	8%	0%
Post office	8%	0%
Home	10%	49%
Museum	4%	0%
Homework centre	0%	2%
Total	100%	100%

For this question students could select multiple responses. The first noticeable difference between the two groups was that students in the quasi-experimental one were able to identify seven places compared to only three by the control group. Another observation was the small number of students (8%) who did not respond - quite unlike 52% of the control group. Home (49%) was the leading source for information for the control group which suggested a heavy reliance on family members for information, while the quasi-experimental group gave priority to the police station (22%), office (22%) and bank (16%). It was not easy arriving at an explanation

for the popularity of these three locations. One can only guess that the police station and the bank were places frequently visited by adults who might also take their children along. Also, public notices were usually posted at the police station and post office (8%). Offices might refer to parents' workplaces which might provide a greater opportunity for finding information needed for assignments, especially with parental help. Home (10%) for the quasi-experimental group did not rank highly. The places mentioned by the quasi-experimental group were mostly those within the immediate community which served as the main source of information for everyone.

Q. 3. Which of the following do you do when you have finished your school assignment? (Check the most suitable answer/s):

(a) Read it over to check for any spelling or grammatical errors.
(b) Check to see if you did everything the teacher asked you to do.
(c) Ask someone else to check it over for you.
(d) Just hand it in.

Table 16: Steps taken to evaluate work done

Steps Taken by students	Quasi-experimental group	Control group
Read it over to check for any spelling or grammatical errors	54%	48%
Check to see if you did everything the teacher asked you to do	40%	23%
Ask someone else to check it over for you	4%	0%
Just hand it in	2%	29%
Total	100%	100%

The steps listed by both groups were not surprising as these same responses were listed in the pre-test. Furthermore, they reflected the ones their teachers constantly told them to carry out, and the researcher reinforced these same points during the treatment. Of importance is the 29% from the control group who just handed work in compared to 2% the quasi-experimental group. It would seem that the latter group took more seriously the requirement to look over assignments for errors and to make sure that work met the task requirement. This could be attributed to the instruction received during the information skills classes.

4.2.2 Reference resources

*Q. 4. Which of the following reference books do you think is the **BEST** one to find the answer for each of the questions below? (Write the letter for the type of book you choose on the line beside the question)*

Reference Books: (a) Almanac (b) Atlas (c) Dictionary (e) Directory (f) Encyclopaedia (g) Handbook (h) Index

(i) The highest mountain in the Caribbean
(ii) The street name for the Ministry of Education in Kingston
(iii) The pronunciation of a word
(iv) General information about events, topics, and places
(v) All the world records for 100m athletes in the last five years

Table 17: Selection of appropriate reference sources

Reference Sources	Quasi-experimental		Control	
	Correct	Incorrect	Incorrect	Correct
Atlas	97%	3%	66%	34%
Directories	94%	6%	63%	37%
Dictionary	97%	3%	44%	56%
Encyclopaedia	75%	25%	78%	22%
Almanac	63%	37%	94%	6%

During the treatment, the quasi-experimental group was taught about different types of reference resources, and the types of information contained in them. They were also given the opportunity to use these resources to locate answers for questions given. From as early as the pre-test the entire sample did well on this question with regards to the atlas (75%), dictionary (72%) and directory (56%). Therefore, it was not surprising that, with instruction, the experimental group's score range ranged from 94% to 97% for these three sources. However, the control group did not do as well. Their scores ranged from 34% to 56% accuracy for these same reference tools. With regard to the encyclopaedia (22%) and the almanac (6%), the responses for this group were poor, in keeping with the general trend in the pre-test. However, the quasi-experimental group showed marked improvement with scores of 75% and 63% respectively. This difference could be due to their being given the opportunity to use the resource after being taught about its purpose. While the almanac was almost unknown to all in the pre-test, there was marked improvement on the part of the treatment group (63%) while a high level of ignorance (94%) persisted among the control group. This marked improvement in knowledge could very likely be attributed to the instruction given to the treatment group.

4.2.3 Parts of a book

Q. 5. Choose the correct word from those given in bold and write it on the line beside its meaning below:

(a) Appendix (b) Bibliography (c) Biography (d) Contents page
(e) Preface (f) Glossary (g) Index (h) Title page

(i) An alphabetical list of important names and topics in a book along with their page numbers.
(ii) A list of hard words and their meaning used in a book.
(iii) The page where the author tells about the creation of the book.
(iv) A section with notes and charts mentioned in a book.

(v) A list of the chapters along with the page numbers.
(vi) A list of books used by an author to write a book.

Table 18: Knowledge of the parts of a book

Parts of a Book	Quasi-experimental Group		Control Group	
	Correct	Incorrect	Correct	Incorrect
Index	94%	6%	9%	91%
Glossary	91%	9%	41%	59%
Preface	69%	31%	6%	94%
Appendix	50%	50%	6%	94%
Content Page	94%	6%	59%	41%
Bibliography	66%	34%	34%	66%

The students in the quasi-experimental group seemed to have almost fully grasped the concepts concerning the index (94%), contents page (94%), and glossary (91%). In contrast, the control group's scores ranged from 9% to 59% for all these items. The results for the quasi-experimental group could be attributed to instruction and the fact that most student textbooks have these parts. The results for the preface, appendix and bibliography were moderate, ranging from 50% to 69%, while the control group's scores still fell below, ranging from 6% to 34%. The moderate results from the quasi-experimental group can possibly be explained by the fact that these parts are not usually found in the books students use at this level, hence their unfamiliarity.

4.2.4 Note-taking

Q. 6.a. Identify two of the main points the author is making in the paragraph below.

Table 19: Students' ability to find essential ideas in a passage

Responses	Quasi-experimental Group	Control Group
Did not respond	13%	63%
Able to find one point	34%	3%
Able to find two points	53%	34%
Total	100%	100%

87% of the quasi-experimental group were able to find one or two main points in the passage given, as opposed to the 37% of the control group. The results for the quasi-experimental group were not surprising as students were given several practice sessions on the topic. A large number (63%) of the control group did not respond to this question. This could be due partly to difficulties with reading and comprehension, as well as the lack of instruction and practice that were afforded to the other group.

Q. *6b. Summarise the passage in three short sentences.*

Table 20: Ability to summarise a passage in three short sentences

Responses	Quasi-experimental Group	Control Group
Correct	91%	31%
Incorrect	9%	69%
Total	100%	100%

91% of the students in the quasi-experimental group were able to complete this task correctly as opposed to the 31% of the control group. The difference could be attributed to the treatment, which included several opportunities for the experimental group to practise in this area.

4.2.5 Alphabetising

Q.7. Write the following names in the exact order in which they would appear alphabetically in the library catalogue on the space provided:

Brown, Stephen; Brouwer, Mark; Brosman, Catherine; Broun, Elizabeth; Brooks, Audrey.

Table 21: Students' alphabetisation skills

Responses	Quasi-experimental Group	Control Group
Correct	94%	44%
Incorrect	6%	56%
Total	100%	100%

After the practice sessions most of the students in the quasi-experimental group (94%) were able to answer this question correctly as opposed to less than half of the control group (44%). Students at this level should have been able to do this type of alphabetisation even without special instruction, and this was one reason why the 87% error level in the pre-test was so surprising. The high scores by the quasi-experimental group in the post-test seem to suggest the need for constant practice for reinforcement - a benefit of IL instruction.

*Q. 8. In an encyclopaedia volume marked **CHAR – CHEM**, which of the following words would not be included in this volume? (Circle your answer):*

(a) Charm (b) Chess (c) Chemistry (d) Cheese

Table 22: Alphabetising using guide words

Responses	Quasi-experimental Group	Control Group
Correct	97%	9%
Incorrect	3%	91%
Total	100%	100%

As with the previous question, the students in the quasi-experimental group (97%) also did very well on this question relating to the use of guide words which also required alphabetisation skills. On the other hand, the control group performed below par, a 91% level of inaccuracy. The same reasons as cited for the previous question could be the cause.

4.2.6 Dewey Decimal Classification Scheme (DDC)

Q.9. ***True or False:*** *The Dewey Decimal Classification Scheme is used in the library to group:*

(a) Biographies with the fiction books
(b) Books on the same subject together
(c) Magazines and audio-visuals together

Table 23: Knowledge of how materials are arranged in the library using DDC

Responses	Quasi-experimental Group	Control Group
Correct	78%	44%
Incorrect	22%	56%
Total	100%	100%

44% of the control group got this question right without any formal instruction on the topic. This could be due to exposure at the public library or elsewhere. Compared to the control group, the quasi-experimental set had a high score of 78%. The difference between groups might indeed be due to the instruction the latter received, since learning about Dewey would only be conducted within this context - the school lacked a professional librarian, any volumes of Dewey or any formal information skills classes.

Q.10. A book about ***cars*** *would be found under which of the following Dewey Classification number?*

(a) 200 (b) 400 (c) 600 (d) 800

Table 24: Knowledge of DDC's ten main classes

Responses	Quasi-experimental Group	Control Group
Correct	97%	31%
Incorrect	3%	69%
Total	100%	100%

This response strengthens the previous one where students had to place a subject under a broad class number in DDC. After the treatment, almost all the students in the quasi-experimental group (97%) were able to choose the correct class for the topic given, as opposed to 31% of the control group. The ability of some of the control group to answer correctly would suggest some exposure to Dewey or some degree of guessing on their part. Therefore, while some variance can be ascribed to the instruction given the quasi-experimental group, there seems to be some other factor apart from guessing - since knowledge of Dewey tends to be largely the purview of librarians.

4.2.7 Catalogue entry information

Q. 11. Use the catalogue card given to answer the following questions:

11a. The catalogue card above is:
(a) an author card (b) a subject card (c) a title card
11b. If you wanted to look for this book under its title, what would you look under?
11c. What series does this book belong to?
11d. Where on the shelf would you look for this book?
11e. Does this book have any pictures?

Table 25: Identifying an item in a catalogue entry

Q11	Questions	Quasi-experimental Group		Control Group	
		Correct	Incorrect	Correct	Incorrect
11a	Type of entry	56%	44%	16%	84%
11b	Subject heading	50%	50%	3%	97%
11c	Series information	31%	69%	0%	100%
11d	Classification number	75%	25%	3%	97%
11e	Illustration	84%	16%	13%	87%

Overall, the control group were largely ignorant of the different features that make up a typical catalogue entry (84-100% of inaccuracy). No more than 16% got any one item correct and other scores ranged from 0-13%. The quasi-experimental group, while scoring higher in accuracy generally, did not do very well in every area. These students scored 84% on identifying illustrations, 75% for the classification number and 56% for naming the type of card, while figures dropped to between 31% and 50% for series and subject headings respectively. This

inconsistent performance by the treatment group may be due to the fact that they had only one, mostly theoretical, lesson on the topic and that there was no catalogue for the students to interface with in order to put what was taught into perspective. Despite this decline in scores, it might also be argued that they still did reasonably well, considering that grasping fully the details of a catalogue card takes time and practice. At least 50% of these students were still able to get at least four out of the five items right. The novelty of the information might have impacted positively on their performance.

4.2.8 Using cross-references

*Q. 12. The following information is given at the end of an article on **Islam** in an encyclopaedia. What does it mean? [Tick only one]*

Islam See Also Mohammed and Qur'an

(a) There are other articles related to Mohammed in the encyclopaedia.
(b) Mohammed is a subheading for Islam.
(c) Islam is not a very important topic.
(d) The encyclopaedia is not arranged alphabetically.

Table 26: Using the 'See also' cross-reference

Responses	Quasi-experimental Group	Control Group
Correct	97%	9%
Incorrect	3%	91%
Total	100	100%

After treatment the quasi-experimental group seemed to have grasped the concept well, as is demonstrated by 97% of them proving able to answer the question correctly. This result may be attributed to the exercises they did using the encyclopaedias. 91% of the control group was unable to answer this question correctly. A majority of the class (63%) still thinks that the 'See also' cross-reference relates to sub-headings. This may be due in part to the lack of IL skills instruction at the school.

*Q. 13.You are looking in the catalogue for information on **Patois (Patwah)** and you found this:*
Patois See Creole (Language)

What is this telling you to do?

Table 27: Using the 'See' cross-reference

Responses	Quasi-experimental Group	Control Group
Correct	78%	6%
Incorrect	22%	94%
Total	100%	100%

78% of the quasi-experimental group was able to explain what the 'See' cross-reference asked them to do, while only 6% of the control group was able to do the same. The high score of the quasi-experimental group can most likely be attributed to the amount of instruction and practice given to them during the lessons since the control group had no such exposure.

4.2.9 Writing citations

Q.15. How would you write out the information about the following book to show your teacher that you used it to get some of the material you included in your essay?

> *A book called **Hazards,** written by Garrette Nagle, and published by Nelson Thornes, located in Essex, England, in 2012.*

After the treatment 94% of the students in the quasi-experimental group were able to cite correctly a book with one author. This could be considered as largely due to the practice given in using the Modern Language Association (MLA) citation style. None of the students in the control group attempted to answer this question, similar to the response of the whole group to the pre-test.

The present study shows that the IL instruction given had a positive effect on the students' ability to better seek information. According to the data collected, it can be argued that there were some high, moderate and marginal changes in the students' abilities after instruction. Based on the analysis of the post-test data, students' performance in writing a bibliography using the MLA style, use of a cross reference, alphabetization to the fourth letter, classifying broadly using DDC, and related activities, were high. There were some moderate results for topics such as the catalogue card, note-taking, parts of a book, and the research process and related activities. The data collected also showed some marginal results in the areas of the purpose of the DDC and reference resources. The improvement in the nine areas reflects the findings of Morant (1987) who states that there was a marked improvement in the scores of students who received information skills instructions.

5. Conclusion and recommendations

The nine information skills topics taught and tested during the study were identified by various curricula which indicated what students at the grade six level should know. The pre-test indicated that the students in the sample were lacking in knowledge in most of these areas. However, after treatment, it was found that there were some marked improvements in the quasi-

experimental group's information literacy abilities following a limited amount of instruction. As a result of the students' progress in these areas they are more effective and efficient information-seekers.

The study's main objective of using IL instruction to improve students' information-seeking skills was achieved. From a practical standpoint, in order to develop more efficient information seekers in Jamaica with the requisite knowledge to navigate this information age, the introduction of a national IL curriculum is needed as early as the primary level. This statement is supported by the Alexandria Proclamation which urges governments to incorporate IL as a vital component of the educational programmes at all levels (IFLA 2005). As seen when IL is introduced at the tertiary level, it becomes difficult to re-shape inefficient information seeking skills that were honed over a long period of time. One of the main limitations of the study was that only one primary school was used. Therefore, the conclusions arrived at cannot be used to make general statements about all primary schools in Jamaica. Other limitations include the use of non-randomized samples which has further restricted the generalisability of the findings.

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