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Chan, L. et al.. 2002. Budapest Open Access Initiative. New York: Open Society Institute. Available at: <http://www.soros.org/openaccess/read.shtml> [Accessed: 18 November 2015].

# Assessing the impact of a guided inquiry unit on Year 5 pupils' information literacy: a student case study

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## Abstract

A guided inquiry unit was planned and implemented for Year 5 pupils to develop their information literacy. Using TRAILS, a forced-choice knowledge assessment, two topics were selected for focus during the inquiry: 'identify potential sources' and 'evaluate sources and information'. The post-inquiry assessment indicated an increase in pupils' understanding in the 'evaluate sources and information' area. However, the use of TRAILS software had both benefits and limitations as a tool to measure the impact on learning.

## Keywords

assessment; guided inquiry; information literacy; primary education; school libraries

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## 1. Introduction

'Churchill School', a pseudonym, is an independent preparatory school in North London. From January to March 2016, a guided inquiry (GI) project was planned and delivered for Year 5 (age 9-10) pupils to develop their information literacy (IL). GI is a unit of study which allows students to develop confidence and 'deeper understandings of subject area curriculum content and IL concepts' (Kuhlthau, Maniotes & Caspari, 2007, p.2). The GI comprised the first six phases of the inquiry framework (see Kuhlthau, Maniotes & Caspari, 2012), and took the following format:

- 8 lessons of 30 minutes
- 1 lesson of an hour
- 1 homework task of 40 minutes

In December 2015, students completed a baseline IL assessment in preparation for the inquiry. The assessment selected for use was TRAILS, a forced-choice knowledge assessment, developed by Kent State University Libraries (2016). TRAILS was selected because it is, according to Owen (2010):

- freely accessible;
- quick and easy to administer;
- mapped to the American Association of School Librarians (AASL) (2007) *Standards for the 21<sup>st</sup>-century learner*, which provide a clear framework of the skills learners require to thrive in an information rich digital society.

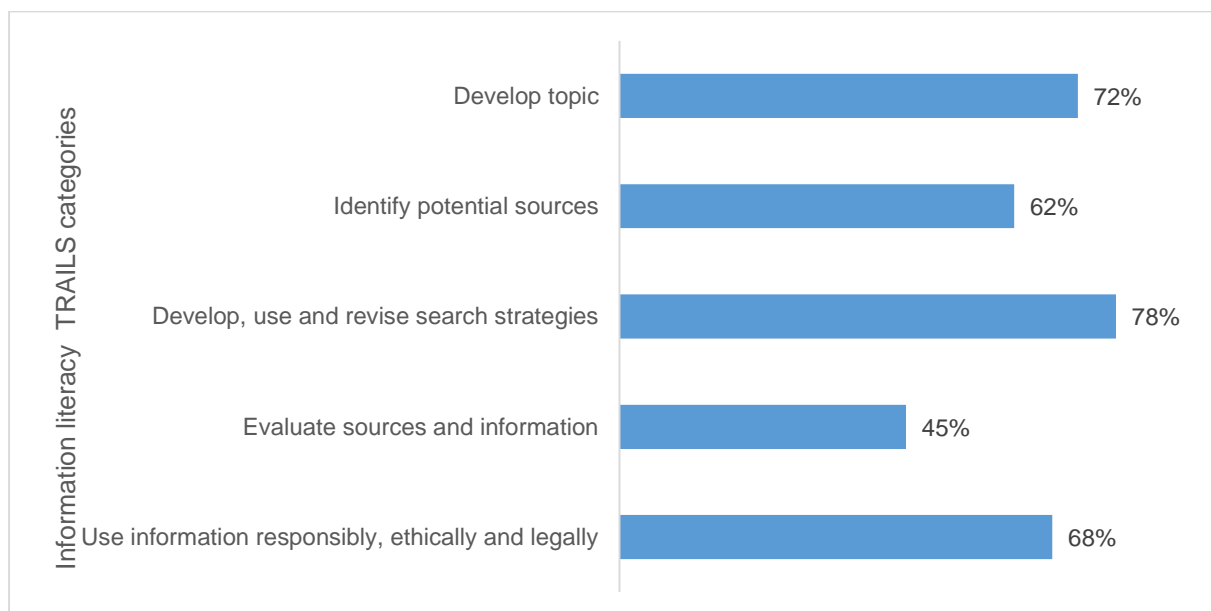
Forced-choice knowledge assessments present learners with a question or prompt and a choice of answers from which 'they must select a response' (Lavrakas, 2008) rather than a nonresponse item (e.g. I don't know). This form of assessment increases the number of 'responses that are usable for analysis' (Lavrakas, 2008). Additionally, forced-choice knowledge assessments are considered an 'effective [method] for assessing knowledge and understanding' (Finson, Ormsbee & Jensen, 2011). As this study seeks to identify pupils' knowledge and understanding in the information literacy domain, the forced-choice assessment provides an appropriate method.

School librarians' and researchers' use of TRAILS to assess students' information literacy is described in the academic and professional literature. For example, Morrison (2007) used the results of a TRAILS assessment in a 10<sup>th</sup> grade (age 15-16) public speaking class to develop students' understanding of the gap between their perception of their information literacy skills and their acquired knowledge. Arnone, Small & Reynolds (2010) used TRAILS in their development of a measure to assess perceived competence in information skills. Bailey & Paul (2012) used TRAILS in their Montgomery County Public Schools study of the relationship between information literacy and reading achievement of students. They assessed 4221 students in grade 5 (age 10-11), 2226 students in grade 8 (age 13-14) and 1629 in grade 11 (age 15-16). They found that 'students with better information literacy (i.e., higher TRAILS scores) had higher academic achievement' (Bailey & Paul, 2012, p.48). Foo et al. (2014) analysed TRAILS content prior to their development of a survey instrument to assess the information literacy competencies of secondary school students in Singapore. Therefore, the use of TRAILS to assess students' information literacy skills across different age groups and contexts suggests that it is an effective method for this study.

## 2. Method

63 Year 5 pupils took the pre-inquiry assessment which comprised 15 questions in five IL categories (listed in Figure 1). The average results for the cohort are shown in Figure 1 below.

**Figure 1: Baseline assessment 1: Year 5 results**



The results indicated a greater weakness in pupils' IL understanding in the following two categories:

- 'identify potential sources'
- 'evaluate sources and information'

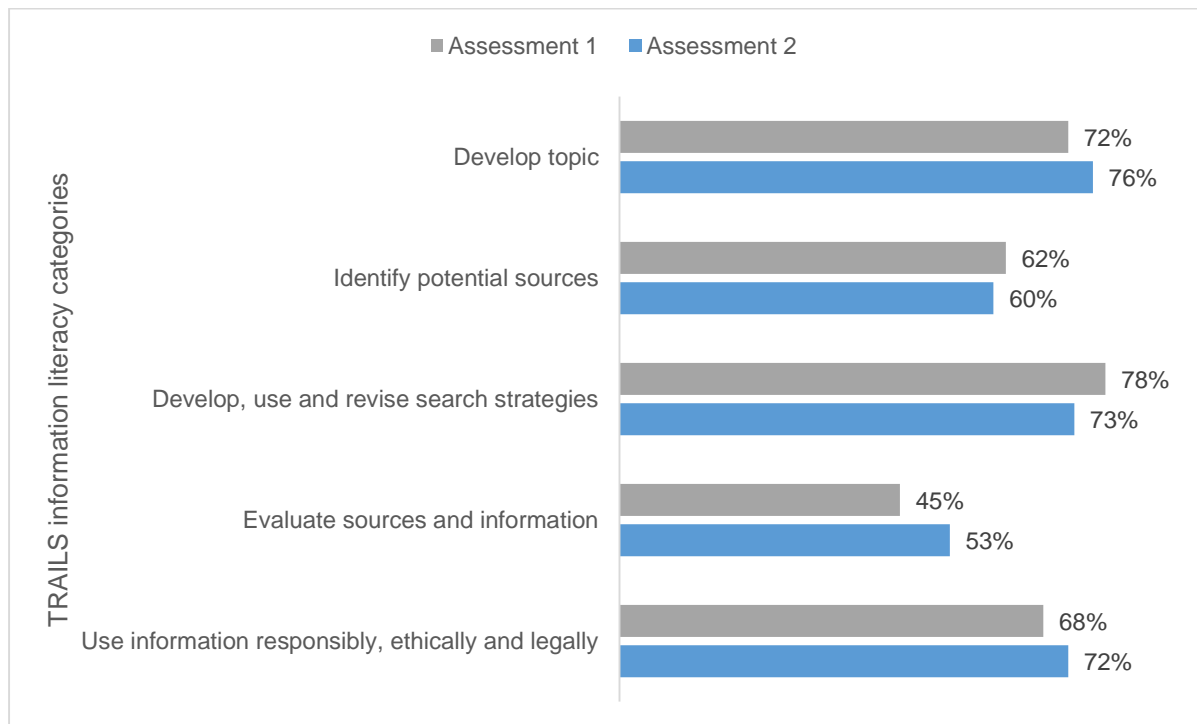
Therefore lessons were structured with the aim of increasing pupil understanding in these areas. In April 2016, a total of 60 pupils repeated the same TRAILS assessment (three pupils had left the school).

## 3. Findings

An initial comparison of the assessment data shows a higher overall score in one category but a lower overall score in the other. Again, pupils' IL scores were taken as an average across the

cohort (see Figure 2 below). In relation to pupils' ability to 'identify potential sources', their score appears to have decreased by 2%. Whereas in relation to pupils' ability to 'evaluate sources and information', the cohort average score increased by 8%.

**Figure 2: Baseline assessments 1 and 2: Year 5 results**



### 3.1 Analysing the decrease in the 'identify potential sources' score

In order to understand whether the decrease in pupils' scores in the 'identify potential sources' category indicated that learning did not take place during the inquiry, the questions on the assessment were analysed to see if they related to the IL content delivered. Questions 4 and 5 did not relate to concepts addressed during the GI. Question 6 did however relate to the IL content delivered. It was the following:

*'You are working on a project and need information about President Abraham Lincoln. Which collection of sources has the most reliable, accurate information?'*

Pupils could select from four possible answers. Their responses are shown in Table 1 below (correct answer highlighted). 9% fewer students gave the correct answer in the second assessment. Overall, more than 50% of students gave an incorrect answer with an increase in the number of students selecting an answer with a fiction story as a more accurate, reliable source than an encyclopaedia. This could indicate that pupils find it difficult to identify the most reliable and accurate sources when they are listed in groups. Pupils would therefore benefit from further IL instruction about which potential sources of information best suit different research tasks.

**Table 1: Pupil responses to Question 6 on the TRAILS assessment**

Answers	Assessment 1		Assessment 2	
	No. of students	%	No. of students	%
A biography of Abraham Lincoln, an online encyclopaedia entry, an official government website	36	57%	29	48%
A biography of Abraham Lincoln, a fiction story about him, a list of websites found in a Google search	10	16%	9	15%
A biography of Abraham Lincoln, a fiction story about him, an official government website	6	10%	10	17%
A biography of Abraham Lincoln, an online encyclopaedia entry, a school's website on American history	11	17%	12	20%
Total	63	100%	60	100%

### 3.2 Analysing the increase in the 'evaluate sources and information' score

The overall 8% increase in Year 5 pupils' ability to 'evaluate sources and information' is an encouraging indicator that learning took place during the guided inquiry. There were average percentage increases in the correct answers for each of the three questions in the category. However, a closer analysis indicates that Question 10 was in fact a comprehension question:

*'You are looking for information to help you answer the following question: What are the rings of Saturn made of? Which of the following facts will help you write your response?'*

The high level of correct responses in both assessments (see Table 2 below) was unsurprising as pupils have literacy skills beyond the expectation for their age.

**Table 2: Pupil responses to Question 10 on the TRAILS assessment**

Answers	Assessment 1		Assessment 2	
	No. of students	%	No. of students	%
Saturn's main rings are composed of water ice.	51	81%	49	82%
Saturn, Jupiter, Uranus and Neptune all have rings.	6	10%	6	10%
Galileo first saw Saturn's rings through a telescope in 1610.	3	5%	4	7%
Saturn is the sixth planet from the sun.	3	5%	1	2%
Total	63	100%	60	100%

Pupils' ability to evaluate sources is in fact more effectively measured in Questions 11 and 12. Question 11 required students to understand the concept of currency:

*'Your assignment is to find out about the languages spoken in Canada. Which is the best source for current and up-to-date information?'*

**Table 3: Pupil responses to Question 11 on the TRAILS assessment**

Answers	Assessment 1		Assessment 2	
	No. of students	%	No. of students	%
A newspaper article titled "Languages Canadians speak" printed last week	23	37%	33	55%
A report titled "Language Communities in Canada: 2011 Census"	6	10%	8	13%
A book titled The Languages of Canada published in 1997	11	18%	3	5%
An early explorer's list of native languages spoken in Canada	22	35%	16	27%
Total	62	100%	60	100%

Ten more students gave the correct answer in the second assessment; thus, the percentage of correct responses for the year group increased by 18% which could indicate that some pupils have an increased understanding of how to identify current information.

Question 12 tested pupils' understanding of the accuracy of information sources:

*'Your teacher has asked you to find information about the planet Saturn. Which electronic source would be the most accurate source of information?'*

**Table 4: Pupil responses to Question 12 on the TRAILS assessment**

Answers	Assessment 1		Assessment 2	
	No. of students	%	No. of students	%
An online encyclopaedia	11	18%	14	23%
Google	10	16%	10	17%
www.saturn.com	26	42%	24	40%
A school's website about space	15	24%	12	20%
Total	62	100%	60	100%

Three more pupils gave the correct answer in the second assessment which is an increase of 5%. However, 40% of pupils thought that a website about Saturn was a more accurate information source than an encyclopaedia. Pupils should have been more cautious about the authority of this information source as there were no authors listed and the concepts of trustworthiness and authority were addressed during the GI. 20% of pupils thought a school's website about space was the most accurate information source, which could suggest that they consider information accessed through school websites as accurate and trustworthy. 17% of pupils answered that Google was the most accurate source of information, which may point towards the need for further instruction on the difference between an information source and a search engine.

The results of the TRAILS assessment suggested an overall increase in pupils' ability to 'evaluate sources', in particular for currency. There are two factors which could have contributed to this positive impact on student learning. Firstly, pupils were introduced to Christensson's mnemonic (2016) as a method for evaluating information sources. Mnemonics are a tool to aid memory (Colman, 2015) and this could have helped pupils recall their learning during the assessment. Secondly, use of the mnemonic step-by-step was modelled to pupils. Modelling is

a behaviourist approach to instruction where ‘the instructor demonstrates how to perform a task or skill’ and then the learner ‘attempts to imitate the instructor’ (Grassian & Kaplowitz, 2009, p.30). As pupils had the opportunity to practise using this skill in the lesson and for homework, this could have also aided their retention.

## 4. Conclusion

Assessing pupils’ IL knowledge prior to the inquiry allowed the identification of areas to target during the GI. However, using an existing assessment tool has both benefits and limitations. On the one hand, the cost-effective, easy implementation of the TRAILS assessment was useful as time for planning IL interventions is constrained. On the other hand, the pre-determined questions did not always relate to the IL content delivered which limits its usefulness as a tool to evaluate learning.

In addition, the functionality of the TRAILS software determined the level of control in viewing and analysing the data. For example, TRAILS does not allow the librarian to view each pupil’s individual answers but rather their overall score for the three questions in each category. Thus, it was not possible to identify pupils who struggled on specific questions or those who missed a question entirely.

Using the TRAILS assessment to measure the impact of a GI unit for Year 5 pupils has demonstrated that IL intervention can contribute to an increase in pupils’ understanding. Although the design of the TRAILS assessment did not always measure the impact of the instructional content delivered through the inquiry, it did give a useful insight into pupils’ understanding. It also identified areas of weakness that can shape the future of IL instruction for Year 5 pupils at ‘Churchill School’.

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