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**Information literacy capabilities of upper secondary students: The case of Vietnam**

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## Information literacy capabilities of upper secondary students: The case of Vietnam

### Abstract

**Purpose** – This paper focuses on investigating information literacy (IL) capabilities and IL self-assessment of Vietnam's upper secondary students.

**Design/methodology/approach** – The investigation was conducted in two upper secondary schools in the country using a multiple-choice questionnaire. The questionnaire was based on the IL competency level assessment toolkit of high schools in the United States, the Tool for Real-time Assessment of Information Literacy, to measure students' IL in terms of developing search strategies, evaluating information sources, using information ethically, and using English to engage with information effectively.

**Findings** – The findings reveal that students' IL has not been well equipped. There is a real need to work towards improving the IL capability of Vietnam's upper secondary students. Findings also reveal gender differences in IL capabilities.

**Research limitations/implications** – The research used a closed response questionnaire, which is considered appropriate to engage with Vietnamese high school students, to explore students' lower-level IL skills and their self-assessment rather than higher-level thinking competencies.

**Practical implications** – This research may help Vietnam's educators understand high school students' IL competency and raise their awareness of the importance of IL in order to encourage the implementation of an IL programme.

**Originality/value** – This study contributes to existing knowledge by adding substantially to current understanding of IL level of Vietnamese upper secondary students - a context which has not been explored to date. It also indicates gender inequality in IL capabilities.

**Keywords** Information literacy, information literacy assessment, self-assessment, high school, Vietnam

**Paper type** Research paper

### 1. Introduction

The idea of developing information literate individuals is widely accepted. However, how to deliver information literacy (IL) programmes is the most difficult part and requires much more effort from educators. Context is an important part that needs to be considered in the implementation of IL programmes. Within a specific context, how an IL programme is valued, supported and delivered is considerably influenced by that context. The context could facilitate or restrain the development of IL (Lloyd, 2011). This study provides an understanding of the IL capabilities of Vietnam's upper secondary students in a context in which the education system is still in transition, from the transmission approach to the constructivist approach in teaching and learning.

Evaluating the effectiveness of existing IL training and users' IL capability has attracted great attention from educators, practitioners, and researchers. This is demonstrated by a considerable amount of literature that has been published on IL assessment, especially in the United Kingdom (UK), the United States (US), and Australia (Rosman *et al.*, 2015). However, little attention has been paid to the Vietnamese educational context. The study was conducted to address the following questions:

- Research question 1 (RQ1): What are the IL capabilities of Vietnamese upper secondary students?
- Research question 2 (RQ2): How do Vietnamese upper secondary students self-rate their IL capabilities?

This paper presents the full findings of the assessment and suggests ways forward based on the analysis and discussion.

## 2. Literature review

### 2.1 The scope of information literacy

IL is regarded as a vital requirement in promoting independent learning which equips people with essential capabilities which enable them to become **lifelong** learners. Although IL has received a great deal of attention from researchers and practitioners since its inception to date, there is no general agreement about the definition of IL (Foo *et al.*, 2014).

The term IL can be understood in different ways. Many authors acknowledge IL as a wide range of skills or abilities. Arguably the most influential definition to date is from the American Library Association (ALA) which defines IL as a set of abilities allowing individuals to “recognize when information is needed and have the ability to locate, evaluate, and use effectively the needed information” (ALA, 1989, p. 1). Chu (2012) asserts that ALA’s IL definition can be seen as the groundwork for the later IL definitions.

Despite the considerable attention paid to IL as a set of skills, Bruce *et al.* (2006) debated that IL is a compound of diverse manners of interacting with information instead of being a set of skills, competencies, and features.

In recent years, the definition of IL has shifted to respond to the ever-changing information environment and variations in information technology; the Association of College and Research Libraries (ACRL) is considered a typical example. In 2007, the Standards for the 21st-Century Learner (American Association of School Librarians [AASL], 2007), based on the Nine Information Literacy Standards for Student Learning (AASL & Association for Educational Communications and Technology [AECT], 1998), was developed to suit the changing information environment. The Information Literacy Competency Standards for Higher Education (ACRL, 2000) was then revised to meet the AASL standards (AASL, 2007). This **provides** an updated understanding of IL, because one of the preliminary purposes of the original ACRL standards was to offer a range of expectations for students moving from K-12 to higher education (HE). The ACRL introduced their new IL definition and a new model which is now known as the ‘Framework for Information Literacy for Higher Education’ in 2015. The new definition emphasises self-reflection and regards the development of IL as part of a learning community instead of following the skills-based approach introduced in the old model (ACRL, 2015).

There are many different definitions of IL given by various institutions and individuals based on different benchmarks. Even if IL is approached from different viewpoints, the principal point of IL is being competent and confident in an ever-changing information environment. The competence and confidence will help individuals become independent and lifelong learners. Coonan strongly argues that it is necessary to reconsider the perception of IL as it is “not merely a set of skills and competences, but a continuum that starts with skills and competences and ascends towards high-level intellectual and metacognitive behaviours and approaches” (Coonan, 2011, p. 20). Following the view of Coonan, IL can be regarded as the process of becoming information literate in order to enable independent and self-directed learning. This process starts by being equipped with skills or abilities to engage effectively with information in various formats and then moves to high-level intellectual and metacognitive behaviours, such as critical evaluation, knowledge creation, argument construction, and self-criticism.

This view influences the assessment of students' IL capabilities in this study. The development of IL is a process from ‘low level skills’ to ‘high order cognitive skills’. The assessment of IL may focus on specific development steps. Performance tests such as assignment, rubrics, and portfolios allow investigators to measure higher order IL cognitive skills. Meanwhile, users’ lower level skills could be measured through knowledge tests, for example a questionnaire. A skill-based measure of lower-level skills could be used as an indicator to predict the results of a more complex measure of higher-level cognitive skills.

## 2.2 Information literacy assessment

There have been many tools developed to assess IL to cater for various different purposes at different levels, including organisational, national, and international (Rozzi-Ochs *et al.*, 2012). Each method has its own strengths and weaknesses (Ali *et al.*, 2010; Chang *et al.*, 2012). The multiple-choice questionnaire test employed in this study is considered the most common way used to measure IL (Walsh, 2009). This technique is preferred because of ease of use, convenience, and low cost (Walsh, 2009). Oakleaf (2008) supports it as it is less time-consuming; relatively straightforward to mark; a wide-ranging knowledge test; a reliable tool for comparison; highly reliability over time, and relatively simple to administer. This kind of test also allows investigators to cover a large sample of participants as well as re-use the test instrument (Chang *et al.*, 2012). However, it mainly focuses on measuring lower level skills rather than higher level cognitive skills (Walton and Hepworth, 2013).

Despite the important role of IL being widely acknowledged, to date, learners have not been equipped with expected IL capability (Venezky, 2000; Chu *et al.*, 2011). The IL capability between genders has been explored in several studies, such as Hignite *et al.* (2009), Chu *et al.* (2011), Chu (2012), Liu and Sun (2012), Mullis *et al.* (2012), Chang *et al.* (2014), and Mohammad (2014). They have demonstrated that there is an imbalance in IL capabilities between male and female students (Klinger *et al.*, 2010).

Research has found that users display a propensity of using simple search techniques to find information (Ojala, 2002; Seamans, 2002; Majid *et al.*, 2011; Pickard *et al.*, 2011). Instead of using academic search tools, for example, library websites (Pickard *et al.*, 2011), users prefer to use Google and online search engines to search for information (Andersen *et al.*, 2007; Chu *et al.*, 2011; Pickard *et al.*, 2011; Chu *et al.*, 2012; Sokoloff, 2012). This may result from the ease of use and the convenience of Google and online search engines (Duffy *et al.*, 2010). However, the overuse of this kind of search tool may negatively affect students' IL skills and the quality of search results (Anderson, 2005; Buschman and Warner, 2005).

Research indicates that information evaluation skill is a weakness of students (Adams, 1999; Knight, 2006; Williams and Rowlands, 2007; Ali *et al.*, 2010; Chang *et al.*, 2012; Pickard *et al.*, 2014). Similar to searching for information, users tend to use under-evaluated information sources rather than attempt to evaluate them (Knight, 2006; Pickard *et al.*, 2014; Shenton *et al.*, 2014). Students mainly use simple techniques to evaluate information sources (University College London, 2008; Shenton *et al.*, 2014).

Studies do not provide homogeneous results concerning the ethical use of information. Some show that young people understand how to access and use information ethically (Williams and Rowlands, 2007), while others demonstrate that students are faced with a lack of understanding of intellectual property (Shih and Allen, 2007; Chang *et al.*, 2012). Furthermore, many studies reveal that students do not respect copyright law (Shih and Allen, 2007; Secker and Coonan, 2013).

## 2.3 Self-assessment of information literacy

Self-assessment allows investigators to explore IL from the student's own perspective, revealing their assessment of their capability rather than that of librarians or educators (Gross and Latham, 2007). Reasons and motivations behind objective tests could be discovered under a self-assessment test (Rosman *et al.*, 2015). Motivation is reduced by both overestimation (Freund and Kasten, 2012) and underestimation (Bandura, 1994). Self-assessment positively affects students' performance, because it allows them to identify their strengths and weaknesses (Ackerman and Wolman, 2007; Rosman *et al.*, 2015). As a result, they can actively plan to improve their IL capability.

The relationship between students' actual IL skill level and self-assessment is noticeably revealed in the domain of IL, such as Geffert and Christensen (1998), Buschman and Warner (2005), Ivanitskaya *et al.* (2006), Gross and Latham (2007), Gross and Latham (2012), and Shenton *et al.* (2014). However, there is no overall conclusion or consensus on the relationship between self-assessment and actual IL skills.

### 3. Methodology

An assessment of all IL aspects in a study is a very big challenge. It is suggested that the assessment should start with IL skills: developing search strategies, evaluating information sources, using information ethically, and using English to engage with information effectively. Therefore, this research has employed a quantitative measure of students' IL in order to **understand** the IL capabilities of Vietnamese upper secondary students. By using a multiple-choice questionnaire to measure students' IL capabilities and their self-assessment, this research could collect data from a large sample and statistically compare between different groups.

#### 3.1 Questionnaire design

The questionnaire contained 35 questions and was divided into three sections, as follows:

- Section A - About you (4 questions): obtained demographic data of the study sample, such as name, gender, school, and level of study.
- Section B – Your IL (26 questions): investigated students' IL level in terms of the ability to develop search strategies, evaluate information sources, use information ethically, and use English to engage with information effectively. Students were allocated one point for each correct answer and each question had only one correct answer. The questionnaire was based on the 12<sup>th</sup> grade version of the IL competency level assessment toolkit of high schools in the US, known as the Tool for Real-time Assessment of Information Literacy (TRAILS), a project which was devised at Kent State University Libraries (Kent State University Libraries, 2016). However, the questions were altered to suit Vietnamese upper secondary students. Modifications to the questions were based on suggestions made by a group of professionals, including an expert in information science, a high school librarian, and an upper secondary school teacher. A short explanation of a situation needing an information search was provided in each question, and several different potential answer choices that could be used to solve the problem were then included. The questionnaire also provided the option "I do not know" for each IL testing question in order to avoid guessing the answer (Neely, 2006).
- Section C – IL self-rating (5 questions): aimed to identify students' IL self-assessment. Students self-rated their IL using a five-point rating scale: choose 5 for highest rating and 1 for lowest rating. The self-assessment items were put at the end of the questionnaire. This aimed to shed some light on the IL concept and testing areas. This would increase the accuracy of the test (Gross and Latham, 2007; Rosman *et al.*, 2015).

Cronbach's  $\alpha$  reliability coefficient of SPSS was used to measure reliability of test items. Research indicates that good tests have reliability coefficients ranging from a low of 0.65 to above 0.90 (Liu and Sun, 2012). Cronbach's  $\alpha$  was conducted with the following results:

- IL assessment: 0.65
- IL self-assessment: 0.71

It can be seen that the internal consistency reliability coefficient of the scale was at an acceptable level.

There was a need to test the validity of the assessment tool to ensure that the questions measure what the research intends to measure (Bryman, 2012). Validity, in the context of this study, was concerned with the issue as to whether the questionnaire precisely reflected students' IL level. Face validity was employed to establish validity of the questionnaire. Specifically, a group of professionals, as mentioned above, was established and invited to participate in the research. **There is an expert** in information science who had more than 30 years' experience in the field in Vietnam; a high school librarian who had five years working experience in an upper secondary school; and an upper secondary school teacher who is well versed in teaching upper secondary students,

1  
2 understanding what is familiar with them, and knowing what is expected from students in a study  
3 programme. The questionnaire was sent to this group to seek their feedback before delivering to  
4 students. The researcher provided group members an explanation of the purpose of the study and  
5 the aim of the student survey. This aimed to help them have a common understanding of the  
6 purpose of the study and be aware of the importance of their expertise knowledge. In addition, the  
7 questionnaire was piloted with 17 upper secondary students. They were also invited to take part in a  
8 follow-up interview to obtain their comments about the questionnaire. The questionnaire was then  
9 amended before delivering to students in the main study. Bryman (2012) indicates that a slight  
10 difference in understanding the indicator or concept by the participants could result in a very  
11 different estimate of the indicator or concept on the part of respondents. The researcher, based on  
12 suggestions made by students who took part in the pilot questionnaire survey and the follow-up  
13 interview, added more concept explanation to reduce the variations in students' understanding of  
14 the concepts, for example, IL, search engine operator and Boolean operator. Furthermore, the  
15 questions were reordered to provide students a better understanding of the new concepts.  
16  
17  
18

### 19 3.2 Procedure and technique

20 A letter and consent form were sent to the Board of School Management of the two schools to  
21 request permission to carry out the research in their institution. Consent forms and information  
22 sheets were provided to students. Students who were willing to participate in the research must fill  
23 in the form and give it to the investigator in the library on selected dates. Students' parents were  
24 required to sign the consent form if they wished to give permission for their child to participate in  
25 this study. The researcher handed out the questionnaires to students in their class and collected them  
26 after students had completed. The investigator and class teachers were facilitators who supported  
27 students during the questionnaire completion process. There are no standards that provide indicators  
28 to specify what a long questionnaire is. Nevertheless, it was assumed that the questionnaire of the  
29 research was relatively long. Thus, the questionnaire was divided into three parts and sent to  
30 students separately in order to reduce the risk of respondent fatigue (Bryman, 2012). The first part  
31 has 5 questions. The second and third part consist of 15 questions for each. The questionnaire was  
32 completed over three days. Each part was completed within 5 to 15 minutes each day before  
33 students' official classes. This means students did not need to complete all 35 questions at one time.  
34 Students must provide their student number in each part after completion to help the researcher  
35 easily collect and assemble the results.  
36  
37  
38  
39

### 40 3.3 Sampling

41 Vietnam's upper secondary schools enrol students based on their entrance examination scores.

42 **Based on this, students are normally divided into two groups: public schools (including gifted high**  
43 **schools, public schools, and semi-public schools), and non-public schools (including private and**  
44 **international schools).** Schools are ranked from high to low in the above order. Students firstly  
45 apply to their local public schools. They can then apply to non-public schools to study if their  
46 entrance examination marks are not sufficient to enter public schools.  
47

48 **The study stratified upper secondary schools in Ho Chi Minh City by school type, and then**  
49 **one public and one private school (labelled as School B and School C, respectively) were selected**  
50 **based on their willingness. In each school, a simple random sample was applied to select students to**  
51 **participate in the study. School B and School C had 1,146 and 981 students, respectively. Yamane's**  
52 **(1967) simplified formula was applied to the above population with sampling error of 10%.**  
53  
54

$$55 n = n_1 + n_2 = \frac{1146}{1 + 1146 \cdot (0.1)^2} + \frac{981}{1 + 981 \cdot (0.1)^2} = 92 + 91 = 183$$

56  
57 **As a result, the study involved 183 upper secondary students ( $n = 183$ ) (aged from 15-18) from the**  
58 **two schools.** The number of female students was 99 (54.1%), while 84 (45.9%) were male. Ninety-  
59 two were from School B and 91 were from School C. Grade 12, 11 and 10 students participated in  
60

the study with the percentage of 35.5%, 30.1% and 34.4%, respectively. **A high response rate is an advantage of this study (100%).**

### 3.4 Data analysis

The response data were imported into SPSS 22 for analysis. For all tests, the alpha level ( $p$ ) was set at 0.05. Data were analysed on two levels: descriptive (mean, sum, standard deviation, and correlation coefficients) and inferential statistics (independent sample t-test and Chi-square).

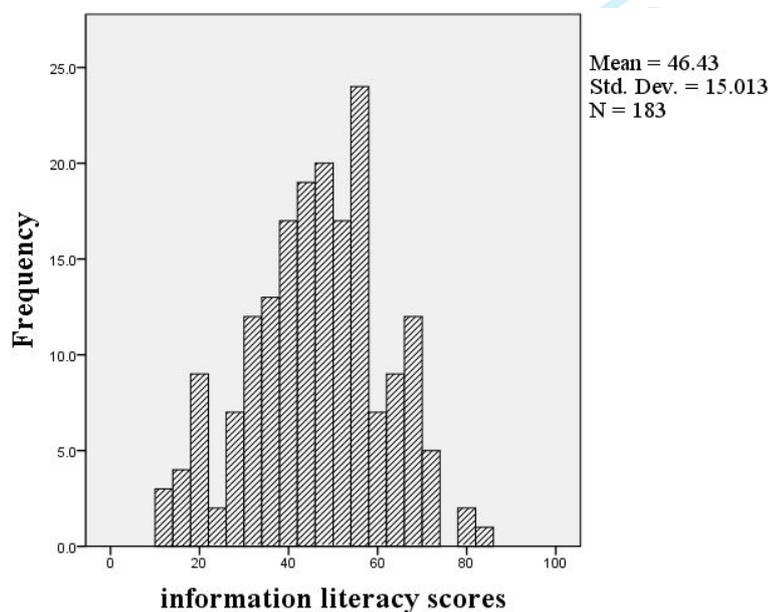
## 4. Findings and discussion

The number of items used to test each IL component was not equal. Thus, the numerical scores were translated to percentage scores in order to compare across items and test areas. **Vietnam's education institutions use the following grading system to assess students' academic capabilities: Good and Very good: 7+; Fail with reassessment opportunity and Pass: 3.5–6.5; Fail with no reassessment opportunity: 0-3. This grading system was applied to this study.** The percentage scores were divided into three groups; less than or equal to 30% ( $\leq 30\%$ ) (low); more than 30% and less than 70% ( $30 < \text{score} < 70$ ) (average); and more than or equal to 70% ( $\geq 70\%$ ) (high).

The self-rating scale of 1 to 5 was recoded and then grouped into value categories in order to facilitate comparison with the IL test scores; 1-2 (low); 3 (average); 4-5 (high).

### 4.1 Overall information literacy scores and self-assessment

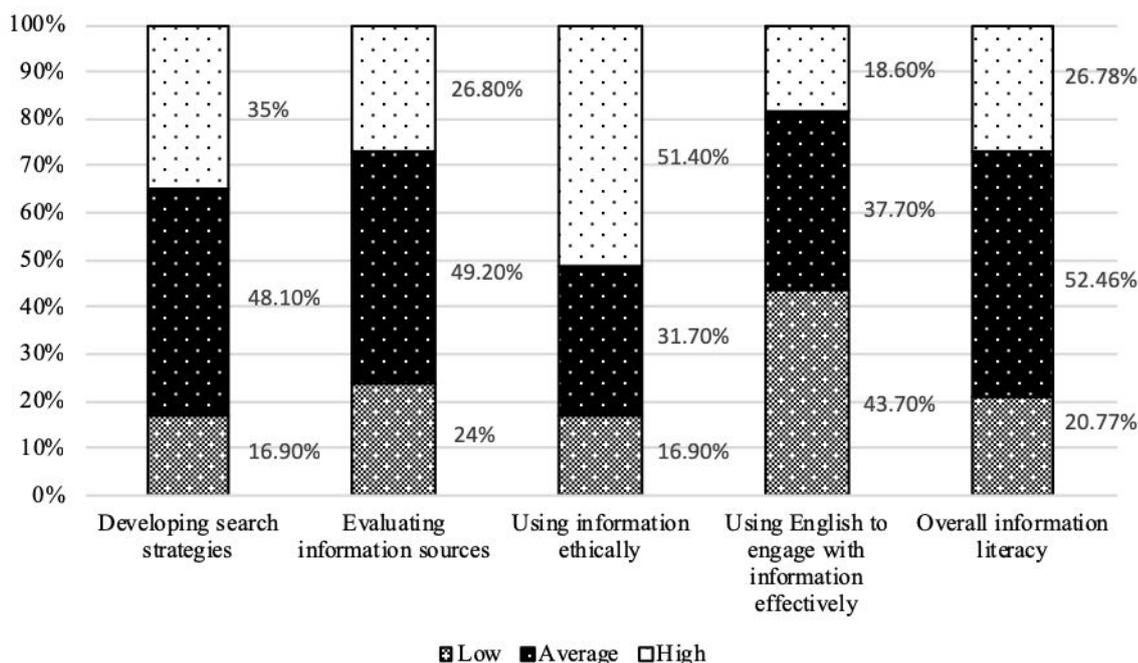
With an overwhelming number of students achieving average IL scores, the study identified that Vietnam's upper secondary students had basic knowledge/skills about how to engage with information. However, the percentage of students achieving high scores (4.4%) was much lower than the proportion of average (82%) and low scoring students (13.7%). Furthermore, the mean IL score was below the expectation of 50% (mean score: 46.43/100) (Figure 1).



**Figure 1.** Overall information literacy scores

Evidence reveals that students had not been equipped with a high level of IL capability. This view is shared by Venezky (2000) who demonstrated that students faced many challenges in handling information, technically-based skills, and effective independent learning. Similarly, studies found that students' IL capability was underdeveloped (Chu *et al.*, 2011). It can be seen that this problem has been well established by research in the past and it is thoroughly unresolved in the context of this research.

The study found that students overrated their actual IL level. This is corroborated by a greater number of students self-rating their IL at a high level (26.78%) in comparison with the number of students achieving an actual high score in the test (4.4%). They also self-rated their ability at a high and average level for almost all IL components, except using English to engage with information effectively (Figure 2). This finding firmly consolidates the results of earlier research showing that young people inaccurately self-assess their IL competence and tend to overestimate their **information and communication technology/IL** knowledge and skills (Buschman and Warner, 2005; Ivanitskaya *et al.*, 2006; Gross and Latham, 2007; Shenton *et al.*, 2014). This overestimation may reduce students' motivation in developing necessary skills (Freund and Kasten, 2012). It is suggested that students' awareness of their actual IL level needs to be increased (Ackerman and Wolman, 2007).



**Figure 2.** Self-assessment of information literacy testing areas

#### 4.2 Information literacy component testing scores

Out of the four IL testing areas, information evaluation was the area where students performed most poorly (mean score: 38.36). They had better performance in the three other IL components (Table 1). The result consolidates the view of many researchers in the field, such as Williams and Rowlands (2007) and Pickard *et al.* (2014), who agree that information evaluation skill is not a young people's strength. Adams (1999) concluded that high school students had problems in evaluating scientific claims made in media sources when he examined how 12<sup>th</sup> grade students evaluated publications related to global warming. This result is supported by Knight (2006) who revealed that first-year students' performance in selecting and using information was better than evaluating information. Additionally, Ali *et al.* (2010) found that Engineering students lacked the necessary knowledge and skills to evaluate the Internet information. Chang *et al.* (2012) suggested that Singapore secondary students needed more improvement in higher-level skills, such as information evaluation, information synthesis, and information use, than other skills, for example, task definition, information seeking, and information access. Similarly, Vietnamese students displayed a poor performance in information evaluation.

During this investigation it was found that students achieved the best-scored performance in using information ethically (mean score: 60.11) in comparison with the three remaining IL components (Table 1). This demonstrates that students of the two schools **understood** ethics in using

information. This finding supports the work of Williams and Rowlands (2007) who found that there was an overwhelming number of young people who understand how to prevent copyright infringement when accessing information on the Internet. Nevertheless, some researchers hold opposite view, such as Shih and Allen (2007) and Chang *et al.* (2012), who observed that there was a lack of understanding of intellectual property among students. It can be seen that earlier research found different results regarding students' understanding of ethical use of information. In the context of this study, Vietnamese students demonstrated that they **understood** this issue.

**Table 1.** Scores for four information literacy testing areas

Testing areas	Mean (%)	Minimum	Maximum
Evaluating information sources	38.36	0	100
Developing search strategies	43.28	0	100
Using English to engage with information effectively	49.40	0	100
Using information ethically	60.11	0	100

The percentage scores among the individual items are given in Table 2. Using search fields to find information showed good-performing scores (scores > 70). Students obtained poor-performing scores in some items, such as Boolean operators and book index (scores ≤ 30). Students did not achieve high scores regarding broadening search results (mean score: 32.8), narrowing search results (mean score: 47.5), and using truncation (mean score: 35.5). Similarly, Ojala (2002) found that advanced search features were only used by around 3-5% of searchers. The studies conducted by Seamans (2002), and Hepworth (2003) demonstrated that searchers did not prefer to use Boolean operators. This finding supports work by Majid *et al.* (2011) who found that nurses principally used basic search features to search for literature and only one-quarter of them utilised Boolean and proximity operators. In addition, students are faced with challenges in identifying sources, broadening and narrowing the search, and they display a propensity to use a new source if they fail to find information, rather than modify their current search (Hepworth, 2003). It can be seen that this research firmly consolidates the results of many earlier studies by indicating the overuse of simple search techniques among Vietnamese students. It is argued that this may prevent students from developing effective searches (University College London, 2008).

**Table 2.** Scores for individual items

Testing area	Testing item	Score (%)
Developing search strategies	Boolean operators	<b>20.8</b>
	Book index	24
	Broadening search results	32.8
	Truncation	35.5
	Online public access catalog (OPAC)	41.5
	Narrowing search results	47.5
	Book table of contents	62.3
Evaluating information sources	Call number	67.8
	Search fields	<b>79.2</b>
	Appropriate information sources	<b>11.5</b>
Using information	Authoritative information sources	44.8
	Information content evaluation	<b>77.6</b>
	Following ethical/legal instructions	<b>36.1</b>
	Copyright	57.4

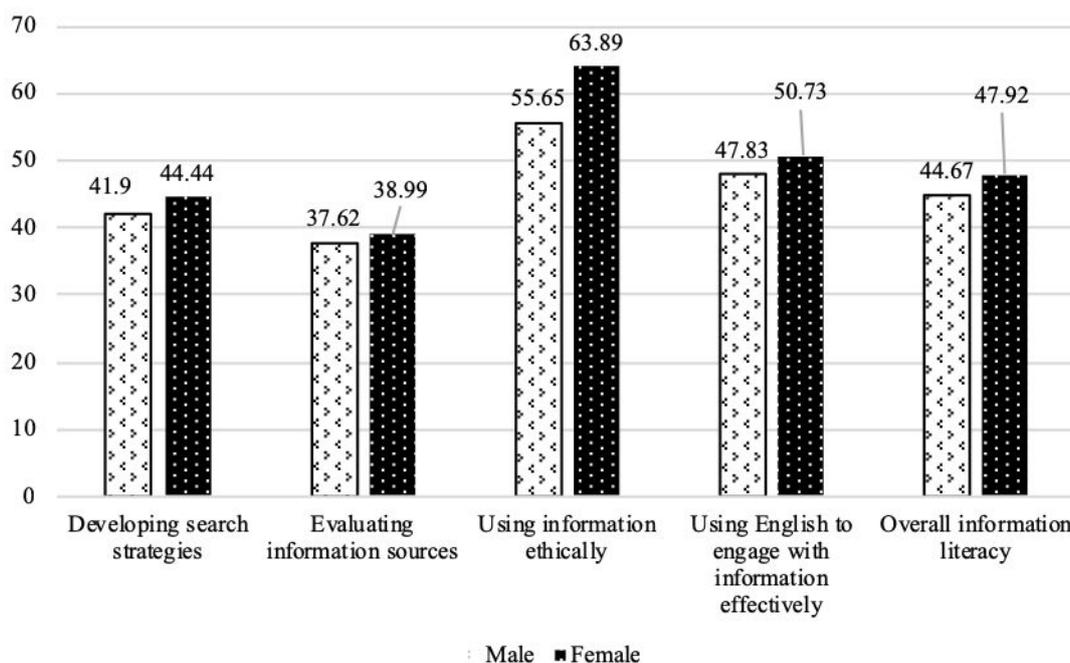
1			
2	ethically	Plagiarism	<b>88</b>
3	Using English	Identifying important information from text files and	
4	to engage with	documents written in English	<b>37.2</b>
5	information	Identifying appropriate search fields presented in English	40.4
6	effectively	Understanding the meaning of a citation written in English	48.6
7		Understanding the message in relation to ethical issues	54.6
8		written in English	56.8
9		Understanding the meaning of the English book's title	56.8
10		Evaluating the content of information written in English	<b>58.5</b>
11			
12			
13			

14 The study found that students preferred to use online search engines, especially Google,  
 15 rather than other search tools, for example, the library catalogue. In total 72.1% of the students  
 16 chose to start their search by using Internet search engines, for example, Google, rather than other  
 17 search tools. This result is corroborating by previous research which identifies that the first-choice  
 18 search engine for most students in particular and searchers in general, is Google (Pickard *et al.*,  
 19 2011; Sokoloff, 2012). In addition to Google, users also give priority to Yahoo (Chu *et al.*, 2011),  
 20 social media channels, and social networking sites for breaking news and expert opinion (Sokoloff,  
 21 2012). Similarly, several studies conducted in Hong Kong and Denmark found that children mainly  
 22 searched for information on the Internet (Andersen *et al.*, 2007; Chu *et al.*, 2012). Vietnamese  
 23 students tended to match this trend, as they also gave priority to searching information through  
 24 Google.

25 The superficial use of Google may reduce the effort of seeking information through other  
 26 search tools among students, even though those search tools can provide students with high quality  
 27 information. For example, library websites/OPAC are less used by searchers in comparison with  
 28 Google or other online search engines (Chu *et al.*, 2011; Pickard *et al.*, 2011). The overuse of  
 29 Google may result in the underdevelopment of students' IL skills (Anderson, 2005) and poor  
 30 academic research results (Buschman and Warner, 2005). This is strongly evidenced in the context  
 31 of this study by indicating that there was a lack of IL capability among students, with only 4.4% of  
 32 the students achieving high scores in the IL assessment.

#### 33 4.3 Information literacy scores and self-assessment between female and male students

34 Female students scored slightly higher than male students (mean score: 47.92 vs. 44.67). Data  
 35 analysis of other aspects of IL between males and females indicates that females obtained higher  
 36 scores than males in the four IL testing areas (Figure 3).



**Figure 3.** Comparison of information literacy test scores between female and male students

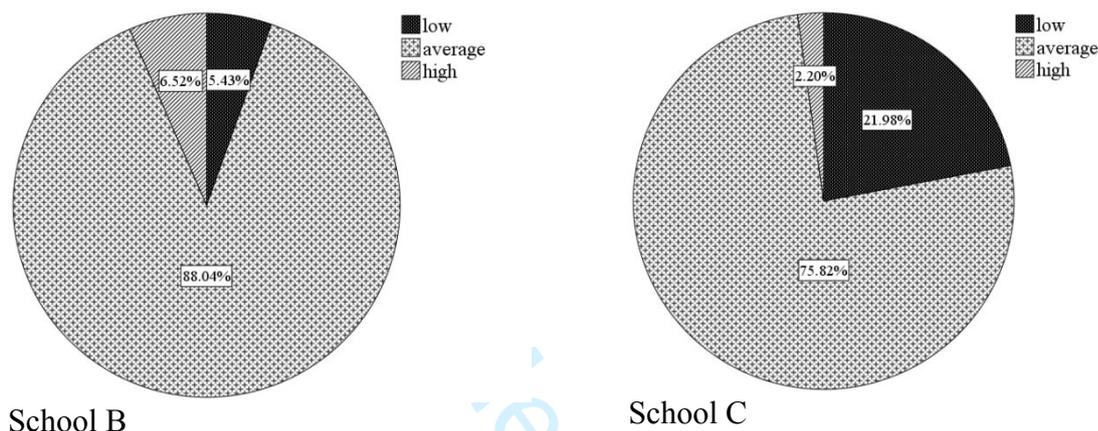
However, boys are inclined to think more positively of their IL level than girls. Specifically, 29.76% of the male students, as against 24.24% of the female students, rated their IL at a high level. It is not surprising to find that females obtained higher scores than males in IL, because the literature widely reports that there are gender gaps in literacy achievement across schools (Klinger *et al.*, 2010). This result strengthens the outcomes of several studies, for instance, Hignite *et al.* (2009), Chu (2012), Liu and Sun (2012), and Chang *et al.* (2014). These projects were carried out to explore the difference between male and female students, ranged from primary schools to HE, in their IL skills. They revealed that female students outscored their male peers in the IL tests. They suggest that breaking the imbalance between males and females in their IL level is essential to enhancing students' learning. In addition to IL, a range of research conducted by the International Association for the Evaluation of Educational Achievement (IEA) demonstrated that female students had better performance than male students in reading literacy (Mullis *et al.*, 2012). It can be seen that, like many other countries, the disparity in the IL level between female and male students also occurred in Vietnam. This study firmly consolidates the results of research carried out by Gross and Latham (2012) who found that students with below-proficient IL skills exaggerated their ability. In the context of this study, male students inflated their IL capability, although their IL scores were lower than females.

Although descriptively, the females showed more capabilities than the males, inferentially, there was no significant difference in their capabilities, with  $p = .145$ ,  $t = 1.465$ ,  $df = 181$ . Similarly, Mohammad (2014) found that there was no significant difference between male and female students concerning their IL capability. The study also found that there was no correlation between students' gender and their IL scores ( $r = -.108$ ) as well as self-assessment variable ( $r = -.023$ ). This research and the earlier studies share the same view by pointing out that there is no statistical relationship between genders and their IL level. For example, Chu *et al.* (2011) showed that students' improvement in IL and information technology (IT) skills could not be significantly predicted by their gender.

#### 4.4 Information literacy scores and self-assessment between schools

School B students' overall IL test scores were higher than School C (mean score: 52.61 vs. 40.18). Average IL scores were recorded by a large number of students in both schools; in particular,

88.04% for School B and 75.82% for School C. The proportion of the students achieving high scores in School B was 6.52%. This ratio was higher than School C, with 2.2%. Conversely, the number of students of School C obtaining low scores was higher than School B (21.98% vs. 5.43%) (Figure 4). Overall, it can be said that students' performance in IL was better in School B than School C. It is not surprising to find that School B's students – a public school, did better than their peers from School C – a private school. The reason is that, Vietnam's public schools are selective and often enrol students who have better academic performance than those in private schools. This may indicate that school students who achieve better academic results are likely to display a better IL level.



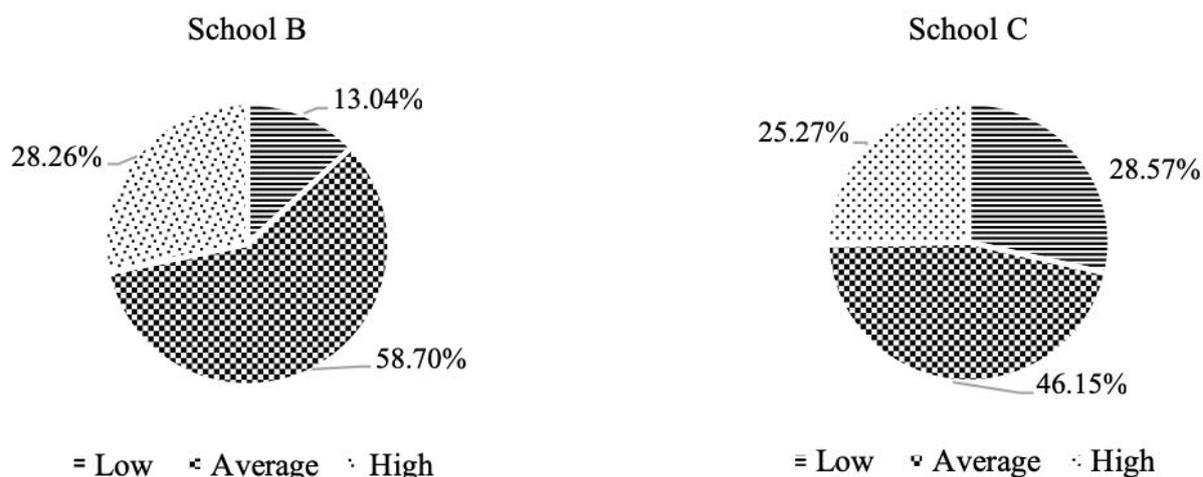
**Figure 4.** Overall information literacy scores of the two schools

Employing a Chi-square test, a relationship was found between types of school and IL scores. In other words, types of school made a difference in IL scores of students, with  $p = .003$ ,  $df = 2$ ,  $X^2 = 11.955^a$ . The study also indicates that there was a medium negative linear relationship between types of school and IL scores ( $r = -.415^{**} < 0$ )<sup>1</sup>. Evidence suggests that students who achieved higher academic results also displayed a better IL performance. This finding is confirmed by Chu *et al.* (2011) who found that improvement in IL and IT skills was significantly predicted by students' academic ability. This is consistent with research conducted by Chang *et al.* (2012) who demonstrated that academic streams affected IL performance of secondary students. Specifically, they found that the express stream<sup>2</sup> obtained higher IL scores than their peers in the normal academic stream. It can be seen that the positive impact of the academic capability to the development of students' IL can also be found in Vietnam's upper secondary students.

It was found that students of School B self-rated their IL level higher than School C's students (Figure 5). School C's students thought that their IL was low (28.57%). This rate was higher than School B (13.04%). This result may reveal that students with better academic performance think of their IL level in a more positive way.

<sup>1</sup> \*\*. Correlation is significant at the .01 level (2-tailed).

<sup>2</sup> Based on the scores in the Primary School Leaving Examination at the end of Grade 6, Singapore students are divided into four groups: the special stream in top-performing schools (the top 10%); the express stream in both top-performing and neighbourhood schools (the next 50%); the normal academic stream (the subsequent 25%); and the normal technical stream (the bottom 15%).



**Figure 5.** Information literacy self-assessment between schools

Chi-square test indicated that self-belief of students in their IL was also affected by types of school, with  $p < .05$  ( $X^2 = 6.836^a$ ,  $df = 2$ ,  $p = .033$ ). **By employing Spearman's correlation coefficient, the schools showed a difference in self-assessment in three out of four IL components: developing search strategies ( $r = -.165^*$ )<sup>3</sup>, evaluating information sources ( $r = -.172^*$ ), using English to engage with information effectively ( $r = -.272^{**}$ ).**

#### 4.5 Information literacy scores and self-assessment between grades

Grade 12 students had better IL performance than Grade 10 and 11 students (Table 3). Specifically, Grade 12 obtained 50.58, while Grade 11 and 10 scored 43.13 and 45.02, respectively. Generally, Grade 12 students had higher scores in overall IL scores and IL testing aspects than the two other grades. Surprisingly, although Grade 11 students are at a higher academic level, they had lower scores in overall IL and IL testing aspects than Grade 10 students. Also, the most surprising result was that higher scores in evaluating information sources were achieved by Grade 10 students.

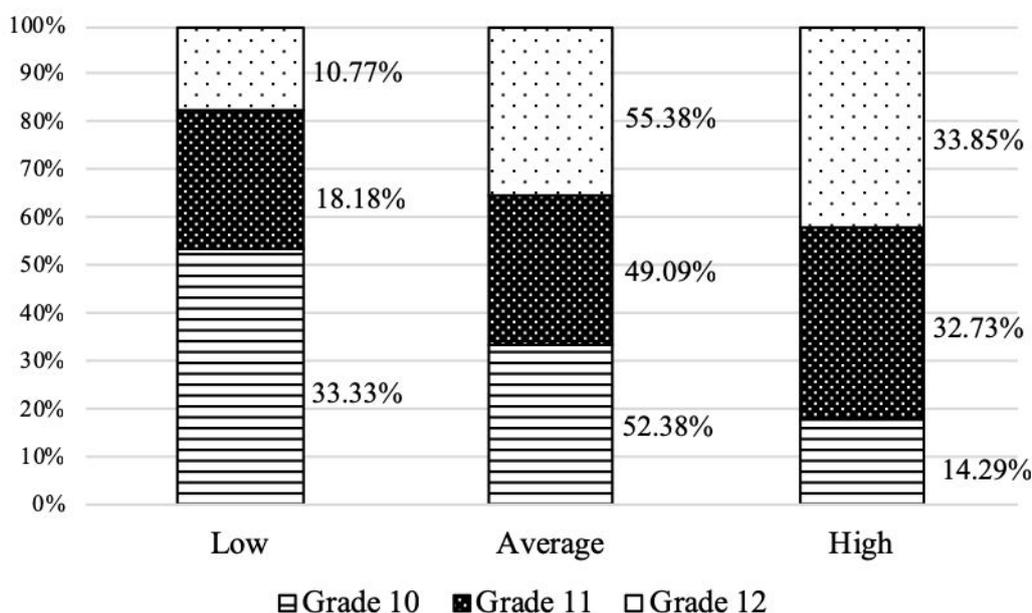
**Table 3.** Information literacy scores between grades

Testing areas	Grade 10 (%)	Grade 11 (%)	Grade 12 (%)
Developing search strategies	41.59	38.18	49.23
Evaluating information sources	41.59	32.36	40.31
Using information ethically	54.37	62.73	63.46
Using English to engage with information effectively	47.43	47.29	53.09
Overall information literacy scores	45.02	43.13	50.58

Chi-square test provides evidence that there was a relationship between the two above variables. In other words, overall IL scores were affected by level of study, with  $X^2 = 12.911^a$ ,  $df = 4$ ,  $p = .012$ . **Evidence demonstrates that level of study affected students' IL regarding developing search strategies ( $r = .158^*$ ), using information ethically ( $r = .165^*$ ) and overall IL scores ( $r = .157^*$ ). It can be said that students who were at a higher academic level also had more positive IL scores ( $r > 0$ ). However, it roughly appears that there was only a weak correlation between study level and IL scores ( $r < .29$ ).**

<sup>3</sup> \*. Correlation is significant at the .05 level (2-tailed).

It was found that students who were at a higher academic level self-rated their IL more positively than those who were at lower grades. The proportion of students who rated their IL at a high level increased from 14.29% (Grade 10) to 33.85% (Grade 12). Conversely, the fraction of students who ranked their IL at a low level declined from 33.33% (Grade 10) to 10.77% (Grade 12) (Figure 6).



**Figure 6.** Comparison of information literacy self-rating between grades

Chi-square test found that IL self-assessment was affected by level of study, with  $p < .05$  ( $X^2 = 13.934^a$ ,  $df = 4$ ,  $p = .008$ ). **The study indicates that there was a weak positive correlation between level of study and students' self-rating ( $r = .271^{**} < .29$ ).** Students who were at a higher academic grade also thought more positively about their IL level.

#### 4.6 Correlation between information literacy testing areas variables

Further granular analysis of the relationship between IL testing areas demonstrates that skills of the earlier stages of the process (e.g. information search) were a good prediction of skills of the later stages (e.g. information evaluation), with  $r > 0$  (Table 4). In other words, this finding indicates that if students performed better at skills of the earlier stages of the information engagement process, they could show an improved performance with later stage skills. The result is in line with earlier literature when Chang *et al.* (2012) confirmed that skills, such as task definition, information seeking strategies, and location and access, had a positive impact on skills in the later stages, for example, information evaluation. Similarly, in this research, students might achieve better scores in evaluating information if they performed well in developing search strategies.

**Table 4.** Correlation between information literacy testing areas variables

Testing areas	Developing search strategies	Evaluating information sources	Using information ethically	Using English to engage with information effectively	Overall information literacy level
Developing search		.287**	.277**	.285**	.803**

1			
2	strategies		
3			
4	Evaluating	.234**	.569**
5	information		
6	sources		
7	Using	.267**	.567**
8	information		
9	ethically		
10			
11	Using English		.669**
12	to engage with		
13	information		
14	effectively		

\*\* . Correlation is significant at the .01 level (2-tailed).

\* . Correlation is significant at the .05 level (2-tailed).

#### 4.7 Correlation between information literacy scores and self-assessment

Employing Spearman Correlation Coefficient, it was found that there was a positive linear relationship between overall IL scores and self-assessment. In other words, students who self-rated their IL at a high level also had better IL performance. Nonetheless, it roughly appears that there was only a weak correlation ( $r = .192^*$ ). This view is confirmed by Gross and Latham (2007) and Rosman *et al.* (2015) who demonstrated that there was a relationship between self-assessment and actual IL skills. Similarly, Ivanitskaya *et al.* (2006) found that there was a positive correlation between self-assessment and actual skills. In contradiction to this view, Geffert and Christensen (1998) revealed that there was no correlation between self-assessment and IL test scores. It can be seen that research found different results of the relationship between students' actual IL level and their self-assessment of that ability. In the context of this study, the positive relationship between the two variables is confirmed.

## 5. Conclusion

From what has been discussed above, it can be seen that this research does support the results of many studies in the past in terms of students' IL capability and their self-assessment. Vietnamese upper secondary students' IL capability bears noticeable similarities to students at the same level in other countries. Vietnamese students' IL is not particularly advanced. They show a propensity to use simple search techniques and a superficial use of Google. They also demonstrate poor performance in information evaluation. This study indicate that more work will need to be done to strengthen IL of upper secondary students in Vietnam.

Students overestimated their actual IL capabilities. Poor IL could be the result of this overestimation because they lack motivation to develop or improve their IL. This suggests that helping students realise their actual IL capabilities is necessary so that the motivation for developing IL will be thoroughly shaped.

During the data analysis process, an unexpected finding was found. Particularly, the study reveals that Grade 10 students achieved higher scores in evaluating information than Grade 11 and Grade 12 students. This finding needs to be explored further in future research.

A finding which may have wider implications was that there were gender gaps in IL achievement between females and males across the two schools. It is suggested that further studies should be conducted in arrange of contexts and countries to investigate this issue in more depth in order to develop an IL intervention which can improve and enhance students' IL equally, regardless of gender.

## References

AASL (2007), *Standards for the 21st-Century Learner*, American Library Association, Chicago.

- 1  
2 AASL and AECT (1998), *Information literacy standards for student learning*, American Library  
3 Association, Chicago.  
4
- 5 Ackerman, P. and Wolman, S. (2007), "Determinants and validity of self-estimates of abilities and  
6 self-concept measures", *Journal of Experimental Psychology: Applied*, Vol. 13 No. 2, pp.  
7 57-78.  
8
- 9  
10 ACRL (2000), *Information Literacy Competency Standards for Higher Education*, American  
11 Library Association, Chicago.  
12
- 13 ACRL (2015), *Framework for Information Literacy for Higher Education*, Association of College  
14 and Research Libraries, Chicago.  
15
- 16  
17 Adams, S. (1999), "Critiquing claims about global warming from the world wide web: a  
18 comparison of high school students and specialists", *Bulletin of Science, Technology and*  
19 *Society*, Vol. 19 No. 6, pp. 539-543.  
20
- 21  
22 ALA (1989), *American Library Association Presidential Committee on Information Literacy: final*  
23 *report*, available at: <http://www.ala.org/acrl/publications/whitepapers/presidential> (accessed  
24 15 November 2018).  
25
- 26  
27 Ali, R., Abu-Hassan, N., Daud, M. and Jusoff, K. (2010), "Information literacy skills of engineering  
28 students", *IJRRAS*, Vol. 5 No. 3, pp. 264-270.  
29
- 30  
31 Andersen, L., Tufte, B., Rasmussen, J. and Chan, K. (2007), "Tweens and new media in Denmark  
32 and Hong Kong", *Journal of Consumer Marketing*, Vol. 24 No. 6, pp. 340-350.  
33
- 34  
35 Anderson, R. (2005), "The (uncertain) future of libraries in a Google world: sounding an alarm",  
36 *Internet Reference Services Quarterly*, Vol. 10 No. 3-4, pp. 29-36.  
37
- 38  
39 Bandura, A. (1994), *Self-efficacy*, Wiley, New York.  
40
- 41  
42 Bruce, C., Edwards, S. and Lupton, M. (2006), "Six frames for information literacy education: a  
43 conceptual framework for interpreting the relationships between theory and practice",  
44 *Italics*, Vol. 5 No. 1, pp. 1-18.  
45
- 46  
47 Bryman, A. (2012), *Social research methods* (4th ed.), Oxford University Press, Oxford.  
48
- 49  
50 Buschman, J. and Warner, D. (2005), "Researching and shaping information literacy initiatives in  
51 relation to the web: some framework problems and needs", *Journal of Academic*  
52 *Librarianship*, Vol. 31 No. 1, pp. 12-18.  
53
- 54  
55 Chang, Y., Foo, S. and Majid, S. (2014), "Assessing IL skills of primary - 5 students in Singapore",  
56 in Kurbanoglu, S., Spiranec, S., Grassian, E., Mizrachi, D. and Catts, R. (Eds.), *Information*  
57 *Literacy: Lifelong Learning and Digital Citizenship in the 21st Century*, Springer, London,  
58 pp. 531-539.  
59
- 60  
61 Chang, Y., Zhang, X., Mokhtar, I., Foo, S., Majid, S., Luyt, B. and Theng, Y. (2012), "Assessing  
62 students' information literacy skills in two secondary schools in Singapore", *Journal of*  
63 *Information Literacy*, Vol. 6 No. 2, pp. 19-34.

- 1  
2 Chu, D., Siu, F., Chu, S., Tavares, N., Ho, S., Chow, K. and Wong, M. (2012), *Developing upper*  
3 *primary students' 21st century skills: inquiry learning through collaborative teaching and*  
4 *Web 2.0 technology*, Centre for Information Technology in Education, Faculty of Education,  
5 The University of Hong Kong, Hong Kong.  
6  
7  
8 Chu, S. (2012), "Assessing information literacy: a case study of primary 5 students in Hong kong",  
9 *School Library Media Research*, Vol. 15, pp. 1-24.  
10  
11 Chu, S., Tse, S. and Chow, K. (2011), "Using collaborative teaching and inquiry project-based  
12 learning to help primary school students develop information literacy and information  
13 skills", *Library and Information Science Research*, Vol. 33 No. 2, pp. 132-143.  
14  
15  
16 Coonan, E. (2011), *A new curriculum for information literacy: transitional - transferable -*  
17 *transformational. Theoretical background: teaching learning: perceptions of information*  
18 *literacy*, available at: <http://arcadiaproject.lib.cam.ac.uk/docs/theory.pdf> (accessed 05  
19 November 2018).  
20  
21  
22 Duffy, A., Liying, T. and Ong, L. (2010), "Singapore teens' perceived ownership of online sources  
23 and credibility", *First Monday*, Vol. 15 No. 4, NP-NP.  
24  
25  
26 Foo, S., Majid, S., Mokhtar, I., Zhang, X., Chang, Y., Luyt, B. and Theng, Y. (2014), "Information  
27 literacy skills of secondary school students in Singapore", *Aslib Journal of Information*  
28 *Management*, Vol. 66 No. 1, pp. 54-76.  
29  
30  
31 Freund, P. and Kasten, N. (2012), "How smart do you think you are? A meta-analysis on the  
32 validity of self-estimates of cognitive ability", *Psychological Bulletin*, Vol. 138 No. 2, pp.  
33 296-321.  
34  
35  
36 Geffert, B. and Christensen, B. (1998), "Things they carry: attitudes toward, opinions about, and  
37 knowledge of libraries and research among incoming college students", *Reference and User*  
38 *Services Quarterly*, Vol. 37 No. 3, pp. 279-285.  
39  
40  
41 Gross, M. and Latham, D. (2007), "Attaining information literacy: an investigation of the  
42 relationship between skill level, self-estimates of skill, and library anxiety", *Library and*  
43 *Information Science Research*, Vol. 29 No. 3, pp. 332-353.  
44  
45  
46 Gross, M. and Latham, D. (2012), "What's skill got to do with it?: information literacy skills and  
47 self-views of ability among first-year college students", *Journal of the American Society for*  
48 *Information Science and Technology*, Vol. 63 No. 3, pp. 574-583.  
49  
50  
51 Hepworth, M. (2003), "Information literacy from the learner's perspective", in Martin, A. and  
52 Rader, H. (Eds.), *Information and IT Literacy: Enabling Learning in the 21st Century*,  
53 Facet, London, pp. 217-233.  
54  
55  
56 Hignite, M., Margavio, T. and Margavio, G. (2009), "Information literacy assessment: moving  
57 beyond computer literacy", *College Student Journal*, Vol. 43 No. 3, pp. 812-821.  
58  
59  
60 Ivanitskaya, L., O'Boyle, I. and Casey, A. (2006), "Health information literacy and competencies of  
information age students: results from the interactive online Research Readiness Self-  
Assessment (RRSA)", *Journal of Medical Internet Research*, Vol. 8 No. 2, pp. 1-14.

- 1  
2 Kent State University Libraries (2016), TRAILS: Tool for Real-time Assessment of Information  
3 Literacy Skills, available at: <http://www.trails-9.org> (accessed 10 January 2019).  
4
- 5 Klinger, D., Shulha, L. and Wade-Woolley, L. (2010), *Towards an understanding of gender*  
6 *differences in literacy achievement*, Queen's Printer for Ontario, Toronto.  
7
- 8 Knight, L. (2006), "Using rubrics to assess information literacy", *Reference Services Review*, Vol.  
9 34 No. 1, pp. 43-55.  
10
- 11  
12 Liu, T. and Sun, H. (2012), "Gender differences on information literacy of science and engineering  
13 undergraduates", *I.J.Modern Education and Computer Science*, Vol. 2, pp. 23-30.  
14
- 15 Lloyd, A. (2011), "Trapped between a rock and a hard place: what counts as information literacy in  
16 the workplace and how is it conceptualized?", *Library Trends*, Vol. 60 No. 2, pp. 277- 296.  
17
- 18 Majid, S., Foo, S., Luyt, B., Zhang, X., Theng, Y., Chang, Y. and Mokhtar, I. (2011), "Adopting  
19 evidence-based practice in clinical decision making: nurses' perceptions, knowledge, and  
20 barriers", *Journal of the Medical Library Association*, Vol. 99 No. 3, pp. 229-236.  
21
- 22  
23 Mohammad, R. (2014), "Investigating the relationship between information literacy and academic  
24 performance among students", *Journal of Education and Health Promotion*, Vol. 3, pp. 95-  
25 98.  
26
- 27  
28 Mullis, I., Martin, M., Foy, P. and Drucker, K. (2012), *PIRLS 2011 international results in reading*,  
29 available at: <https://timssandpirls.bc.edu/pirls2011/international-results-pirls.html> (accessed  
30 10 January 2019).  
31
- 32  
33 Neely, T. (2006), *Information literacy assessment: standard-based tools and assignments*,  
34 American Library Association, Chicago.  
35
- 36  
37 Oakleaf, M. (2008), "Dangers and opportunities: a conceptual map of information literacy  
38 assessment approaches", *portal: Libraries and the Academy*, Vol. 8 No. 3, pp. 233-253.  
39
- 40  
41 Ojala, M. (2002), "Search Soirees", *Online*, Vol. 26 No. 1, pp. 5.  
42
- 43  
44 Pickard, A., Gannon-Leary, P. and Coventry, L. (2011), "The onus on us? Stage one in developing  
45 an i-Trust model for our users", *Library and Information Research*, Vol. 35 No. 111, pp. 87-104.  
46
- 47  
48 Pickard, A., Shenton, A. and Johnson, A. (2014), "Young people and the evaluation of information  
49 on the World Wide Web: principles, practice and beliefs", *Journal of Librarianship and*  
50 *Information Science*, Vol. 46 No. 1, pp. 3-20.  
51
- 52  
53 Rosman, T., Mayer, A. and Krampen, G. (2015), "Combining self-assessments and achievement  
54 tests in information literacy assessment: empirical results and recommendations for  
55 practice", *Assessment & Evaluation in Higher Education*, Vol. 40 No. 5, pp. 740-754.  
56
- 57  
58 Rozzi-Ochs, J., Egelhoff, C., Jackson, H. and Zelmanowitz, S. (2012), "Work in progress: building  
59 information literacy assessment", paper presented at the 2012 Frontiers in Education  
60 Conference Proceedings.

- 1  
2 Seamans, N. (2002), "Student perceptions of information literacy: insights for librarians", *Reference*  
3 *Services Review*, Vol. 30 No. 2, pp. 112-123.  
4
- 5 Secker, J. and Coonan, E. (2013), *Rethinking information literacy: a practical framework for*  
6 *supporting learning*, Facet, London.  
7
- 8  
9 Shenton, A., Pickard, A. and Johnson, A. (2014), "Information evaluation and the individual's  
10 cognitive state: some insights from a study of British teenaged users", *IFLA Journal*, Vol. 40  
11 No. 4, pp. 307-316.  
12
- 13 Shih, W. and Allen, M. (2007), "Working with Generation-D: adopting and adapting to cultural  
14 learning and change", *Library Management*, Vol. 28 No. 1/2, pp. 89-100.  
15
- 16 Sokoloff, J. (2012), "Information literacy in the workplace: employer expectations", *Journal of*  
17 *Business & Finance Librarianship*, Vol. 17 No. 1, pp. 1-17.  
18  
19
- 20 University College London (2008), *Information behaviour of the researcher of the future: a CIBER*  
21 *briefing paper, executive summary*, available at:  
22 [https://www.webarchive.org.uk/wayback/archive/20140614113419/http://www.jisc.ac.uk/m](https://www.webarchive.org.uk/wayback/archive/20140614113419/http://www.jisc.ac.uk/media/documents/programmes/reppres/gg_final_keynote_11012008.pdf)  
23 [edia/documents/programmes/reppres/gg\\_final\\_keynote\\_11012008.pdf](https://www.webarchive.org.uk/wayback/archive/20140614113419/http://www.jisc.ac.uk/media/documents/programmes/reppres/gg_final_keynote_11012008.pdf) (accessed 01  
24 November 2018].  
25  
26
- 27 Venezky, R. (2000), "The digital divide within formal school education: cause and consequences",  
28 in OECD (Ed.), *Learning to Bridge the Digital Divide: Education and Skills*, OECD, Paris,  
29 pp. 63-76.  
30
- 31 Walsh, A. (2009), "Information literacy assessment: where do we start?", *Journal of Librarianship*  
32 *and Information Science*, Vol. 41 No. 1, pp. 19-28.  
33  
34
- 35 Walton, G. and Hepworth, M. (2013), "Using assignment data to analyse a blended information  
36 literacy intervention: a quantitative approach", *Journal of Librarianship and Information*  
37 *Science*, Vol. 45 No. 1, pp. 53-63.  
38  
39
- 40 Williams, P. and Rowlands, I. (2007), *Information behaviour of the researcher of the future: the*  
41 *literature on young people and their information behaviour*, available at:  
42 [http://www.webarchive.org.uk/wayback/archive/20140614113317/http://www.jisc.ac.uk/me](http://www.webarchive.org.uk/wayback/archive/20140614113317/http://www.jisc.ac.uk/media/documents/programmes/reppres/ggworkpackageii.pdf)  
43 [dia/documents/programmes/reppres/ggworkpackageii.pdf](http://www.webarchive.org.uk/wayback/archive/20140614113317/http://www.jisc.ac.uk/media/documents/programmes/reppres/ggworkpackageii.pdf) (accessed 10 November 2018].  
44  
45
- 46 Yamane, T. (1967), *Statistics, an introductory analysis*, 2nd ed., Harper and Row, New York.  
47  
48  
49  
50  
51  
52  
53  
54  
55  
56  
57  
58  
59  
60

## Information literacy capabilities of upper secondary students: The case of Vietnam

### Abstract

**Purpose** – This paper focuses on investigating information literacy (IL) capabilities and IL self-assessment of Vietnam's upper secondary students.

**Design/methodology/approach** – The investigation was conducted in two upper secondary schools in the country using a multiple-choice questionnaire. The questionnaire was based on the IL competency level assessment toolkit of high schools in the United States, the Tool for Real-time Assessment of Information Literacy, to measure students' IL in terms of developing search strategies, evaluating information sources, using information ethically, and using English to engage with information effectively.

**Findings** – The findings reveal that students' IL has not been well equipped. There is a real need to work towards improving the IL capability of Vietnam's upper secondary students. Findings also reveal gender differences in IL capabilities.

**Research limitations/implications** – The research used a closed response questionnaire, which is considered appropriate to engage with Vietnamese high school students, to explore students' lower-level IL skills and their self-assessment rather than higher-level thinking competencies.

**Practical implications** – This research may help Vietnam's educators understand high school students' IL competency and raise their awareness of the importance of IL in order to encourage the implementation of an IL programme.

**Originality/value** – This study contributes to existing knowledge by adding substantially to current understanding of IL level of Vietnamese upper secondary students - a context which has not been explored to date. It also indicates gender inequality in IL capabilities.

**Keywords** Information literacy, information literacy assessment, self-assessment, high school, Vietnam

**Paper type** Research paper

### 1. Introduction

The idea of developing information literate individuals is widely accepted. However, how to deliver information literacy (IL) programmes is the most difficult part and requires much more effort from educators. Context is an important part that needs to be considered in the implementation of IL programmes. Within a specific context, how an IL programme is valued, supported and delivered is considerably influenced by that context. The context could facilitate or restrain the development of IL (Lloyd, 2011). This study provides an understanding of the IL capabilities of Vietnam's upper secondary students in a context in which the education system is still in transition, from the transmission approach to the constructivist approach in teaching and learning.

Evaluating the effectiveness of existing IL training and users' IL capability has attracted great attention from educators, practitioners, and researchers. This is demonstrated by a considerable amount of literature that has been published on IL assessment, especially in the United Kingdom (UK), the United States (US), and Australia (Rosman *et al.*, 2015). However, little attention has been paid to the Vietnamese educational context. The study was conducted to address the following questions:

- Research question 1 (RQ1): What are the IL capabilities of Vietnamese upper secondary students?
- Research question 2 (RQ2): How do Vietnamese upper secondary students self-rate their IL capabilities?

This paper presents the full findings of the assessment and suggests ways forward based on the analysis and discussion.

## 2. Literature review

### 2.1 The scope of information literacy

IL is regarded as a vital requirement in promoting independent learning which equips people with essential capabilities which enable them to become **lifelong** learners. Although IL has received a great deal of attention from researchers and practitioners since its inception to date, there is no general agreement about the definition of IL (Foo *et al.*, 2014).

The term IL can be understood in different ways. Many authors acknowledge IL as a wide range of skills or abilities. Arguably the most influential definition to date is from the American Library Association (ALA) which defines IL as a set of abilities allowing individuals to “recognize when information is needed and have the ability to locate, evaluate, and use effectively the needed information” (ALA, 1989, p. 1). Chu (2012) asserts that ALA’s IL definition can be seen as the groundwork for the later IL definitions.

Despite the considerable attention paid to IL as a set of skills, Bruce *et al.* (2006) debated that IL is a compound of diverse manners of interacting with information instead of being a set of skills, competencies, and features.

In recent years, the definition of IL has shifted to respond to the ever-changing information environment and variations in information technology; the Association of College and Research Libraries (ACRL) is considered a typical example. In 2007, the Standards for the 21st-Century Learner (American Association of School Librarians [AASL], 2007), based on the Nine Information Literacy Standards for Student Learning (AASL & Association for Educational Communications and Technology [AECT], 1998), was developed to suit the changing information environment. The Information Literacy Competency Standards for Higher Education (ACRL, 2000) was then revised to meet the AASL standards (AASL, 2007). This **provides** an updated understanding of IL, because one of the preliminary purposes of the original ACRL standards was to offer a range of expectations for students moving from K-12 to higher education (HE). The ACRL introduced their new IL definition and a new model which is now known as the ‘Framework for Information Literacy for Higher Education’ in 2015. The new definition emphasises self-reflection and regards the development of IL as part of a learning community instead of following the skills-based approach introduced in the old model (ACRL, 2015).

There are many different definitions of IL given by various institutions and individuals based on different benchmarks. Even if IL is approached from different viewpoints, the principal point of IL is being competent and confident in an ever-changing information environment. The competence and confidence will help individuals become independent and lifelong learners. Coonan strongly argues that it is necessary to reconsider the perception of IL as it is “not merely a set of skills and competences, but a continuum that starts with skills and competences and ascends towards high-level intellectual and metacognitive behaviours and approaches” (Coonan, 2011, p. 20). Following the view of Coonan, IL can be regarded as the process of becoming information literate in order to enable independent and self-directed learning. This process starts by being equipped with skills or abilities to engage effectively with information in various formats and then moves to high-level intellectual and metacognitive behaviours, such as critical evaluation, knowledge creation, argument construction, and self-criticism.

This view influences the assessment of students' IL capabilities in this study. The development of IL is a process from ‘low level skills’ to ‘high order cognitive skills’. The assessment of IL may focus on specific development steps. Performance tests such as assignment, rubrics, and portfolios allow investigators to measure higher order IL cognitive skills. Meanwhile, users’ lower level skills could be measured through knowledge tests, for example a questionnaire. A skill-based measure of lower-level skills could be used as an indicator to predict the results of a more complex measure of higher-level cognitive skills.

## 2.2 Information literacy assessment

There have been many tools developed to assess IL to cater for various different purposes at different levels, including organisational, national, and international (Rozzi-Ochs *et al.*, 2012). Each method has its own strengths and weaknesses (Ali *et al.*, 2010; Chang *et al.*, 2012). The multiple-choice questionnaire test employed in this study is considered the most common way used to measure IL (Walsh, 2009). This technique is preferred because of ease of use, convenience, and low cost (Walsh, 2009). Oakleaf (2008) supports it as it is less time-consuming; relatively straightforward to mark; a wide-ranging knowledge test; a reliable tool for comparison; highly reliability over time, and relatively simple to administer. This kind of test also allows investigators to cover a large sample of participants as well as re-use the test instrument (Chang *et al.*, 2012). However, it mainly focuses on measuring lower level skills rather than higher level cognitive skills (Walton and Hepworth, 2013).

Despite the important role of IL being widely acknowledged, to date, learners have not been equipped with expected IL capability (Venezky, 2000; Chu *et al.*, 2011). The IL capability between genders has been explored in several studies, such as Hignite *et al.* (2009), Chu *et al.* (2011), Chu (2012), Liu and Sun (2012), Mullis *et al.* (2012), Chang *et al.* (2014), and Mohammad (2014). They have demonstrated that there is an imbalance in IL capabilities between male and female students (Klinger *et al.*, 2010).

Research has found that users display a propensity of using simple search techniques to find information (Ojala, 2002; Seamans, 2002; Majid *et al.*, 2011; Pickard *et al.*, 2011). Instead of using academic search tools, for example, library websites (Pickard *et al.*, 2011), users prefer to use Google and online search engines to search for information (Andersen *et al.*, 2007; Chu *et al.*, 2011; Pickard *et al.*, 2011; Chu *et al.*, 2012; Sokoloff, 2012). This may result from the ease of use and the convenience of Google and online search engines (Duffy *et al.*, 2010). However, the overuse of this kind of search tool may negatively affect students' IL skills and the quality of search results (Anderson, 2005; Buschman and Warner, 2005).

Research indicates that information evaluation skill is a weakness of students (Adams, 1999; Knight, 2006; Williams and Rowlands, 2007; Ali *et al.*, 2010; Chang *et al.*, 2012; Pickard *et al.*, 2014). Similar to searching for information, users tend to use under-evaluated information sources rather than attempt to evaluate them (Knight, 2006; Pickard *et al.*, 2014; Shenton *et al.*, 2014). Students mainly use simple techniques to evaluate information sources (University College London, 2008; Shenton *et al.*, 2014).

Studies do not provide homogeneous results concerning the ethical use of information. Some show that young people understand how to access and use information ethically (Williams and Rowlands, 2007), while others demonstrate that students are faced with a lack of understanding of intellectual property (Shih and Allen, 2007; Chang *et al.*, 2012). Furthermore, many studies reveal that students do not respect copyright law (Shih and Allen, 2007; Secker and Coonan, 2013).

## 2.3 Self-assessment of information literacy

Self-assessment allows investigators to explore IL from the student's own perspective, revealing their assessment of their capability rather than that of librarians or educators (Gross and Latham, 2007). Reasons and motivations behind objective tests could be discovered under a self-assessment test (Rosman *et al.*, 2015). Motivation is reduced by both overestimation (Freund and Kasten, 2012) and underestimation (Bandura, 1994). Self-assessment positively affects students' performance, because it allows them to identify their strengths and weaknesses (Ackerman and Wolman, 2007; Rosman *et al.*, 2015). As a result, they can actively plan to improve their IL capability.

The relationship between students' actual IL skill level and self-assessment is noticeably revealed in the domain of IL, such as Geffert and Christensen (1998), Buschman and Warner (2005), Ivanitskaya *et al.* (2006), Gross and Latham (2007), Gross and Latham (2012), and Shenton *et al.* (2014). However, there is no overall conclusion or consensus on the relationship between self-assessment and actual IL skills.

### 3. Methodology

An assessment of all IL aspects in a study is a very big challenge. It is suggested that the assessment should start with IL skills: developing search strategies, evaluating information sources, using information ethically, and using English to engage with information effectively. Therefore, this research has employed a quantitative measure of students' IL in order to **understand** the IL capabilities of Vietnamese upper secondary students. By using a multiple-choice questionnaire to measure students' IL capabilities and their self-assessment, this research could collect data from a large sample and statistically compare between different groups.

#### 3.1 Questionnaire design

The questionnaire contained 35 questions and was divided into three sections, as follows:

- Section A - About you (4 questions): obtained demographic data of the study sample, such as name, gender, school, and level of study.
- Section B – Your IL (26 questions): investigated students' IL level in terms of the ability to develop search strategies, evaluate information sources, use information ethically, and use English to engage with information effectively. Students were allocated one point for each correct answer and each question had only one correct answer. The questionnaire was based on the 12<sup>th</sup> grade version of the IL competency level assessment toolkit of high schools in the US, known as the Tool for Real-time Assessment of Information Literacy (TRAILS), a project which was devised at Kent State University Libraries (Kent State University Libraries, 2016). However, the questions were altered to suit Vietnamese upper secondary students. Modifications to the questions were based on suggestions made by a group of professionals, including an expert in information science, a high school librarian, and an upper secondary school teacher. A short explanation of a situation needing an information search was provided in each question, and several different potential answer choices that could be used to solve the problem were then included. The questionnaire also provided the option "I do not know" for each IL testing question in order to avoid guessing the answer (Neely, 2006).
- Section C – IL self-rating (5 questions): aimed to identify students' IL self-assessment. Students self-rated their IL using a five-point rating scale: choose 5 for highest rating and 1 for lowest rating. The self-assessment items were put at the end of the questionnaire. This aimed to shed some light on the IL concept and testing areas. This would increase the accuracy of the test (Gross and Latham, 2007; Rosman *et al.*, 2015).

Cronbach's  $\alpha$  reliability coefficient of SPSS was used to measure reliability of test items. Research indicates that good tests have reliability coefficients ranging from a low of 0.65 to above 0.90 (Liu and Sun, 2012). Cronbach's  $\alpha$  was conducted with the following results:

- IL assessment: 0.65
- IL self-assessment: 0.71

It can be seen that the internal consistency reliability coefficient of the scale was at an acceptable level.

There was a need to test the validity of the assessment tool to ensure that the questions measure what the research intends to measure (Bryman, 2012). Validity, in the context of this study, was concerned with the issue as to whether the questionnaire precisely reflected students' IL level. Face validity was employed to establish validity of the questionnaire. Specifically, a group of professionals, as mentioned above, was established and invited to participate in the research. **There is an expert** in information science who had more than 30 years' experience in the field in Vietnam; a high school librarian who had five years working experience in an upper secondary school; and an upper secondary school teacher who is well versed in teaching upper secondary students,

1  
2 understanding what is familiar with them, and knowing what is expected from students in a study  
3 programme. The questionnaire was sent to this group to seek their feedback before delivering to  
4 students. The researcher provided group members an explanation of the purpose of the study and  
5 the aim of the student survey. This aimed to help them have a common understanding of the  
6 purpose of the study and be aware of the importance of their expertise knowledge. In addition, the  
7 questionnaire was piloted with 17 upper secondary students. They were also invited to take part in a  
8 follow-up interview to obtain their comments about the questionnaire. The questionnaire was then  
9 amended before delivering to students in the main study. Bryman (2012) indicates that a slight  
10 difference in understanding the indicator or concept by the participants could result in a very  
11 different estimate of the indicator or concept on the part of respondents. The researcher, based on  
12 suggestions made by students who took part in the pilot questionnaire survey and the follow-up  
13 interview, added more concept explanation to reduce the variations in students' understanding of  
14 the concepts, for example, IL, search engine operator and Boolean operator. Furthermore, the  
15 questions were reordered to provide students a better understanding of the new concepts.  
16  
17  
18

### 19 3.2 Procedure and technique

20 A letter and consent form were sent to the Board of School Management of the two schools to  
21 request permission to carry out the research in their institution. Consent forms and information  
22 sheets were provided to students. Students who were willing to participate in the research must fill  
23 in the form and give it to the investigator in the library on selected dates. Students' parents were  
24 required to sign the consent form if they wished to give permission for their child to participate in  
25 this study. The researcher handed out the questionnaires to students in their class and collected them  
26 after students had completed. The investigator and class teachers were facilitators who supported  
27 students during the questionnaire completion process. There are no standards that provide indicators  
28 to specify what a long questionnaire is. Nevertheless, it was assumed that the questionnaire of the  
29 research was relatively long. Thus, the questionnaire was divided into three parts and sent to  
30 students separately in order to reduce the risk of respondent fatigue (Bryman, 2012). The first part  
31 has 5 questions. The second and third part consist of 15 questions for each. The questionnaire was  
32 completed over three days. Each part was completed within 5 to 15 minutes each day before  
33 students' official classes. This means students did not need to complete all 35 questions at one time.  
34 Students must provide their student number in each part after completion to help the researcher  
35 easily collect and assemble the results.  
36  
37  
38  
39

### 40 3.3 Sampling

41 Vietnam's upper secondary schools enrol students based on their entrance examination scores.

42 **Based on this, students are normally divided into two groups: public schools (including gifted high**  
43 **schools, public schools, and semi-public schools), and non-public schools (including private and**  
44 **international schools).** Schools are ranked from high to low in the above order. Students firstly  
45 apply to their local public schools. They can then apply to non-public schools to study if their  
46 entrance examination marks are not sufficient to enter public schools.  
47

48 **The study stratified upper secondary schools in Ho Chi Minh City by school type, and then**  
49 **one public and one private school (labelled as School B and School C, respectively) were selected**  
50 **based on their willingness. In each school, a simple random sample was applied to select students to**  
51 **participate in the study. School B and School C had 1,146 and 981 students, respectively. Yamane's**  
52 **(1967) simplified formula was applied to the above population with sampling error of 10%.**  
53  
54

$$55 n = n_1 + n_2 = \frac{1146}{1 + 1146 \cdot (0.1)^2} + \frac{981}{1 + 981 \cdot (0.1)^2} = 92 + 91 = 183$$

56  
57 **As a result, the study involved 183 upper secondary students ( $n = 183$ ) (aged from 15-18) from the**  
58 **two schools.** The number of female students was 99 (54.1%), while 84 (45.9%) were male. Ninety-  
59 two were from School B and 91 were from School C. Grade 12, 11 and 10 students participated in  
60

the study with the percentage of 35.5%, 30.1% and 34.4%, respectively. **A high response rate is an advantage of this study (100%).**

### 3.4 Data analysis

The response data were imported into SPSS 22 for analysis. For all tests, the alpha level ( $p$ ) was set at 0.05. Data were analysed on two levels: descriptive (mean, sum, standard deviation, and correlation coefficients) and inferential statistics (independent sample t-test and Chi-square).

## 4. Findings and discussion

The number of items used to test each IL component was not equal. Thus, the numerical scores were translated to percentage scores in order to compare across items and test areas. **Vietnam's education institutions use the following grading system to assess students' academic capabilities: Good and Very good: 7+; Fail with reassessment opportunity and Pass: 3.5–6.5; Fail with no reassessment opportunity: 0-3. This grading system was applied to this study.** The percentage scores were divided into three groups; less than or equal to 30% ( $\leq 30\%$ ) (low); more than 30% and less than 70% ( $30 < \text{score} < 70$ ) (average); and more than or equal to 70% ( $\geq 70\%$ ) (high).

The self-rating scale of 1 to 5 was recoded and then grouped into value categories in order to facilitate comparison with the IL test scores; 1-2 (low); 3 (average); 4-5 (high).

### 4.1 Overall information literacy scores and self-assessment

With an overwhelming number of students achieving average IL scores, the study identified that Vietnam's upper secondary students had basic knowledge/skills about how to engage with information. However, the percentage of students achieving high scores (4.4%) was much lower than the proportion of average (82%) and low scoring students (13.7%). Furthermore, the mean IL score was below the expectation of 50% (mean score: 46.43/100) (Figure 1).

“Insert Figure 1. Overall information literacy scores here”

Evidence reveals that students had not been equipped with a high level of IL capability. This view is shared by Venezky (2000) who demonstrated that students faced many challenges in handling information, technically-based skills, and effective independent learning. Similarly, studies found that students' IL capability was underdeveloped (Chu *et al.*, 2011). It can be seen that this problem has been well established by research in the past and it is thoroughly unresolved in the context of this research.

The study found that students overrated their actual IL level. This is corroborated by a greater number of students self-rating their IL at a high level (26.78%) in comparison with the number of students achieving an actual high score in the test (4.4%). They also self-rated their ability at a high and average level for almost IL components, except using English to engage with information effectively (Figure 2). This finding firmly consolidates the results of earlier research showing that young people inaccurately self-assess their IL competence and tend to overestimate their **information and communication technology/IL** knowledge and skills (Buschman and Warner, 2005; Ivanitskaya *et al.*, 2006; Gross and Latham, 2007; Shenton *et al.*, 2014). This overestimation may reduce students' motivation in developing necessary skills (Freund and Kasten, 2012). It is suggested that students' awareness of their actual IL level needs to be increased (Ackerman and Wolman, 2007).

“Insert Figure 2. Self-assessment of information literacy testing areas here”

### 4.2 Information literacy component testing scores

Out of the four IL testing areas, information evaluation was the area where students performed most poorly (mean score: 38.36). They had better performance in the three other IL components (Table

1  
2 1). The result consolidates the view of many researchers in the field, such as Williams and  
3 Rowlands (2007) and Pickard *et al.* (2014), who agree that information evaluation skill is not a  
4 young people's strength. Adams (1999) concluded that high school students had problems in  
5 evaluating scientific claims made in media sources when he examined how 12<sup>th</sup> grade students  
6 evaluated publications related to global warming. This result is supported by Knight (2006) who  
7 revealed that first-year students' performance in selecting and using information was better than  
8 evaluating information. Additionally, Ali *et al.* (2010) found that Engineering students lacked the  
9 necessary knowledge and skills to evaluate the Internet information. Chang *et al.* (2012) suggested  
10 that Singapore secondary students needed more improvement in higher-level skills, such as  
11 information evaluation, information synthesis, and information use, than other skills, for example,  
12 task definition, information seeking, and information access. Similarly, Vietnamese students  
13 displayed a poor performance in information evaluation.  
14

15  
16 During this investigation it was found that students achieved the best-scored performance in  
17 using information ethically (mean score: 60.11) in comparison with the three remaining IL  
18 components (Table 1). This demonstrates that students of the two schools **understood** ethics in using  
19 information. This finding supports the work of Williams and Rowlands (2007) who found that there  
20 was an overwhelming number of young people who understand how to prevent copyright  
21 infringement when accessing information on the Internet. Nevertheless, some researchers hold  
22 opposite view, such as Shih and Allen (2007) and Chang *et al.* (2012), who observed that there was  
23 a lack of understanding of intellectual property among students. It can be seen that earlier research  
24 found different results regarding students' understanding of ethical use of information. In the  
25 context of this study, Vietnamese students demonstrated that they **understood** this issue.  
26  
27

28 “Insert Table 1. Scores for four information literacy testing areas here”  
29

30  
31 The percentage scores among the individual items are given in Table 2. Using search fields  
32 to find information showed good-performing scores (scores > 70). Students obtained poor-  
33 performing scores in some items, such as Boolean operators and book index (scores ≤ 30). Students  
34 did not achieve high scores regarding broadening search results (mean score: 32.8), narrowing search  
35 results (mean score: 47.5), and using truncation (mean score: 35.5). Similarly, Ojala (2002) found  
36 that advanced search features were only used by around 3-5% of searchers. The studies conducted  
37 by Seamans (2002), and Hepworth (2003) demonstrated that searchers did not prefer to use Boolean  
38 operators. This finding supports work by Majid *et al.* (2011) who found that nurses principally used  
39 basic search features to search for literature and only one-quarter of them utilised Boolean and  
40 proximity operators. In addition, students are faced with challenges in identifying sources, broadening  
41 and narrowing the search, and they display a propensity to use a new source if they fail to find  
42 information, rather than modify their current search (Hepworth, 2003). It can be seen that this  
43 research firmly consolidates the results of many earlier studies by indicating the overuse of simple  
44 search techniques among Vietnamese students. It is argued that this may prevent students from  
45 developing effective searches (University College London, 2008).  
46  
47

48  
49 “Insert Table 2. Scores for individual items here”  
50

51  
52 The study found that students preferred to use online search engines, especially Google,  
53 rather than other search tools, for example, the library catalogue. In total 72.1% of the students  
54 chose to start their search by using Internet search engines, for example, Google, rather than other  
55 search tools. This result is corroborating by previous research which identifies that the first-choice  
56 search engine for most students in particular and searchers in general, is Google (Pickard *et al.*,  
57 2011; Sokoloff, 2012). In addition to Google, users also give priority to Yahoo (Chu *et al.*, 2011),  
58 social media channels, and social networking sites for breaking news and expert opinion (Sokoloff,  
59 2012). Similarly, several studies conducted in Hong Kong and Denmark found that children mainly  
60

1  
2 searched for information on the Internet (Andersen *et al.*, 2007; Chu *et al.*, 2012). Vietnamese  
3 students tended to match this trend, as they also gave priority to searching information through  
4 Google.

5 The superficial use of Google may reduce the effort of seeking information through other  
6 search tools among students, even though those search tools can provide students with high quality  
7 information. For example, library websites/OPAC are less used by searchers in comparison with  
8 Google or other online search engines (Chu *et al.*, 2011; Pickard *et al.*, 2011). The overuse of  
9 Google may result in the underdevelopment of students' IL skills (Anderson, 2005) and poor  
10 academic research results (Buschman and Warner, 2005). This is strongly evidenced in the context  
11 of this study by indicating that there was a lack of IL capability among students, with only 4.4% of  
12 the students achieving high scores in the IL assessment.  
13  
14

#### 15 4.3 Information literacy scores and self-assessment between female and male students

16 Female students scored slightly higher than male students (mean score: 47.92 vs. 44.67). Data  
17 analysis of other aspects of IL between males and females indicates that females obtained higher  
18 scores than males in the four IL testing areas (Figure 3).  
19

20  
21 “Insert Figure 3. Comparison of information literacy test scores between female and male students  
22 here”  
23

24  
25 However, boys are inclined to think more positively of their IL level than girls. Specifically,  
26 29.76% of the male students, as against 24.24% of the female students, rated their IL at a high level.  
27 It is not surprising to find that females obtained higher scores than males in IL, because the  
28 literature widely reports that there are gender gaps in literacy achievement across schools (Klinger  
29 *et al.*, 2010). This result strengthens the outcomes of several studies, for instance, Hignite *et al.*  
30 (2009), Chu (2012), Liu and Sun (2012), and Chang *et al.* (2014). These projects were carried out to  
31 explore the difference between male and female students, ranged from primary schools to HE, in  
32 their IL skills. They revealed that female students outscored their male peers in the IL tests. They  
33 suggest that breaking the imbalance between males and females in their IL level is essential to  
34 enhancing students' learning. In addition to IL, a range of research conducted by the International  
35 Association for the Evaluation of Educational Achievement (IEA) demonstrated that female  
36 students had better performance than male students in reading literacy (Mullis *et al.*, 2012). It can  
37 be seen that, like many other countries, the disparity in the IL level between female and male  
38 students also occurred in Vietnam. This study firmly consolidates the results of research carried out  
39 by Gross and Latham (2012) who found that students with below-proficient IL skills exaggerated  
40 their ability. In the context of this study, male students inflated their IL capability, although their IL  
41 scores were lower than females.  
42

43  
44 **Although descriptively, the females showed more capabilities than the males, inferentially,**  
45 **there was no significant difference in their capabilities**, with  $p = .145$ ,  $t = 1.465$ ,  $df = 181$ . Similarly,  
46 Mohammad (2014) found that there was no significant difference between male and female students  
47 concerning their IL capability. **The study also found that there was no correlation between students'**  
48 **gender and their IL scores ( $r = -.108$ ) as well as self-assessment variable ( $r = -.023$ ).** This research  
49 **and the earlier studies share the same view by pointing out that there is no statistical relationship**  
50 **between genders and their IL level. For example, Chu *et al.* (2011) showed that students'**  
51 **improvement in IL and information technology (IT) skills could not be significantly predicted by**  
52 **their gender.**  
53  
54

#### 55 4.4 Information literacy scores and self-assessment between schools

56 School B students' overall IL test scores were higher than School C (mean score: 52.61 vs. 40.18).  
57 Average IL scores were recorded by a large number of students in both schools; in particular,  
58 88.04% for School B and 75.82% for School C. The proportion of the students achieving high  
59  
60

scores in School B was 6.52%. This ratio was higher than School C, with 2.2%. Conversely, the number of students of School C obtaining low scores was higher than School B (21.98% vs. 5.43%) (Figure 4). Overall, it can be said that students' performance in IL was better in School B than School C. It is not surprising to find that School B's students – a public school, did better than their peers from School C – a private school. The reason is that, Vietnam's public schools are selective and often enrol students who have better academic performance than those in private schools. This may indicate that school students who achieve better academic results are likely to display a better IL level.

“Insert Figure 4. Overall information literacy scores of the two schools here”

Employing a Chi-square test, a relationship was found between types of school and IL scores. In other words, types of school made a difference in IL scores of students, with  $p = .003$ ,  $df = 2$ ,  $X^2 = 11.955^a$ . The study also indicates that there was a medium negative linear relationship between types of school and IL scores ( $r = -.415^{**} < 0$ )<sup>1</sup>. Evidence suggests that students who achieved higher academic results also displayed a better IL performance. This finding is confirmed by Chu *et al.* (2011) who found that improvement in IL and IT skills was significantly predicted by students' academic ability. This is consistent with research conducted by Chang *et al.* (2012) who demonstrated that academic streams affected IL performance of secondary students. Specifically, they found that the express stream<sup>2</sup> obtained higher IL scores than their peers in the normal academic stream. It can be seen that the positive impact of the academic capability to the development of students' IL can also be found in Vietnam's upper secondary students.

It was found that students of School B self-rated their IL level higher than School C's students (Figure 5). School C's students thought that their IL was low (28.57%). This rate was higher than School B (13.04%). This result may reveal that students with better academic performance think of their IL level in a more positive way.

“Insert Figure 5. Information literacy self-assessment between schools here”

Chi-square test indicated that self-belief of students in their IL was also affected by types of school, with  $p < .05$  ( $X^2 = 6.836^a$ ,  $df = 2$ ,  $p = .033$ ). By employing Spearman's correlation coefficient, the schools showed a difference in self-assessment in three out of four IL components: developing search strategies ( $r = -.165^*$ )<sup>3</sup>, evaluating information sources ( $r = -.172^*$ ), using English to engage with information effectively ( $r = -.272^{**}$ ).

#### 4.5 Information literacy scores and self-assessment between grades

Grade 12 students had better IL performance than Grade 10 and 11 students (Table 3). Specifically, Grade 12 obtained 50.58, while Grade 11 and 10 scored 43.13 and 45.02, respectively. Generally, Grade 12 students had higher scores in overall IL scores and IL testing aspects than the two other grades. Surprisingly, although Grade 11 students are at a higher academic level, they had lower scores in overall IL and IL testing aspects than Grade 10 students. Also, the most surprising result was that higher scores in evaluating information sources were achieved by Grade 10 students.

<sup>1</sup> \*\*. Correlation is significant at the .01 level (2-tailed).

<sup>2</sup> Based on the scores in the Primary School Leaving Examination at the end of Grade 6, Singapore students are divided into four groups: the special stream in top-performing schools (the top 10%); the express stream in both top-performing and neighbourhood schools (the next 50%); the normal academic stream (the subsequent 25%); and the normal technical stream (the bottom 15%).

<sup>3</sup> \*. Correlation is significant at the .05 level (2-tailed).

1  
2 “Insert Table 3. Information literacy scores between grades here”  
3

4 Chi-square test provides evidence that there was a relationship between the two above  
5 variables. In other words, overall IL scores were affected by level of study, with  $X^2 = 12.911^a$ ,  $df =$   
6  $4$ ,  $p = .012$ . Evidence demonstrates that level of study affected students’ IL regarding developing  
7 search strategies ( $r = .158^*$ ), using information ethically ( $r = .165^*$ ) and overall IL scores ( $r =$   
8  $.157^*$ ). It can be said that students who were at a higher academic level also had more positive IL  
9 scores ( $r > 0$ ). However, it roughly appears that there was only a weak correlation between study  
10 level and IL scores ( $r < .29$ ).  
11

12 It was found that students who were at a higher academic level self-rated their IL more  
13 positively than those who were at lower grades. The proportion of students who rated their IL at a  
14 high level increased from 14.29% (Grade 10) to 33.85% (Grade 12). Conversely, the fraction of  
15 students who ranked their IL at a low level declined from 33.33% (Grade 10) to 10.77% (Grade 12)  
16 (Figure 6).  
17

18  
19 “Insert Figure 6. Comparison of information literacy self-rating between grades here”  
20

21 Chi-square test found that IL self-assessment was affected by level of study, with  $p < .05$  ( $X^2$   
22  $= 13.934^a$ ,  $df = 4$ ,  $p = .008$ ). The study indicates that there was a weak positive correlation between  
23 level of study and students’ self-rating ( $r = .271^{**} < .29$ ). Students who were at a higher academic  
24 grade also thought more positively about their IL level.  
25

#### 26 4.6 Correlation between information literacy testing areas variables

27 Further granular analysis of the relationship between IL testing areas demonstrates that skills of the  
28 earlier stages of the process (e.g. information search) were a good prediction of skills of the later  
29 stages (e.g. information evaluation), with  $r > 0$  (Table 4). In other words, this finding indicates that  
30 if students performed better at skills of the earlier stages of the information engagement process,  
31 they could show an improved performance with later stage skills. The result is in line with earlier  
32 literature when Chang *et al.* (2012) confirmed that skills, such as task definition, information  
33 seeking strategies, and location and access, had a positive impact on skills in the later stages, for  
34 example, information evaluation. Similarly, in this research, students might achieve better scores in  
35 evaluating information if they performed well in developing search strategies.  
36  
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38  
39 “Insert Table 4. Correlation between information literacy testing areas variables here”  
40

#### 41 4.7 Correlation between information literacy scores and self-assessment

42 Employing Spearman Correlation Coefficient, it was found that there was a positive linear  
43 relationship between overall IL scores and self-assessment. In other words, students who self-rated  
44 their IL at a high level also had better IL performance. Nonetheless, it roughly appears that there  
45 was only a weak correlation ( $r = .192^*$ ). This view is confirmed by Gross and Latham (2007) and  
46 Rosman *et al.* (2015) who demonstrated that there was a relationship between self-assessment and  
47 actual IL skills. Similarly, Ivanitskaya *et al.* (2006) found that there was a positive correlation  
48 between self-assessment and actual skills. In contradiction to this view, Geffert and Christensen  
49 (1998) revealed that there was no correlation between self-assessment and IL test scores. It can be  
50 seen that research found different results of the relationship between students’ actual IL level and  
51 their self-assessment of that ability. In the context of this study, the positive relationship between  
52 the two variables is confirmed.  
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### 56 5. Conclusion

57 From what has been discussed above, it can be seen that this research does support the results of  
58 many studies in the past in terms of students’ IL capability and their self-assessment. Vietnamese  
59  
60

upper secondary students' IL capability bears noticeable similarities to students at the same level in other countries. Vietnamese students' IL is not particularly advanced. They show a propensity to use simple search techniques and a superficial use of Google. They also demonstrate poor performance in information evaluation. This study indicate that more work will need to be done to strengthen IL of upper secondary students in Vietnam.

Students overestimated their actual IL capabilities. Poor IL could be the result of this overestimation because they lack motivation to develop or improve their IL. This suggests that helping students realise their actual IL capabilities is necessary so that the motivation for developing IL will be thoroughly shaped.

During the data analysis process, an unexpected finding was found. Particularly, the study reveals that Grade 10 students achieved higher scores in evaluating information than Grade 11 and Grade 12 students. This finding needs to be explored further in future research.

A finding which may have wider implications was that there were gender gaps in IL achievement between females and males across the two schools. It is suggested that further studies should be conducted in arrange of contexts and countries to investigate this issue in more depth in order to develop an IL intervention which can improve and enhance students' IL equally, regardless of gender.

## References

AASL (2007), *Standards for the 21st-Century Learner*, American Library Association, Chicago.

AASL and AECT (1998), *Information literacy standards for student learning*, American Library Association, Chicago.

Ackerman, P. and Wolman, S. (2007), "Determinants and validity of self-estimates of abilities and self-concept measures", *Journal of Experimental Psychology: Applied*, Vol. 13 No. 2, pp. 57-78.

ACRL (2000), *Information Literacy Competency Standards for Higher Education*, American Library Association, Chicago.

ACRL (2015), *Framework for Information Literacy for Higher Education*, Association of College and Research Libraries, Chicago.

Adams, S. (1999), "Critiquing claims about global warming from the world wide web: a comparison of high school students and specialists", *Bulletin of Science, Technology and Society*, Vol. 19 No. 6, pp. 539-543.

ALA (1989), *American Library Association Presidential Committee on Information Literacy: final report*, available at: <http://www.ala.org/acrl/publications/whitepapers/presidential> (accessed 15 November 2018).

Ali, R., Abu-Hassan, N., Daud, M. and Jusoff, K. (2010), "Information literacy skills of engineering students", *IJRRAS*, Vol. 5 No. 3, pp. 264-270.

Andersen, L., Tufte, B., Rasmussen, J. and Chan, K. (2007), "Tweens and new media in Denmark and Hong Kong", *Journal of Consumer Marketing*, Vol. 24 No. 6, pp. 340-350.

Anderson, R. (2005), "The (uncertain) future of libraries in a Google world: sounding an alarm", *Internet Reference Services Quarterly*, Vol. 10 No. 3-4, pp. 29-36.

- 1  
2 Bandura, A. (1994), *Self-efficacy*, Wiley, New York.  
3
- 4 Bruce, C., Edwards, S. and Lupton, M. (2006), "Six frames for information literacy education: a  
5 conceptual framework for interpreting the relationships between theory and practice",  
6 *Italics*, Vol. 5 No. 1, pp. 1-18.  
7
- 8  
9 Bryman, A. (2012), *Social research methods* (4th ed.), Oxford University Press, Oxford.  
10
- 11 Buschman, J. and Warner, D. (2005), "Researching and shaping information literacy initiatives in  
12 relation to the web: some framework problems and needs", *Journal of Academic*  
13 *Librarianship*, Vol. 31 No. 1, pp. 12-18.  
14
- 15 Chang, Y., Foo, S. and Majid, S. (2014), "Assessing IL skills of primary - 5 students in Singapore",  
16 in Kurbanoglu, S., Spiranec, S., Grassian, E., Mizrahi, D. and Catts, R. (Eds.), *Information*  
17 *Literacy: Lifelong Learning and Digital Citizenship in the 21st Century*, Springer, London,  
18 pp. 531-539.  
19
- 20 Chang, Y., Zhang, X., Mokhtar, I., Foo, S., Majid, S., Luyt, B. and Theng, Y. (2012), "Assessing  
21 students' information literacy skills in two secondary schools in Singapore", *Journal of*  
22 *Information Literacy*, Vol. 6 No. 2, pp. 19-34.  
23
- 24  
25 Chu, D., Siu, F., Chu, S., Tavares, N., Ho, S., Chow, K. and Wong, M. (2012), *Developing upper*  
26 *primary students' 21st century skills: inquiry learning through collaborative teaching and*  
27 *Web 2.0 technology*, Centre for Information Technology in Education, Faculty of Education,  
28 The University of Hong Kong, Hong Kong.  
29
- 30 Chu, S. (2012), "Assessing information literacy: a case study of primary 5 students in Hong kong",  
31 *School Library Media Research*, Vol. 15, pp. 1-24.  
32
- 33  
34 Chu, S., Tse, S. and Chow, K. (2011), "Using collaborative teaching and inquiry project-based  
35 learning to help primary school students develop information literacy and information  
36 skills", *Library and Information Science Research*, Vol. 33 No. 2, pp. 132-143.  
37
- 38  
39 Coonan, E. (2011), *A new curriculum for information literacy: transitional - transferable -*  
40 *transformational. Theoretical background: teaching learning: perceptions of information*  
41 *literacy*, available at: <http://arcadiaproject.lib.cam.ac.uk/docs/theory.pdf> (accessed 05  
42 November 2018).  
43
- 44  
45 Duffy, A., Liying, T. and Ong, L. (2010), "Singapore teens' perceived ownership of online sources  
46 and credibility", *First Monday*, Vol. 15 No. 4, NP-NP.  
47
- 48 Foo, S., Majid, S., Mokhtar, I., Zhang, X., Chang, Y., Luyt, B. and Theng, Y. (2014), "Information  
49 literacy skills of secondary school students in Singapore", *Aslib Journal of Information*  
50 *Management*, Vol. 66 No. 1, pp. 54-76.  
51
- 52  
53 Freund, P. and Kasten, N. (2012), "How smart do you think you are? A meta-analysis on the  
54 validity of self-estimates of cognitive ability", *Psychological Bulletin*, Vol. 138 No. 2, pp.  
55 296-321.  
56
- 57 Geffert, B. and Christensen, B. (1998), "Things they carry: attitudes toward, opinions about, and  
58 knowledge of libraries and research among incoming college students", *Reference and User*  
59 *Services Quarterly*, Vol. 37 No. 3, pp. 279-285.  
60

- 1  
2  
3 Gross, M. and Latham, D. (2007), "Attaining information literacy: an investigation of the  
4 relationship between skill level, self-estimates of skill, and library anxiety", *Library and*  
5 *Information Science Research*, Vol. 29 No. 3, pp. 332-353.
- 6  
7  
8 Gross, M. and Latham, D. (2012), "What's skill got to do with it?: information literacy skills and  
9 self-views of ability among first-year college students", *Journal of the American Society for*  
10 *Information Science and Technology*, Vol. 63 No. 3, pp. 574-583.
- 11  
12 Hepworth, M. (2003), "Information literacy from the learner's perspective", in Martin, A. and  
13 Rader, H. (Eds.), *Information and IT Literacy: Enabling Learning in the 21st Century*,  
14 Facet, London, pp. 217-233.
- 15  
16  
17 Hignite, M., Margavio, T. and Margavio, G. (2009), "Information literacy assessment: moving  
18 beyond computer literacy", *College Student Journal*, Vol. 43 No. 3, pp. 812-821.
- 19  
20  
21 Ivanitskaya, L., O'Boyle, I. and Casey, A. (2006), "Health information literacy and competencies of  
22 information age students: results from the interactive online Research Readiness Self-  
23 Assessment (RRSA)", *Journal of Medical Internet Research*, Vol. 8 No. 2, pp. 1-14.
- 24  
25 Kent State University Libraries (2016), TRAILS: Tool for Real-time Assessment of Information  
26 Literacy Skills, available at: <http://www.trails-9.org> (accessed 10 January 2019).
- 27  
28  
29 Klinger, D., Shulha, L. and Wade-Woolley, L. (2010), *Towards an understanding of gender*  
30 *differences in literacy achievement*, Queen's Printer for Ontario, Toronto.
- 31  
32 Knight, L. (2006), "Using rubrics to assess information literacy", *Reference Services Review*, Vol.  
33 34 No. 1, pp. 43-55.
- 34  
35  
36 Liu, T. and Sun, H. (2012), "Gender differences on information literacy of science and engineering  
37 undergraduates", *I.J.Modern Education and Computer Science*, Vol. 2, pp. 23-30.
- 38  
39  
40 Lloyd, A. (2011), "Trapped between a rock and a hard place: what counts as information literacy in  
41 the workplace and how is it conceptualized?", *Library Trends*, Vol. 60 No. 2, pp. 277- 296.
- 42  
43  
44 Majid, S., Foo, S., Luyt, B., Zhang, X., Theng, Y., Chang, Y. and Mokhtar, I. (2011), "Adopting  
45 evidence-based practice in clinical decision making: nurses' perceptions, knowledge, and  
46 barriers", *Journal of the Medical Library Association*, Vol. 99 No. 3, pp. 229-236.
- 47  
48  
49 Mohammad, R. (2014), "Investigating the relationship between information literacy and academic  
50 performance among students", *Journal of Education and Health Promotion*, Vol. 3, pp. 95-  
51 98.
- 52  
53  
54 Mullis, I., Martin, M., Foy, P. and Drucker, K. (2012), *PIRLS 2011 international results in reading*,  
55 available at: <https://timssandpirls.bc.edu/pirls2011/international-results-pirls.html> (accessed  
56 10 January 2019).
- 57  
58  
59 Neely, T. (2006), *Information literacy assessment: standard-based tools and assignments*,  
60 American Library Association, Chicago.

- 1  
2 Oakleaf, M. (2008), "Dangers and opportunities: a conceptual map of information literacy  
3 assessment approaches", *portal: Libraries and the Academy*, Vol. 8 No. 3, pp. 233-253.  
4
- 5 Ojala, M. (2002), "Search Soirees", *Online*, Vol. 26 No. 1, pp. 5.  
6
- 7 Pickard, A., Gannon-Leary, P. and Coventry, L. (2011), "The onus on us? Stage one in developing  
8 an i-Trust model for our users", *Library and Information Research*, Vol. 35 No. 111, pp. 87-104.  
9
- 10 Pickard, A., Shenton, A. and Johnson, A. (2014), "Young people and the evaluation of information  
11 on the World Wide Web: principles, practice and beliefs", *Journal of Librarianship and  
12 Information Science*, Vol. 46 No. 1, pp. 3-20.  
13
- 14 Rosman, T., Mayer, A. and Krampen, G. (2015), "Combining self-assessments and achievement  
15 tests in information literacy assessment: empirical results and recommendations for  
16 practice", *Assessment & Evaluation in Higher Education*, Vol. 40 No. 5, pp. 740-754.  
17
- 18 Rozzi-Ochs, J., Egelhoff, C., Jackson, H. and Zelmanowitz, S. (2012), "Work in progress: building  
19 information literacy assessment", paper presented at the 2012 Frontiers in Education  
20 Conference Proceedings.  
21
- 22 Seamans, N. (2002), "Student perceptions of information literacy: insights for librarians", *Reference  
23 Services Review*, Vol. 30 No. 2, pp. 112-123.  
24
- 25 Secker, J. and Coonan, E. (2013), *Rethinking information literacy: a practical framework for  
26 supporting learning*, Facet, London.  
27
- 28 Shenton, A., Pickard, A. and Johnson, A. (2014), "Information evaluation and the individual's  
29 cognitive state: some insights from a study of British teenaged users", *IFLA Journal*, Vol. 40  
30 No. 4, pp. 307-316.  
31
- 32 Shih, W. and Allen, M. (2007), "Working with Generation-D: adopting and adapting to cultural  
33 learning and change", *Library Management*, Vol. 28 No. 1/2, pp. 89-100.  
34
- 35 Sokoloff, J. (2012), "Information literacy in the workplace: employer expectations", *Journal of  
36 Business & Finance Librarianship*, Vol. 17 No. 1, pp. 1-17.  
37
- 38 University College London (2008), *Information behaviour of the researcher of the future: a CIBER  
39 briefing paper, executive summary*, available at:  
40 [https://www.webarchive.org.uk/wayback/archive/20140614113419/http://www.jisc.ac.uk/m  
41 edia/documents/programmes/reppres/gg\\_final\\_keynote\\_11012008.pdf](https://www.webarchive.org.uk/wayback/archive/20140614113419/http://www.jisc.ac.uk/media/documents/programmes/reppres/gg_final_keynote_11012008.pdf) (accessed 01  
42 November 2018].  
43
- 44 Venezky, R. (2000), "The digital divide within formal school education: cause and consequences",  
45 in OECD (Ed.), *Learning to Bridge the Digital Divide: Education and Skills*, OECD, Paris,  
46 pp. 63-76.  
47
- 48 Walsh, A. (2009), "Information literacy assessment: where do we start?", *Journal of Librarianship  
49 and Information Science*, Vol. 41 No. 1, pp. 19-28.  
50  
51  
52  
53  
54  
55  
56  
57  
58  
59  
60

1  
2 Walton, G. and Hepworth, M. (2013), "Using assignment data to analyse a blended information  
3 literacy intervention: a quantitative approach", *Journal of Librarianship and Information  
4 Science*, Vol. 45 No. 1, pp. 53-63.  
5

6  
7 Williams, P. and Rowlands, I. (2007), *Information behaviour of the researcher of the future: the  
8 literature on young people and their information behaviour*, available at:  
9 [http://www.webarchive.org.uk/wayback/archive/20140614113317/http://www.jisc.ac.uk/me  
10 dia/documents/programmes/reppres/ggworkpackageii.pdf](http://www.webarchive.org.uk/wayback/archive/20140614113317/http://www.jisc.ac.uk/media/documents/programmes/reppres/ggworkpackageii.pdf) (accessed 10 November 2018).  
11

12 Yamane, T. (1967), *Statistics, an introductory analysis*, 2nd ed., Harper and Row, New York.  
13  
14  
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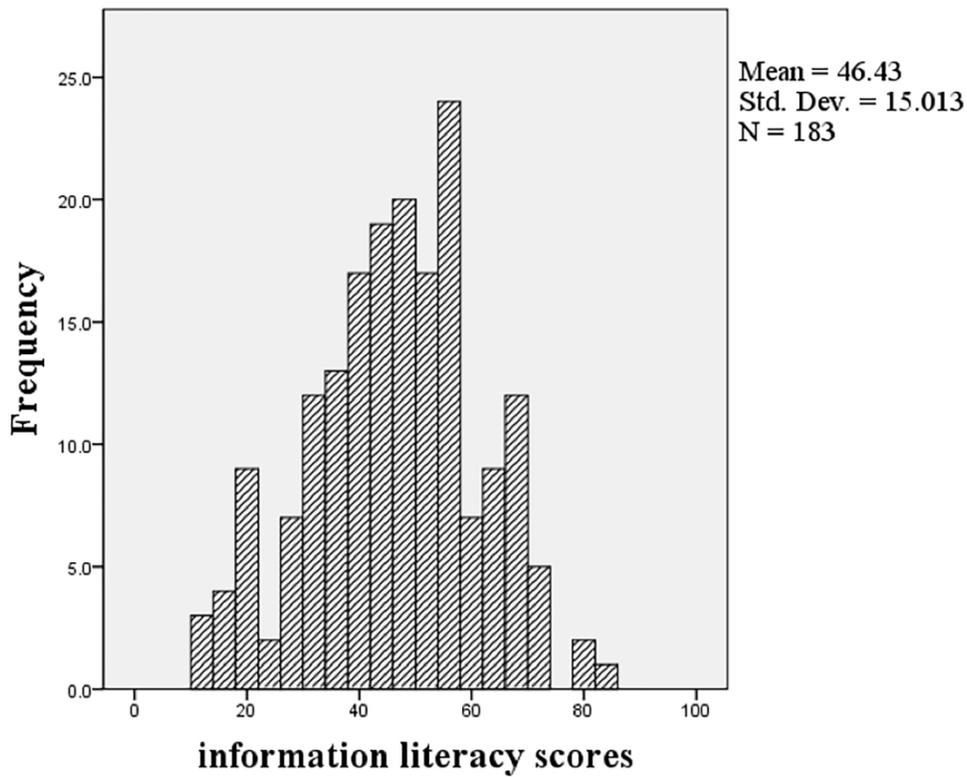


Figure 1. Overall information literacy scores  
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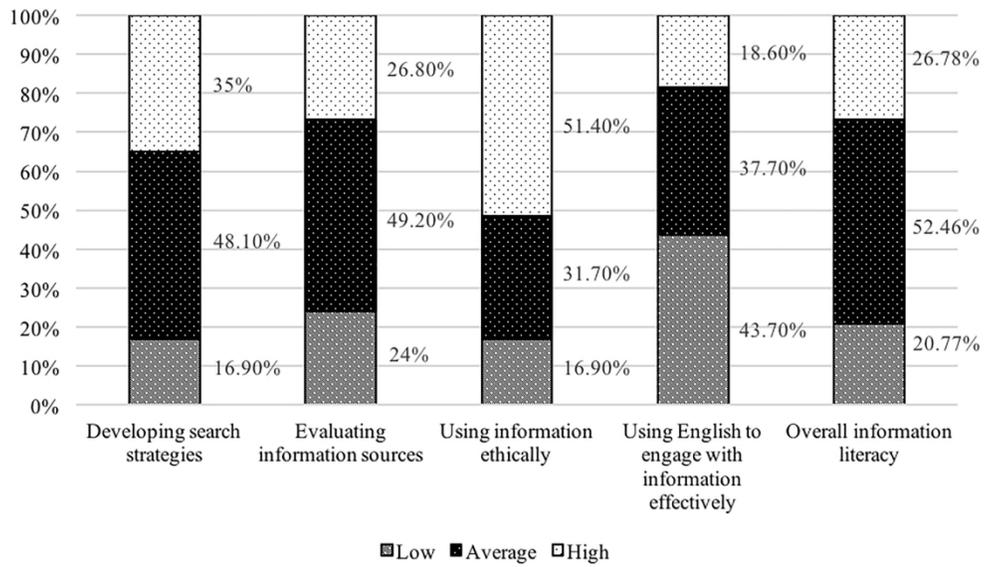


Figure 2. Self-assessment of information literacy testing areas

500x302mm (150 x 150 DPI)

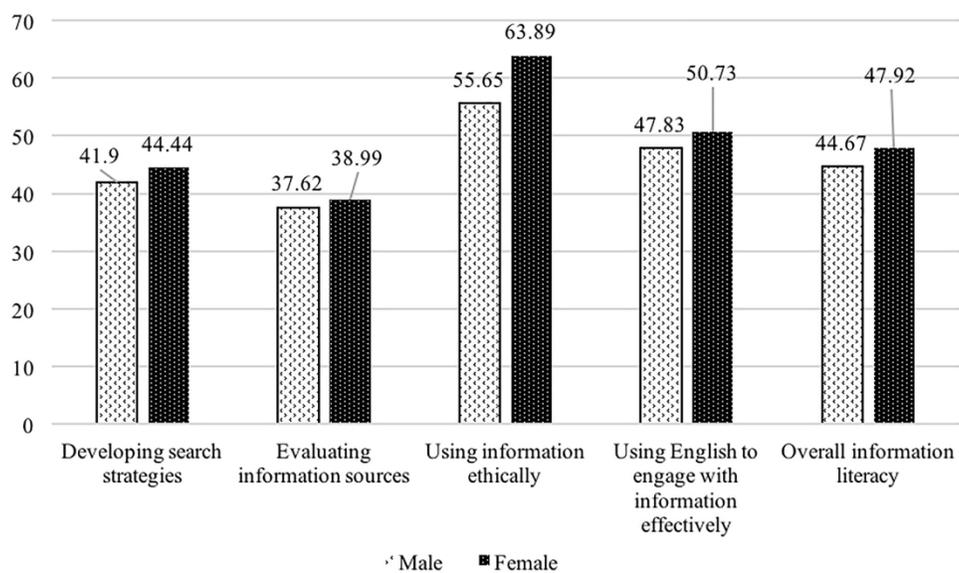


Figure 3. Comparison of information literacy test scores between female and male students

500x314mm (150 x 150 DPI)

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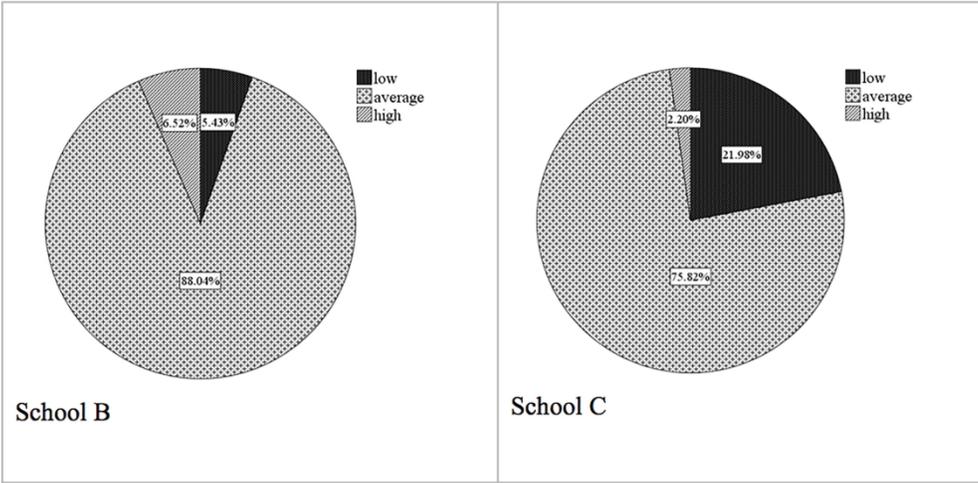


Figure 4. Overall information literacy scores of the two schools

500x252mm (144 x 144 DPI)

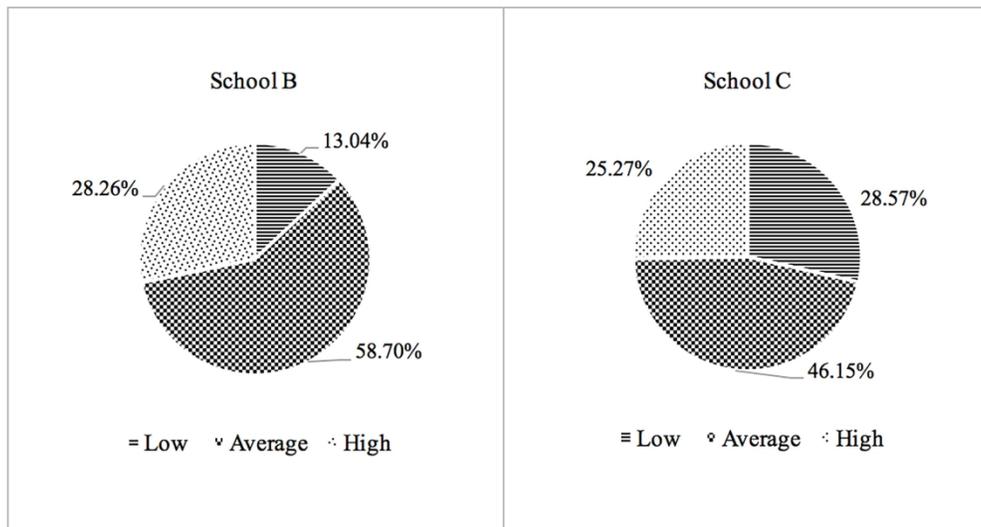


Figure 5. Information literacy self-assessment between schools

500x268mm (144 x 144 DPI)

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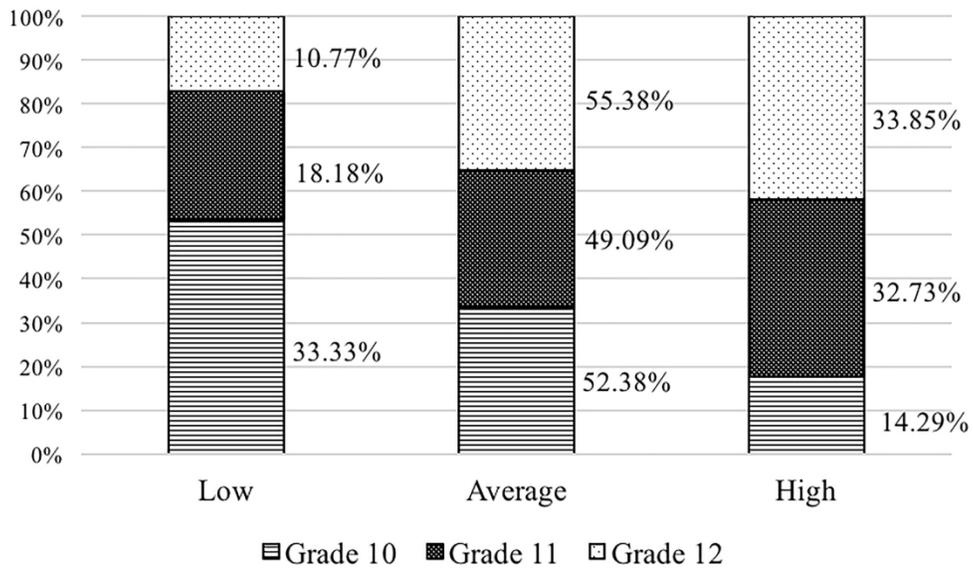


Figure 6. Comparison of information literacy self-rating between grades

500x309mm (150 x 150 DPI)

**Table 1.** Scores for four information literacy testing areas

Testing areas	Mean (%)	Minimum	Maximum
Evaluating information sources	38.36	0	100
Developing search strategies	43.28	0	100
Using English to engage with information effectively	49.40	0	100
Using information ethically	60.11	0	100

**Table 2.** Scores for individual items

Testing area	Testing item	Score (%)
Developing search strategies	Boolean operators	<b>20.8</b>
	Book index	<b>24</b>
	Broadening search results	32.8
	Truncation	35.5
	Online public access catalog (OPAC)	41.5
	Narrowing search results	47.5
	Book table of contents	62.3
	Call number	67.8
	Search fields	<b>79.2</b>
Evaluating information sources	Appropriate information sources	<b>11.5</b>
	Authoritative information sources	44.8
	Information content evaluation	<b>77.6</b>
Using information ethically	Following ethical/legal instructions	<b>36.1</b>
	Copyright	57.4
	Plagiarism	<b>88</b>
Using English to engage with information effectively	Identifying important information from text files and documents written in English	<b>37.2</b>
	Identifying appropriate search fields presented in English	40.4
	Understanding the meaning of a citation written in English	48.6
	Understanding the message in relation to ethical issues written in English	54.6
	Understanding the meaning of the English book's title	56.8
	Evaluating the content of information written in English	<b>58.5</b>

**Table 3.** Information literacy scores between grades

Testing areas	Grade 10 (%)	Grade 11 (%)	Grade 12 (%)
Developing search strategies	41.59	38.18	49.23
Evaluating information sources	41.59	32.36	40.31
Using information ethically	54.37	62.73	63.46
Using English to engage with information effectively	47.43	47.29	53.09
Overall information literacy scores	45.02	43.13	50.58

**Table 4.** Correlation between information literacy testing areas variables

Testing areas	Developing search strategies	Evaluating information sources	Using information ethically	Using English to engage with information effectively	Overall information literacy level
Developing search strategies		.287**	.277**	.285**	.803**
Evaluating information sources			.234**	.188*	.569**
Using information ethically				.267**	.567**
Using English to engage with information effectively					.669**

\*\* . Correlation is significant at the .01 level (2-tailed).

\* . Correlation is significant at the .05 level (2-tailed).

## Responses to the reviewers

### Referee: 1

Comments:

- 1) The sampling technique should be specified (whether convenience, random or stratified). It is also important to show that the sample of 183 is a true representation of the population being studied.

Based on your suggestions, the paper provides additional information regarding sampling strategy used in the study in Section 3.3. Since the research focused on the practice of IL teaching and learning in Vietnamese upper secondary schools, it was important to demonstrate the practice of IL by exploring different settings. In Vietnam, there are two main kinds of upper secondary schools, public and non-public. Thus, the researcher stratified the population by school type, and then one public and one non-public school were selected. The selection of two schools followed the process, as explained below.

- The researcher obtained a list of upper secondary schools in Ho Chi Minh City from the Education and Training Department – HCMC, which contains 196 institutions. This list was grouped into two units, public and non-public schools, by the department.
- The researcher contacted in person each two schools individually to seek the permission from the vice-presidents instead of all schools at the same time. Each round included one public school and one non-public school.
- At the second round, one public school and one non-public school provided the researcher permission to conduct the study in their institutions.

The sampling of students for the questionnaire was then implemented by drawing on nominated schools. In order to calculate a reliable sample size, the researcher decided on choosing students based on Yamane's (1967) sample formula, as follows.

$$n = \frac{N}{1 + Ne^2}$$

Specifically:

n - the sample size

N - the population size

e - the acceptable sampling error

School B and School C had 1,146 ( $N_1$ ) and 981 ( $N_2$ ) students, respectively. Yamane's formula was applied to the above population with sampling error of 10% ( $e = 0.1$ ). As a result, the main study involved 183 upper secondary students ( $n=183$ ).

$$n = n_1 + n_2 = \frac{1146}{1 + 1146 \cdot (0.1)^2} + \frac{981}{1 + 981 \cdot (0.1)^2} = 92 + 91 = 183$$

- 2) It should be indicated if the set ranges for percentage scores and self-rating are standardized. Will an investigator replicating the study have to use the same or different ranges?

Page 6, Lines 2-9: Findings and discussion – Are the set ranges for percentage scores and self-rating standardized?

The manuscript provides additional information to explain the reason why the set ranges were used in Section 4 Page 6. The study employed a grading system which is currently used in Vietnam's educational institutions as following:

- (1) Very good: 8+
- (2) Good: 7-7.5
- (3) Pass: 5-6.5
- (4) Fail, reassessment permitted: 3.5-4.5
- (5) Fail, reassessment not taken: 0-3

Because the sample size of the study is not large and in order to measure students' IL in a more meaningful way, the above grading scales were grouped into 3 main units: Good and Very good; Pass and Fail, reassessment permitted; Fail, reassessment not taken. This grading scale was then applied to the percentage IL scores of the study.

In practice, if an investigator conducts a similar research in Vietnam, he/she can use the same grading scale; or he/she can use a five-level grading scale as mentioned above rather than my three-level grading scale if the sample size is large enough.

For self-rating, the study used a five-point rating scale, 5 for highest rating and 1 for lowest rating, as indicated in Section 3.1. The self-rating scale was then groups into three units corresponding to the three-level scale used in the IL test.

- 3) Page 12, Lines 29-33 can be taken out because it is unnecessary. Again the analysis in Lines 34-41 on the same page can be better placed under their respective previous sections 4.3, 4.4, and 4.5

Lines 29-33 on Page 12 were taken out as suggested.

Based on your suggestions, findings and discussions related to correlation between demographic variables and IL testing areas variables on Page 12 Lines 34-41 were moved to respective previous sections 4.3, 4.4 and 4.5. Table 4 was removed because the content of section 4.6 was taken out and moved to other sections. Statistics previously presented in Table 4 were inserted into appropriate places in sections 4.3, 4.4 and 4.5.

In the previous version of the manuscript, sections 4.6 and 4.7 present correlation between demographic variables and IL testing areas variables as well as self-rating variables, respectively. As section 4.6 was moved out, findings presented in section 4.7 were also moved to respective previous sections 4.3, 4.4 and 4.5.

- 4) The title could be tweaked as: "Information literacy capabilities of upper secondary students: The case of Vietnam"

Many thanks for your suggestion. The title of the manuscript was amended as suggested.

## Referee 2

Comments:

- 1) Authors did well to demonstrate how the study was carried out. However, it would be important if authors could:

- 1
- 2
- 3
- 4 1. Tell the population size
- 5 2. How the sample size of 183 was determined
- 6 3. How individual subjects were selected
- 7

8 Based on your suggestions, the paper provides additional information regarding sampling  
9 strategy used in the study in Section 3.3. Since the research focused on the practice of IL  
10 teaching and learning in Vietnamese upper secondary schools, it was important to demonstrate  
11 the practice of IL by exploring different settings. In Vietnam, there are two main kinds of upper  
12 secondary schools, public and non-public. Thus, the researcher stratified the population by  
13 school type, and then one public and one non-public school were selected. The selection of two  
14 schools followed the process, as explained below.

- 15
- 16 - The researcher obtained a list of upper secondary schools in Ho Chi Minh City from  
17 the Education and Training Department – HCMC, which contains 196 institutions. This  
18 list was grouped into two units, public and non-public schools, by the department.
- 19 - The researcher contacted in person each two schools individually to seek the permission  
20 from the vice-presidents instead of all schools at the same time. Each round included  
21 one public school and one non-public school.
- 22 - At the second round, one public school and one non-public school provided the  
23 researcher permission to conduct the study in their institutions.

24 The sampling of students for the questionnaire was then implemented by drawing on nominated  
25 schools. In order to calculate a reliable sample size, the researcher decided on choosing students  
26 based on Yamane's (1967) sample formula, as follows.

$$n = \frac{N}{1 + Ne^2}$$

27 Specifically:

28 n - the sample size

29 N - the population size

30 e - the acceptable sampling error

31 School B and School C had 1,146 (N<sub>1</sub>) and 981 (N<sub>2</sub>) students, respectively. Yamane's  
32 formula was applied to the above population with sampling error of 10% (e = 0.1). As a result,  
33 the main study involved 183 upper secondary students (n=183).

$$n = n_1 + n_2 = \frac{1146}{1 + 1146 \cdot (0.1)^2} + \frac{981}{1 + 981 \cdot (0.1)^2} = 92 + 91 = 183$$

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- 45
- 46 4. What was the response rate (especially when parents were required to give consent  
47 for their wards)
- 48

49 The manuscript added a sentence in section 3.3 to indicate the response rate of the study. A  
50 high response rate is a great advantage of the study. 100% of students (n=183) agreed to take  
51 part in the study and their parents gave consent for this. The vice-presidents of the two  
52 schools provided the researcher permission to conduct the study in their institutions.  
53 Librarians were key informants to invite students to take part in the study. Students' parents  
54 were required to sign the consent form if they wished to give permission for their child to  
55 participate in this study. If they had any questions, they could contact the researcher.

- 56
- 57
- 58
- 59 5. On what basis did researchers choose to categorize responses as low (< or = 30%),  
60 average (> 30% but <70%) and high (>70)? Can authors provide any scientific basis for this?

The manuscript provides additional information to explain the reason why the set ranges were used in Section 4 Page 6. The study employed a grading system which is currently used in Vietnam's educational institutions at all levels as following:

- (1) Very good: 8+
- (2) Good: 7-7.5
- (6) Pass: 5-6.5
- (7) Fail, reassessment permitted: 3.5-4.5
- (8) Fail, reassessment not taken: 0-3

Because the sample size of the study is not large and in order to measure students' IL in a more meaningful way, the above grading scales were grouped into 3 main units: Good and Very good; Pass and Fail, reassessment permitted; Fail, reassessment not taken. This grading scale was then applied to the percentage IL scores of the study.

In practice, if an investigator conducting a similar research in Vietnam, he/she could use the same grading scale; or he/she could use a five-level grading scale as mentioned above rather than my three-level grading scale if the sample size is large enough.

For self-rating, the study used a five-point rating scale, 5 for highest rating and 1 for lowest rating, as indicated in Section 3.1. The self-rating scale was then groups into three units corresponding to the three-level scale used in the IL test.

#### 6. Could the authors attach the questionnaire used?

The questionnaire is attached at the end of this document and as a supplementary file.

2) The results are well demonstrated and justified within literature. However, as the inferential statistics demonstrated that there was no significance difference between females and males IL capabilities, it is equally wrong for the authors to use the descriptive data to make such conclusion. Thus, authors can say that "although descriptively, the females showed more capabilities than the males, inferentially, there was no significant difference in their capabilities".

Many thanks for your suggestions, the conclusion was amended in section 4.3.

3) Apart from few grammatical errors, I think the paper was well written. For example, on page 4, line 57, authors wrote "they are an expert...". This I think should read "they are experts..."

The manuscript has been read through and some grammatical errors were corrected.

## Questionnaire

Student ID:	Code:
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## INFORMATION LITERACY QUESTIONNAIRE

Thank you for taking the time to complete this questionnaire which aims to explore your information literacy level. It is not a test, so do not mind that your answer is right or wrong. I would like to

emphasise that your responses are extremely valuable to the study, and it is important that you answer all the questions as honestly and fully as you can. Please do not discuss the answers of these questions with your friends and teachers until after you have completed the questionnaire.

We estimate that this will take you about...minutes to complete. Please return the questionnaire to ...

Please tick (X) on appropriate box (tick one only)

### A. ABOUT YOU

1. Name: .....
2. Name of the school you are studying: .....
3. What is your gender?  Male  Female
4. Level of study  
 Grade 10  Grade 11  Grade 12

### B. AWARENESS AND SELF-RATING

5. Have you heard or read about the term “information literacy”?

Yes  No

If Yes, what does information literacy mean to you?

.....

.....

.....

.....

### C. YOUR INFORMATION LITERACY

6. *Most libraries use call numbers to arrange their books. Call number shows you the exact location of the book and often appears on the spine of books.*

How do you describe books which have the same or similar call numbers?

- They were written by the same author.
- They were bought at the same time.
- They have the same or similar subjects.
- They have the same size.
- I do not know

7. If you want to search for the book “Van hoc” by using your online library catalogue (see picture), which search type would you choose?

- Tất cả (All fields)
- Tác gia (Author)
- Nhan de (Title)
- Linh vuc (Subject)

- 1  
2  
3  I do not know
- 4 8. You found a book that is a biography of Ho Chi Minh. You need to find the chapter that  
5 deals with his work in the period 1940-1945. Which of the following do you use to locate  
6 the chapter on this period?  
7  Summary in the library catalogue  
8  Table of contents  
9  Index  
10  All of the above  
11  I do not know
- 12 9. You are reading a geography book and you want to find the passages on “Ha Noi”. Which  
13 of the following parts of the book would you use to locate the passages?  
14  Bibliography  
15  Index  
16  Preface  
17  Title page  
18  I do not know
- 19 10. Which of the following is **NOT** a search engine operator (also known as a Boolean  
20 operator)?  
21  
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23  
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*Search engine operators are special characters and words to get more specific search results.*

- 25  And  
26  Or  
27  Not  
28  Same  
29  I do not know
- 30 11. You want to find documents for your essay, but you aware that the topic has several  
31 synonyms, which search operator would you use?  
32  
33  
34  
35

*Synonyms are words that mean the same or nearly the same as each other, for example, old people, old folks, elderly and senior citizens.*

- 36  And  
37  Or  
38  Not  
39  Near  
40  I do not know
- 41 12. *Truncation searching is used to find all terms by using a portion of a word.*  
42  
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*If you end a search term with a special symbol, such as Libr\*, which of the following results would you retrieve?*

- 47  Library and librarian  
48  Library and Literature  
49  Interlibrary and library  
50  I do not now
- 51 13. When you search your school database for documents using “Van hoc”, you retrieve  
52 many documents. You want to narrow your search. Which of the following searches do  
53 you use?  
54  Van hoc and Viet Nam  
55  Van hoc or Van chuong  
56  I do not know  
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14. When you search your school database for documents using “Tre em”, you retrieve some documents. You want to retrieve more documents. Which of the following searches do you use?
- Tre em or Thieu nhi or Tre con
  - Tre em and Thieu nhi and Tre con
  - Tre em not Thieu nhi
  - I do not know
15. When you want to find all the books written by Nguyen Tuan, which search type would you choose?
- Subject
  - Title
  - Author
  - Keyword
  - I do not know
16. You have a plan to study abroad. You are searching for information about a country, the United Kingdom. Given the sources below, select the best place to begin your search.
- Library subscription electronic journal database
  - Print and online encyclopaedia
  - Internet search engine, such as Google
  - Library online catalogue
  - I do not know
17. What **DON'T** you use to evaluate the update of a web page?
- Web page update date
  - The amount of information that a web page provides
  - Last day when a notice is posted
  - Links are working effectively or not
  - I do not know
18. You are preparing a PowerPoint presentation on how to learn English. You hear that the Ministry of Education and Training has issued a new regulation to change English textbooks. You want to use this information in your presentation. What should you do to verify that this information is correct?
- Ask your friends
  - Ask your parents or guardian
  - Call bookstore owner where you often buy books
  - Ask at the library
  - I do not know
19. What **DON'T** you use to evaluate the authority of a web page?
- Qualifications of authors
  - Prestige of sponsor
  - Web domain (e.g. .org, .edu, .net, .com)
  - The amount of information that a web page provides
  - I do not know
20. Read the two paragraphs below. Select the statement on which both paragraphs agree.
- Paragraph 1:**  
Theo số liệu thống kê của WHO (Tổ chức y tế thế giới): Trung bình mỗi năm, thế giới có trên 10 triệu người chết vì tai nạn giao thông. Năm 2006, riêng Trung Quốc có tới 89,455 người chết vì các vụ tai nạn giao thông. Ở Việt Nam con số này là 12,300. Năm 2007, WHO đặt Việt Nam vào Quốc gia có tỉ lệ các vụ tử vong vì tai nạn giao thông cao nhất thế giới với 33 trường hợp tử vong mỗi ngày.  
(Translate the above paragraph for English speakers, not in the questionnaire,

“According to WHO (World Health Organization), there are more than 10 million people killed in traffic-related accidents around the world every year. In 2006, China had 89,455 deaths from traffic accidents. In Vietnam, the figure was 12,300. In 2007, WHO assessed Vietnam as a country which had the highest traffic-related death rate around the world, with 33 deaths per day”)

**Paragraph 2:**

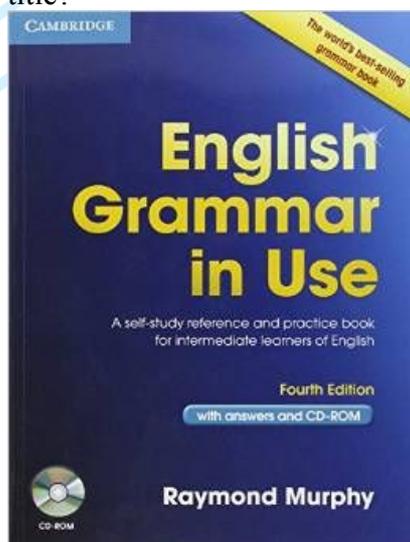
Hàng năm số vụ tai nạn giao thông vẫn không hề suy giảm, ngược lại nó còn tăng lên rất nhiều. Cứ mỗi năm, Việt Nam có tới gần một nghìn vụ tai nạn giao thông, nhiều nhất là xe máy. Nguyên nhân chính gây ra các vụ tai nạn phần lớn là do ý thức chấp hành luật lệ giao thông của người dân: uống rượu bia vượt quá nồng độ cho phép khi lái xe, không đội mũ bảo hiểm, chở trên ba người phóng nhanh vượt ẩu...

(Translate the above paragraph for English speakers, not in the questionnaire, “The annual number of traffic accidents remains undiminished, it rapidly increased instead. Every year, Vietnam has around one thousand traffic accidents. Most of them are motorcycle accidents. This results from a lack of awareness of traffic safety laws, such as drinking alcohol while driving, not wearing a helmet, etc.”)

- Vietnam has high traffic-related death rate
  - Traffic accidents occur in young people.
  - Vietnam is trying to reduce the number of traffic accidents
  - I do not know
21. What is plagiarism?
- Citing someone else’s work and providing a reference in your bibliography.
  - Using someone else’s work as it is your own.
  - Discussing a book with your classmate.
  - I do not know
22. You find an important article about the population growth rate in Vietnam for your group presentation in your geography class. Under the copyright law of Vietnam, you are allowed to make a copy of the article for your own personal use and:
- Make 3 copies for other members in your team.
  - Make 10 copies to sell to your classmates.
  - Make 100 copies and share on campus for an exhibition of the World Population Day.
  - I do not know
23. You would like to use some photos from a collection “Sai Gon in pictures” for your web page. What should you do in order to not break copyright laws?
- Copy and post the photos on your web page
  - Ask for permission from copyright owner to use the collection
  - Edit the collection by cutting or adding more photos and then post on your web page.
  - Use and give credit to the collection.
  - I do not know
24. You have to submit your assignment tomorrow but you have not done anything. What should you do?
- Try to finish it before deadline even if the quality of your work is not as good as expected.
  - Email or call your teacher and ask for an extension on the due date, even though it will mean a lower grade.
  - Borrow your older sister’s paper that she used last semester in the same class, add some of your notes and turn the paper in on time.

I do not know

25. The following image is from the first page of a book. Could you show the book's **FULL** title?



- English grammar in use  
 English grammar in use: a self-study reference and practice book for intermediate learners of English  
 Raymond Murphy  
 Fourth edition  
 The world's best-selling grammar book: English grammar in use  
 I do not know

26. You search a book by using an English database. You find a citation as follow:  
**HAHN, D., FLYNN, L. & REUBEN, S. 2008. *The Ultimate Teen Book Guide*, London, Walker.**

What does "Walker" refer to in the above citation?

- Volume number  
 Issue number  
 Publisher  
 Title  
 I do not know

27. You love J. K. Rowling's Harry Potter novels. You want to find books written in English that J. K. Rowling wrote by using an English search engine, which search type would you use?

- Title search on: Rowling  
 Author search on: Rowling  
 Subject search on: Rowling  
 I do not know

28. Often the article title will alert the researcher to bias. You are searching for articles and books related to the development of children's literature. You find a book with title "**Written for children: an outline of English-language children's literature**". Do you think this book is suitable for you?

- Yes, the book is suitable  
 No, the book is unsuitable  
 I do not know

29. Compare the following two paragraphs, and then identify which paragraph discusses the topic "Kings of Vietnam".

Paragraph 1: "The Hung dynasty produced 18 kings, each of whom ruled for 150 years. At this time, the nation was named **Van Lang**. This dynasty was then overthrown by a neighbouring king in 258 B.C. He established the new kingdom of **Au Lac** and built his capital at Phuc An, whose remains still exist today in the village of Co Loa, located west of Hanoi".

Paragraph 2: "Unfortunately, life was rather chaotic for them wherever they lived. The repressive policies of South Vietnamese president **Ngo Dinh Diem** ultimately led to his assassination in 1963. Subsequent regimes didn't have any more popular support but were firmly entrenched, thanks to both the South Vietnamese and U.S. militaries"

- Paragraph 1
- Paragraph 2
- Both Paragraph 1 and 2
- Neither Paragraph 1 or 2
- I do not know

30. You are preparing a PowerPoint presentation that your teacher will post online. You have found some very effective photos from a website that has posted the following English message:

*"All of the images on this website are copyrighted. Please do not use any of them on a Web page, CD-ROM, printed or otherwise published work without receiving permission in advance from our site."*

What will you do?

- You have to seek permission from the copyright owner before you use the photos.
- You have to ask for permission to use the photos in your PowerPoint presentation but can feel free to post the photos to your presentation knowing that you have applied for permission.
- You have to seek permission from the copyright owner and also provide a citation.
- You have to seek permission from the copyright owner, provide a citation in your PowerPoint, and give a reference in your bibliography.
- I do not know

### B. AWARENESS AND SELF-RATING

31. How would you rate your ability to develop search strategies in order to find appropriate information? (Choose 5 for highest rating and 1 for lowest rating)

1	2	3	4	5

32. How would you rate your ability to evaluate information sources? (Choose 5 for highest rating and 1 for lowest rating)

1	2	3	4	5

33. How would you rate your ability to use information ethically? (Choose 5 for highest rating and 1 for lowest rating)

*Using information ethically means there are copyright and intellectual property issues; for example, if you plan to use the information in an article, you cannot copy it without*

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*references to the information sources; for example, you cannot post a photo that belongs to another person on your own website if you do not seek permission from that person.*

1	2	3	4	5

34. How would you rate your ability to use English to engage with information effectively?  
(Choose 5 for highest rating and 1 for lowest rating)

1	2	3	4	5

35. Finally, please reflect on how you think you did on this assessment of your information literacy level and select the number that best represents your score (choose 5 for highest rating and 1 for lowest rating).

1	2	3	4	5

**THANK YOU!**

# Questionnaire

Student ID:	Code:
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## INFORMATION LITERACY QUESTIONNAIRE

Thank you for taking the time to complete this questionnaire which aims to explore your information literacy level. It is not a test, so do not mind that your answer is right or wrong. I would like to emphasise that your responses are extremely valuable to the study, and it is important that you answer all the questions as honestly and fully as you can. Please do not discuss the answers of these questions with your friends and teachers until after you have completed the questionnaire.

We estimate that this will take you about...minutes to complete. Please return the questionnaire to ...

Please tick (X) on appropriate box (tick one only)

### A. ABOUT YOU

- Name: .....
- Name of the school you are studying: .....
- What is your gender?     Male                       Female
- Level of study  
 Grade 10         Grade 11         Grade 12

### B. AWARENESS AND SELF-RATING

- Have you heard or read about the term "information literacy"?  
 Yes                                       No

If Yes, what does information literacy mean to you?

.....

.....

.....

.....

.....

### C. YOUR INFORMATION LITERACY

- Most libraries use call numbers to arrange their books. Call number shows you the exact location of the book and often appears on the spine of books.*

How do you describe books which have the same or similar call numbers?

- They were written by the same author.
  - They were bought at the same time.
  - They have the same or similar subjects.
  - They have the same size.
  - I do not know
- If you want to search for the book "Van hoc" by using your online library catalogue (see picture), which search type would you choose?

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TRA CỨU THƯ MỤC TRỰC TUYẾN

van hoc Nhan đề

CHON CƠ SỞ DỮ LIỆU  
 Thư viện Lạc Việt

+ Tìm kiếm nâng cao

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- Tất cả (All fields)  
 Tác gia (Author)  
 Nhan đề (Title)  
 Lĩnh vực (Subject)  
 I do not know
8. You found a book that is a biography of Ho Chi Minh. You need to find the chapter that deals with his work in the period 1940-1945. Which of the following do you use to locate the chapter on this period?
- Summary in the library catalogue  
 Table of contents  
 Index  
 All of the above  
 I do not know
9. You are reading a geography book and you want to find the passages on “Ha Noi”. Which of the following parts of the book would you use to locate the passages?
- Bibliography  
 Index  
 Preface  
 Title page  
 I do not know
10. Which of the following is **NOT** a search engine operator (also known as a Boolean operator)?

35  
36  
37  
38  
39  
40  
41  
42  
43  
44

*Search engine operators are special characters and words to get more specific search results.*

- And  
 Or  
 Not  
 Same  
 I do not know
11. You want to find documents for your essay, but you aware that the topic has several synonyms, which search operator would you use?

45  
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*Synonyms are words that mean the same or nearly the same as each other, for example, old people, old folks, elderly and senior citizens.*

- And  
 Or  
 Not  
 Near  
 I do not know
12. Truncation searching is used to find all terms by using a portion of a word.

55  
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60

If you end a search term with a special symbol, such as Libr\*, which of the following results would you retrieve?

- Library and librarian  
 Library and Literature  
 Interlibrary and library

- 1  
2  
3  I do not now
- 4 13. When you search your school database for documents using “Van hoc”, you retrieve many  
5 documents. You want to narrow your search. Which of the following searches do you use?  
6  Van hoc and Viet Nam  
7  Van hoc or Van chuong  
8  I do not know
- 9  
10 14. When you search your school database for documents using “Tre em”, you retrieve some  
11 documents. You want to retrieve more documents. Which of the following searches do you use?  
12  Tre em or Thieu nhi or Tre con  
13  Tre em and Thieu nhi and Tre con  
14  Tre em not Thieu nhi  
15  I do not know
- 16 15. When you want to find all the books written by Nguyen Tuan, which search type would you  
17 choose?  
18  Subject  
19  Title  
20  Author  
21  Keyword  
22  I do not know
- 23 16. You have a plan to study abroad. You are searching for information about a country, the United  
24 Kingdom. Given the sources below, select the best place to begin your search.  
25  Library subscription electronic journal database  
26  Print and online encyclopaedia  
27  Internet search engine, such as Google  
28  Library online catalogue  
29  I do not know
- 30  
31 17. What **DON'T** you use to evaluate the update of a web page?  
32  Web page update date  
33  The amount of information that a web page provides  
34  Last day when a notice is posted  
35  Links are working effectively or not  
36  I do not know
- 37 18. You are preparing a PowerPoint presentation on how to learn English. You hear that the Ministry  
38 of Education and Training has issued a new regulation to change English textbooks. You want to  
39 use this information in your presentation. What should you do to verify that this information is  
40 correct?  
41  Ask your friends  
42  Ask your parents or guardian  
43  Call bookstore owner where you often buy books  
44  Ask at the library  
45  I do not know
- 46  
47 19. What **DON'T** you use to evaluate the authority of a web page?  
48  Qualifications of authors  
49  Prestige of sponsor  
50  Web domain (e.g. .org, .edu, .net, .com)  
51  The amount of information that a web page provides  
52  I do not know
- 53 20. Read the two paragraphs below. Select the statement on which both paragraphs agree.
- 54 **Paragraph 1:**  
55 Theo số liệu thống kê của WHO (Tổ chức y tế thế giới): Trung bình mỗi năm, thế giới có trên 10  
56 triệu người chết vì tai nạn giao thông. Năm 2006, riêng Trung Quốc có tới 89,455 người chết vì  
57 các vụ tai nạn giao thông. Ở Việt Nam con số này là 12,300. Năm 2007, WHO đặt Việt Nam vào  
58 Quốc gia có tỉ lệ các vụ tử vong vì tai nạn giao thông cao nhất thế giới với 33 trường hợp tử vong  
59 mỗi ngày.  
60 (Translate the above paragraph for English speakers, not in the questionnaire,

“According to WHO (World Health Organization), there are more than 10 million people killed in traffic-related accidents around the world every year. In 2006, China had 89,455 deaths from traffic accidents. In Vietnam, the figure was 12,300. In 2007, WHO assessed Vietnam as a country which had the highest traffic-related death rate around the world, with 33 deaths per day”)

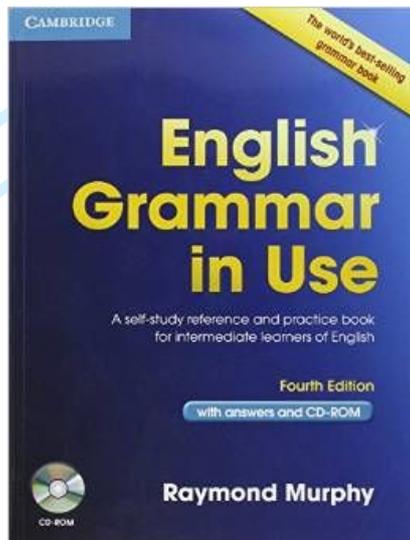
**Paragraph 2:**

Hàng năm số vụ tai nạn giao thông vẫn không hề suy giảm, ngược lại nó còn tăng lên rất nhiều. Cứ mỗi năm, Việt Nam có tới gần một nghìn vụ tai nạn giao thông, nhiều nhất là xe máy. Nguyên nhân chính gây ra các vụ tai nạn phần lớn là do ý thức chấp hành luật lệ giao thông của người dân: uống rượu bia vượt quá nồng độ cho phép khi lái xe, không đội mũ bảo hiểm, chở trên ba người phóng nhanh vượt ẩu...

(Translate the above paragraph for English speakers, not in the questionnaire,

“The annual number of traffic accidents remains undiminished, it rapidly increased instead. Every year, Vietnam has around one thousand traffic accidents. Most of them are motorcycle accidents. This results from a lack of awareness of traffic safety laws, such as drinking alcohol while driving, not wearing a helmet, etc.”)

- Vietnam has high traffic-related death rate
  - Traffic accidents occur in young people.
  - Vietnam is trying to reduce the number of traffic accidents
  - I do not know
21. What is plagiarism?
- Citing someone else’s work and providing a reference in your bibliography.
  - Using someone else’s work as it is your own.
  - Discussing a book with your classmate.
  - I do not know
22. You find an important article about the population growth rate in Vietnam for your group presentation in your geography class. Under the copyright law of Vietnam, you are allowed to make a copy of the article for your own personal use and:
- Make 3 copies for other members in your team.
  - Make 10 copies to sell to your classmates.
  - Make 100 copies and share on campus for an exhibition of the World Population Day.
  - I do not know
23. You would like to use some photos from a collection “Sai Gon in pictures” for your web page. What should you do in order to not break copyright laws?
- Copy and post the photos on your web page
  - Ask for permission from copyright owner to use the collection
  - Edit the collection by cutting or adding more photos and then post on your web page.
  - Use and give credit to the collection.
  - I do not know
24. You have to submit your assignment tomorrow but you have not done anything. What should you do?
- Try to finish it before deadline even if the quality of your work is not as good as expected.
  - Email or call your teacher and ask for an extension on the due date, even though it will mean a lower grade.
  - Borrow your older sister’s paper that she used last semester in the same class, add some of your notes and turn the paper in on time.
  - I do not know
25. The following image is from the first page of a book. Could you show the book’s FULL title?



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- English grammar in use
- English grammar in use: a self-study reference and practice book for intermediate learners of English
- Raymond Murphy
- Fourth edition
- The world's best-selling grammar book: English grammar in use
- I do not know
26. You search a book by using an English database. You find a citation as follow:  
**HAHN, D., FLYNN, L. & REUBEN, S. 2008. *The Ultimate Teen Book Guide*, London, Walker.**
- What does "Walker" refer to in the above citation?
- Volume number
- Issue number
- Publisher
- Title
- I do not know
27. You love J. K. Rowling's Harry Potter novels. You want to find books written in English that J. K. Rowling wrote by using an English search engine, which search type would you use?
- Title search on: Rowling
- Author search on: Rowling
- Subject search on: Rowling
- I do not know
28. Often the article title will alert the researcher to bias. You are searching for articles and books related to the development of children's literature. You find a book with title "**Written for children: an outline of English-language children's literature**". Do you think this book is suitable for you?
- Yes, the book is suitable
- No, the book is unsuitable
- I do not know
29. Compare the following two paragraphs, and then identify which paragraph discusses the topic "Kings of Vietnam".

Paragraph 1: "The Hung dynasty produced 18 kings, each of whom ruled for 150 years. At this time, the nation was named **Van Lang**. This dynasty was then overthrown by a neighbouring king in 258 B.C. He established the new kingdom of **Au Lac** and built his capital at Phuc An, whose remains still exist today in the village of Co Loa, located west of Hanoi".

Paragraph 2: "Unfortunately, life was rather chaotic for them wherever they lived. The repressive policies of South Vietnamese president **Ngo Dinh Diem** ultimately led to his assassination in

1963. Subsequent regimes didn't have any more popular support but were firmly entrenched, thanks to both the South Vietnamese and U.S. militaries”

- Paragraph 1  
 Paragraph 2  
 Both Paragraph 1 and 2  
 Neither Paragraph 1 or 2  
 I do not know

30. You are preparing a PowerPoint presentation that your teacher will post online. You have found some very effective photos from a website that has posted the following English message:

*"All of the images on this website are copyrighted. Please do not use any of them on a Web page, CD-ROM, printed or otherwise published work without receiving permission in advance from our site."*

What will you do?

- You have to seek permission from the copyright owner before you use the photos.  
 You have to ask for permission to use the photos in your PowerPoint presentation but can feel free to post the photos to your presentation knowing that you have applied for permission.  
 You have to seek permission from the copyright owner and also provide a citation.  
 You have to seek permission from the copyright owner, provide a citation in your PowerPoint, and give a reference in your bibliography.  
 I do not know

## B. AWARENESS AND SELF-RATING

31. How would you rate your ability to develop search strategies in order to find appropriate information? (Choose 5 for highest rating and 1 for lowest rating)

1	2	3	4	5

32. How would you rate your ability to evaluate information sources? (Choose 5 for highest rating and 1 for lowest rating)

1	2	3	4	5

33. How would you rate your ability to use information ethically? (Choose 5 for highest rating and 1 for lowest rating)

*Using information ethically means there are copyright and intellectual property issues; for example, if you plan to use the information in an article, you cannot copy it without references to the information sources; for example, you cannot post a photo that belongs to another person on your own website if you do not seek permission from that person.*

1	2	3	4	5

34. How would you rate your ability to use English to engage with information effectively? (Choose 5 for highest rating and 1 for lowest rating)

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35. Finally, please reflect on how you think you did on this assessment of your information literacy level and select the number that best represents your score (choose 5 for highest rating and 1 for lowest rating).

1	2	3	4	5

**THANK YOU!**