INTRODUCTION

In recent years, inquiry project based learning has become one of the new focuses in Hong Kong’s education system. The Education Bureau (EDB) has integrated the concept of inquiry project based learning into the curriculum from primary to senior secondary levels (Chu et al., 2012). Educational mission now emphasizes information literacy (IL), which is defined as acquiring and using appropriate information via various media in order to satisfy individual’s information need, together with critical awareness of the importance of using information in an ethical way (Boon, Johnston, & Webber, 2007; Leckie & Fullerton, 1999; Tarrant, Dodgson, & Law, 2008; Wong, 2010). However, many scholars have demonstrated the growing problem of students using information unethically, no matter university students (Chao, Wilhelm, & Neureuther, 2009; Elander, Pittam, Lusher, Fox, & Payne, 2010; Eret & Gokmenoglu, 2010; Park, 2003; Wheeler, 2009) or secondary school students (McGregor & Williamson, 2005; Newlon, 2009; Sisti, 2007). Students copy texts, graphics as well as ideas from others without any acknowledgment, especially from the Internet (Risquez, O’Dwyer, & Ledwith, 2011).

In this information age, students are able to search information via the Internet. The “copy and paste” functions allow students to use other’s work and present it as their own without any acknowledgment easily. Thus, the Education Bureau, formerly known as Education and Manpower Bureau (EMB) recommended students to be aware of the plagiarism behaviour (Education and Manpower Bureau, 2005). Besides, under the new Diploma of Secondary Education (DSE) curriculum, students need to build their IL skills for fulfilling their school based assessments. Students should be taught how to avoid plagiarism. Some previous studies have identified students’ plagiarism behaviour (Chao et al., 2009; Elander et al., 2010; McGregor & Williamson, 2005; Newlon, 2009; Sisti, 2007). However, most current studies portray the situation in Western countries, while related research focusing on Hong Kong is scarce. This study targets the secondary school students in Hong Kong. It explores to what extent the students understand plagiarism in the context of their inquiry based projects.
findings help design new inquiry project based curriculum. Specifically, the following research questions are stated:

1. Why do the students do poorly in avoiding plagiarism?
2. What are the secondary school students’ perspectives on plagiarism?
3. What have the teachers done in supporting their students to avoid plagiarism?

Literature Review

Plagiarism is a growing problem in universities as well as secondary schools (Chao et al., 2009; The University of Hong Kong, 2002). Pecorari (2003) agrees that plagiarism is more common in second-language writing because of insufficient language skill of students. She termed the behaviour of students repeating the language and ideas that have been adopted in any information sources as textual plagiarism. Plagiarism refers to a behaviour that deals with academic misconduct and dishonesty (Park, 2003; Wheeler, 2009).

Some scholars have classified plagiarism into intentional and unconscious (Chao et al., 2009; Sisti, 2007). The intentional behaviour describes a manner of ignoring intellectual property to use information freely (McGregor & Williamson, 2005), which includes copying others' works without proper acknowledgment (Chao et al., 2009; McGregor & Williamson, 2005; Sisti, 2007; Zimerman, 2012), and copying text from information available from the Internet (Chao et al., 2009; Risquez et al., 2011; Sisti, 2007). The unconscious behaviour refers to plagiarism committed due to the lack of knowledge of different citation styles (Bombaro, 2007; Chao et al., 2009; Fischer & Zigmond, 2011), the inability on differentiating plagiarized wordings (Bombaro, 2007; Chao et al., 2009; Sisti, 2007), or the lack of confidence in his own language skill (Fischer & Zigmond, 2011). Besides, students present their own previously published work without any acknowledgment is also considered as plagiarism, which is termed as self-plagiarism (American Psychological Association, 2010). Nonetheless, it is hard to define academic dishonesty as intentional or unconscious as it requires subjective judgement.

Practically, students are allowed copying the work of others to support their point of view, but they must acknowledge the original authors properly. That means the quoted materials must be identified, and their sources must be clearly provided immediately after the quoted materials. The sources should detail the name(s) of the author(s), the title, the date of publication and the page reference (The University of Hong Kong, 2002). This paper defines plagiarism as the behaviour of copying the texts, graphics or ideas of others without any proper citation (Elander et al., 2010; Newlon, 2009; Park, 2003; Zimerman, 2012).
METHODOLOGY

This study targets at Form 1 students in a local public school. Students' IL ability was evaluated by how well they have cited the information sources used in their group projects. Works done by 15 project teams have been submitted to an online free plagiarism checker, Small SEO Tools, which supports both English and Chinese text. This online tool checks texts for plagiarism by comparing materials available on Google platform (SmallSeoTools.com, 2010). It provides an index to indicate the “Uniqueness” of the content, see Figure 1. This index shows the proportion of content which were used by students’ own words.

Figure 1: A sample of the online plagiarism check.

A scale was developed for assessing the degree of plagiarism in their project works. As shown in Figure 2. This assessment scale was designed based on the practices employed by the Higher Schools in other countries, the policies stated by the International Schools in Hong Kong, and the guidelines regarding plagiarism issued by the American Psychological Association.

Figure 2: Information sources used in the development of the assessment scale.

1 SmallSEOTools.com (http://www.smallseotools.com/plagiarism-checker/)
As shown in Table 1, this assessment scale consists of four levels. Level 1 indicates that no plagiarism behaviour has been found. Level 2 shows that students have copied some texts from their own previous works, or copied a block of texts (less than 40 words) without any proper citation. Level 3 represents a “moderate” level at which students have copied other’s works (more than 40 words) without proper citation. Finally, Level 4 represents the most serious situation in which students have copied a large block of text from other’s works without any acknowledgment.

Table 1: Plagiarism assessment scale.

<table>
<thead>
<tr>
<th>Level</th>
<th>Label</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Level 1</td>
<td>None</td>
<td>No plagiarism has been found.</td>
</tr>
<tr>
<td>Level 2</td>
<td>Minor</td>
<td>• Copy a block of text from the student’s previous works$^2$, or</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Copy a block of text of less $40$ words without any citation</td>
</tr>
<tr>
<td>Level 3</td>
<td>Moderate</td>
<td>Copy a block of text of over $40$ words$^3$ without any citation, but</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• with a reference at the end of the work, or</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• give reference in form of an attachment (like image, PowerPoint or Word document)</td>
</tr>
<tr>
<td>Level 4</td>
<td>Serious</td>
<td>Copy a block of text of over $40$ words without citation.</td>
</tr>
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Besides, students’ IL skill regarding plagiarism was also quantified by two IL tests, in which two questions were designed to test students’ ability to use information ethically. The first question was designed to assess students’ ability to identify plagiarism behaviour. The second question was specified to evaluate their knowledge of giving citation. A pre and a post IL tests were carried out before and after students have received any training regarding citation respectively. 1 score was given for answering the question correctly. Paired t-test was employed to assess the statistical significance of the difference between each set of pairs in these two IL tests (Hair, Anderson, Tatham, & Black, 1998). Data were input to an online t-test calculator$^4$. The null hypothesis is stated as follows:

$H_0$: There is no difference between the mean scores of the pre and the post IL tests.

Finally, we have interviewed a subject teacher and 30 students in order to understand the following:

1. What are the secondary school students’ perspectives on plagiarism?
2. How do the students understand the behaviour of plagiarism?
3. What have the teachers done in supporting their students to avoid plagiarism?
4. Why do the students do poorly in avoiding plagiarism?

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$^2$ Assumption: student did not realize that he/she is supposed to cite their own works.

$^3$ APA Publication Manual suggests giving a quotation for copying a block of text of 40 or more words (American Psychological Association, 2010).

$^4$ QuickCalcs: Online Calculators for Scientists (http://graphpad.com/quickcalcs/ttest1.cfm)
PRELIMINARY FINDINGS

This study found that only two project teams have not committed any kinds of plagiarism. The other project teams (n=13) have performed different degree of plagiarism, see Table 2. One project team has copied materials from their own previous work (a set of PowerPoint slides). This case is classified as “Minor” level, because this set of PowerPoint was used as a progress presentation for the same project. Theoretically, students are allowed to submit same piece of work once. This type of plagiarism behaviour is acceptable for those students who have not received any education regarding plagiarism.

Table 2: Summary of students’ plagiarism seriousness

<table>
<thead>
<tr>
<th>Level</th>
<th>Label</th>
<th>No. of Project Team</th>
</tr>
</thead>
<tbody>
<tr>
<td>Level 1</td>
<td>None</td>
<td>2</td>
</tr>
<tr>
<td>Level 2</td>
<td>Minor</td>
<td>1</td>
</tr>
<tr>
<td>Level 3</td>
<td>Moderate</td>
<td>9</td>
</tr>
<tr>
<td>Level 4</td>
<td>Serious</td>
<td>3</td>
</tr>
</tbody>
</table>

Furthermore, there are three project teams that have shown a serious degree of plagiarism in their work. They copied material directly from Internet without any citation. In the student interviews, students believe that information available in the Internet is open to the public. All people can use online sharing information freely without any acknowledgment.

Besides, among the 13 teams which have been found to have committed plagiarism, most cases (n=9) are classified at Level 3 (moderate) as the plagiarism was done owing to the students’ insufficient knowledge in citation. This finding is supported by the IL pre test, records a mean score of 0.67 out of a total score 2. Many students provided their information sources by attaching the image of the materials that were used, or simply providing the hyperlink of the websites. In the student interviews, students explained that they have not received any citation training at their primary school education as well as at Form 1. They believed that they have already done the citation properly. Actually, they did not know how to do the citation. Their teacher also reflected that the citation training was not included in the curriculum at Form 1. Thus, he was unable to spend more time on this area, even though he found the students have done the citation wrongly. The teacher believed that the lack of citation training was the main reason behind his students’ act of plagiarism. Students are better to receive education in using information ethically starting at primary school level.
Figure 3 portrays the results of the pre and the post IL tests, including 36 students who have taken both pre and post IL tests. The inner circle represents the pre IL test, and the outer circle is the post IL test. The number of students who get “2 scores” is increased dramatically, from 3% to 19%. This implies students have enhanced their knowledge to identify plagiarism behaviour and to provide proper citation. The number of students who get “0 score” is decreased, from 36% to 25%. These reflect that students can improve their ability to avoid plagiarism by receiving any related training. The subject teacher explained that he has organised a seminar regarding proper citation. He has mentioned the importance of citation and proper referencing in class before conducting the post IL test.

Figure 3: Pre and Post IL Test results.

Furthermore, the t-test provides another perspective, which records a 6 P-value of 0.057 and a t-statistic of 1.9633 with 35 degree of freedom. These two figures suggest rejecting the null hypothesis. This proves that there is significant difference between the mean scores of the pre and the post IL tests. This further supports that education is useful to avoid the plagiarism behaviour.

However, we reviewed the difference between the pre and the post IL tests by individual student. We found that only 36% of students have achieved a better improvement. 47% and 17% of students have not improved their knowledge of plagiarism or even done worried respectively. These findings reflect that education is not “one time effort”. Continuing education is a better way to enrich students’ awareness of plagiarism. Besides, more practices regarding citation should be provided to strengthen students’ ability and confidence to avoid plagiarism.
CONCLUSION

In conclusion, this study found that junior secondary students do not have a definite concept of plagiarism. Students have received insufficient education to avoid plagiarism. They think that information can be used from the Internet directly because it is open to the public. And they believe that there is no copyright protection for online information. Regarding this, education is necessary to change students’ perspective in legal use of information, especially online information. Plagiarism can be avoided by providing appropriate training, especially in the Primary School level. Besides, teachers can provide clear guideline regarding how to do the citation in a proper way. On the other hand, the management of schools are recommended to include the “Code of Academic Honesty” in the student handbook as part of their school policy.

REFERENCES


The University of Hong Kong. (2002). What is Plagiarism? Retrieved 11 February, 2012, from [http://www0.hku.hk/plagiarism/page2s.htm](http://www0.hku.hk/plagiarism/page2s.htm)

