PLAGIARISM-FREE INQUIRY PROJECT-BASED LEARNING

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Preface

The 21st century is characterized by its profound changes in the way how human-beings live and interact (Dunning, 2000). The education sectors around the globe have been reacting towards these changes and modifying their education systems and pedagogies to prepare students for the future society (Black, 2009). Among the myriad of new interventions, inquiry project-based learning has been under the spotlight in recent decades as a means to equip students with the essential 21st century skills, such as reading and writing abilities; IT and digital literacies; interpersonal and problem solving skills. Empirical evidence has corroborated that inquiry project-based learning is a plausible way to develop students’ core competencies (e.g., Chu, 2009; David, 2008; Donham et al., 2001; Wilhelm, Sherrod, & Walters, 2008). However, incorporating inquiry projects into the already fully packed school curriculum has never been an easy task to school administrators and teachers. Moreover, the readily accessible internet resources have made plagiarism so much easier than before (Mages & Garson, 2010), hampering the potential benefits of inquiry projects as a fruitful learning experience.

In the hope of helping teachers maximize the educational benefits students can get from an inquiry project, this book puts forward a practical teaching framework, supported by a collaborative teaching team, the use of wikis as a working platform, the employment of Wikiglass as a monitoring tool, and a pedagogy called UPCC, which stands for the four stages of helping students get rid of plagiarism in their project output: Understanding plagiarism, Paraphrase, Cite, and Check their work for originality. The teaching methodology has been implemented in a local secondary school; and it has been received positively by both teachers and students. Interested education practitioners may regard this book as a teaching manual to help them refine their current practices.

References:
Plagiarism-free inquiry project-based learning
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Chapter 1: Introduction

1.1. What students need today: 21st century skills

In the 21st century, the global structure has changed dramatically, leading to the evolving demands for our future pillars. With the acceleration of digital technology development, typical routine work is less required among the labor force in the 21st century. Therefore, educators now advocate the teaching goals shall be modified to instil the children with the skills and literacy currently on demand (Black, 2009). In this section, we will look at two frameworks offered by P21 and UNESCO Bangkok regarding the components that 21st century skills entail.

1.1.1 Partnership Framework for 21st Century Skills by P21

Partnership for 21st Century Skills (P21, 2009) has proposed the framework that includes three skill sets that are closely relevant to the modern world: (1) learning and innovation; (2) information, media and technology skills (referred collectively as ‘digital literacies’); and (3) life and career skills. According to P21 framework, each skill set is defined with several specific key capabilities. In the other words, the three skill sets are comprised of 12 components (P21, 2009). **Learning and innovation skills** cover the critical thinking and problem solving, communicating, collaborating, and being creative and innovative. **Digital literacies** consist of the information, media and technology literacies. Information literacy (IL) is defined as “able to recognize when information is needed and hav(ing) the ability to locate, evaluate, and use effectively the needed information” (American Library Association, 1989, p. 1). Media literacy (ML) means being able to decode, evaluate, analyze, and produce print and electronic media (Aufderheide, 1997). Technology literacy refers to the ability to use digital technology, communication tools, and/or networks to access, manage, integrate, evaluate, and create information (International ICT Literacy Panel, 2002). **Life and career skills** encompasses the ability to be flexible and adaptable, have a self-direction, engage in social and cross-cultural interactions, be productive and accountable, and have the potential to manage leadership and responsibilities.

![Rainbow illustration of the Partnership for 21st Century Skills framework (extracted from Chu, Reynolds, Tavares, Notari & Lee, in press)](image)

Figure 1.1 Rainbow illustration of the Partnership for 21st Century Skills framework (extracted from Chu, Reynolds, Tavares, Notari & Lee, in press)
Learning and innovation skills | Digital literacies | Life and career skills
--- | --- | ---
Critical thinking | Information literacy | Flexibility and adaptability
Problem solving | Media literacy | Self-direction
Communicating | Technology literacy | Social and cross-cultural interactions
Collaborating, creative and innovative | | Productivity and accountability

Table 1.1 Components of 21st century skills by P21 (Based on information provided by http://www.p21.org/our-work/p21-framework)

Trilling and Fadel (2009) has summarized the 21st century skills by the formula:

***3Rs x 7Cs = 21st Century Learning***

3Rs represented the established skills of “Reading”, “wRiting” and “aRithmetic”. As for the 7Cs, they mean Critical thinking and problem solving, Communication, information and media literacy, Collaboration, teamwork and leadership, Creativity and innovation, Career and learning self-reliance, Cross-cultural understanding and Computer and ICT literacy.

1.1.2 UNESCO Bangkok framework on transversal competencies

According to the UNESCO Bangkok framework on transversal competencies, there are six general transversal competencies: Critical and innovative thinking (e.g. creativity, entrepreneurship, resourcefulness), interpersonal skills (e.g. communication skills, organizational skills, teamwork), intrapersonal skills (e.g. self-discipline, ability to learn independently, flexibility and adaptability), global citizenship (e.g. awareness, tolerance, openness, responsibility, respect for diversity), media and information literacy (e.g. the ability to locate and access information through ICT, media, libraries and archives) while the physical and psychological health (e.g. healthy lifestyle, healthy feeding) is an optional domain since it is difficult to find a coherence between health domain and all case studies and some incorporate these key competencies to the intrapersonal or interpersonal domain instead.

<table>
<thead>
<tr>
<th>Domains</th>
<th>Critical and innovative thinking</th>
<th>Interpersonal skills</th>
<th>Intrapersonal skills</th>
<th>Global citizenship</th>
<th>Media and information literacy</th>
</tr>
</thead>
<tbody>
<tr>
<td>Examples</td>
<td>Creativity Reflective thinking Reasoned decision-making</td>
<td>Communication skills Empathy Compassion</td>
<td>Self-discipline Self-awareness Integrity</td>
<td>Tolerance Openness Intercultural understanding</td>
<td>Ability to locate and access information through ICT, media, libraries and archives Ability to analyse and evaluate media content</td>
</tr>
</tbody>
</table>

Table1.2 UNESCO Bangkok framework on transversal competencies (adapted from Education Research Institutes Network (ERI-Net), 2013)

After a brief overview on the two frameworks put forward by P21 and UNESCO Bangkok, we start to get a general sense of how challenging 21st century education has become. Students, on top of the tight curriculum they have to go through, are expected to embody a great myriad of soft and hard skills in order to cope with the
highly mobile, knowledge-intensive, and collaborative working environment (Dunning, 2000). How are we, educators in the 21st century, going to help our students develop such capabilities? The next section of this chapter is going to provide some answers to that.

1.2. How inquiry project based learning helps develop 21st century skills

1.2.1. Rationales behind inquiry project based learning

In order to help the students in Hong Kong to be equipped with the aforementioned transversal skills and competencies, one of the most common ways of teaching and learning advocated by the constructivist educators is inquiry-based learning (Chu, 2009). The EDB of the HKSAR (2002) defines inquiry-based learning as a student-centred approach that promotes the combination of skills, knowledge, and values in the General studies (GS) learning process. The approach promotes that during learning, the teachers act as facilitators and students consolidate and extend their knowledge by asking questions and use information search to dig out the answer. In case they face problems, they collect and analyze the information collected.

The importance of providing adequate chances for students to explore issues actively is highlighted by Vygotsky (1987): Under the instructions given by a more skilled person via scaffolding, children can acquire new cognitive intelligence. According to Moran (2007), it is proposed that teachers can provide scaffolding through giving out questions, demonstrating and posing hypotheses for explanations in the classroom so as to assist the discovery among the children. Hmelo-Silver, Duncan, and Chinn (2007) proposed that the aforementioned scaffolding is a recipe for children to learn in a more complicated domains without cognitive overloading. Furthermore, this process shall be within the proximal development zone of each student. That means the tasks assigned to the children shall not able to complete the work alone because of the difficulty, but will be handleable if guidances are available (Bee & Boyd, 2002; Rogoff, 1990; Vygotsky, 1987). Kuhlthau (2004) suggested that during the information search process, assistance will only be available if the child is not able to finish an assignment alone or find it with huge difficulty.

Different from the traditional learning of imposed tasks, the students undergo self-generated or semi-imposed tasks that negotiate via a theme and content based on a problem (Harada & Yoshina, 2004a). By this method, Gross (1999) believed that compared to imposed tasks, students gets the feeling of ownership in self-generated tasks. This echoes with the autonomous learning raised by Piaget (1973), which need students to uncover the ideas and relationships via the activities they feel interested in. According to Alberta Learning (2004), it is concluded that inquiry projects can be competed decently if the students are interested in those activities. Kuhlthau et al. further proves this statement by saying that “the curriculum and the student’s world need to be closely aligned for deep personal learning to take place” (2007, p. 8). Therefore, it is crucial to enable students to pick and personalize their work to enhance their school performance.

1.2.2. Benefits of using IPjBL in school

Donham et al. (2001) conducted a study that involved three schools to practice the inquiry-based learning. The result found out no matter what the students’ innate capabilities are, all students are benefitted from authentic and meaningful learning induced by inquiry-based learning when compared to the rote learning. Wilhelm, Sherrod, and Walters (2008) reinforced the finding by introducing the implementation of projects during the learning process. Project work enables the students who have a wide variety of learning styles, cultural and ethnic backgrounds, and ability levels to explore their interests in the defined curriculum framework, so they can develop their individual advantages.

Furthermore, projects can attract interests of students, stimulate thinking and empower students with the skills to apply problem solving skill (David, 2008). By allowing students to take control over their own parts of the project which are relevant to them, project work also promotes a sense of responsibility (Alloway et al., 1996).

IBL + project = inquiry PjBL (project-based learning)

1.3. The authors’ attempt in a local secondary school

In fact, a local secondary school in Hong Kong has been the pioneer of adopting a plagiarism-free inquiry project learning model into their Liberal Studies curriculum. On 27 October 2015, an In-house Training Workshop on “Plagiarism: What it is and How to recognize and avoid it using UPCC Model” (standing for
Understanding plagiarism, Paraphrase, Cite and Check their work for originality) was held (TWGSS, 2015). On that day, Dr CHU K.W, Samuel, Dr HU, Xiao and Ms Helen CHEUNG from the Division of Information and Technology Studies, Faculty of Education, HKU were the facilitators. The UPCC Model and how it can be applied in daily learning and teaching activities to avoid plagiarism were explained by Dr CHU. Furthermore Dr HU and Ms CHEUNG introduced the newly developed I.T. tools like Wikiglass and Schoology to enhance the effectiveness of “Self-regulated Learning” in classroom teaching and educational programmes. This book has detailedly documented the good practices on plagiarism-free IPjBL from teachers and students at the school.

In this book, the challenges in leading students through an inquiry group project will first be introduced. After that, wikis (PBworks) will be explained in how to facilitate students’ group project work. Furthermore, ways to enhance students’ ability in information literacy and avoid plagiarism will be discussed. At the end, Wikiglass will be introduced as a learning analytics tool to facilitate students to learn. It is hoped that by the case study of plagiarism-free IPjBL practice in the pilot school, more secondary schools in Hong Kong will engage in such practices in the future.

References:


Chapter 2: Challenges in leading students through an inquiry group project

The problems encountered in inquiry group project can be ascribed to four main factors: The lack of IT skills; plagiarism behavior by students; and the insufficient time and proper training of teachers.

2.1 Lack of IT skills

Educators using inquiry PBL have raised the point that, learning among students can be enhanced by using computers and information search through the internet (Owens, Hester, & Teale, 2002). Therefore, IT and information literacy skills become the main components in productive learning.

Nevertheless, whether the inquiry PBL can be successfully implemented in the local primary school curriculum is doubtful as many students may have difficulty in gaining access to relevant database and do not possess information technology (IT) skills (Chu, 2009). These hinder the successful implementation of inquiry PBL. For example, EDB (2007) stated that only a few among 635 local primary schools have tried WiseNews (May Lee, personal communication, September 7, 2006), which is a news database that is said to be useful for local GS projects (Chow et al., 2007). Students from different grades seem to be lacking the skills of information literacy to identify the relevant information and the ability to evaluate the information the students select critically (Livingstone & Lynch, 2000; Salovaara, 2005; van Aalst, Fung, Li & Wong, 2007).

Furthermore, the first author conducted a study that found out many P4 students in a local primary school, who were already deemed as leaders in using IT in education, might also lack the effective IT skills such as word processing IT skills and information literacy (Chu, 2009). Therefore, during the implementation of PBL which requires extensive use of computers and IT, students may face some hurdles.

2.2 Plagiarism of students

Plagiarism is defined as the unauthorized use of ideas, texts and graphics extracted from a particular source but not giving credit to the initial authors (Elander et al., 2010; Smith et al., 2007; Yeo and Chien, 2007). In fact, many students could define what plagiarism is, but seldom could point out the acts of plagiarism (Koul et al., 2009). Therefore they committed plagiarism for instance how to acknowledge (Risquez et al., 2011; Rutgers, 2007) or cite (Mages and Garson, 2010) the others’ work correctly to reaffirm their viewpoint. Moreover, self-plagiarism – presenting himself/herself previously published work as new work (American Psychological Association, 2010), is another issue that is difficult to be comprehended and so committed by the negligent students.

The students’ negative perspectives have pointed out the four factors that describe improper mindset regarding the use of information, which are cryptomnesia, memory and cognitive malfunction where individuals mistake a previous conceived idea from external sources as their own (American Psychological Association, 2002), time saving, work avoidance and convenience. Due to the lack of motivation to exert themselves in their work, students copied information directly from the newspapers, Internet or other channels. Among all types of information resources, they know more about web-based search tools for instance Google or Yahoo rather than e-journal or e-book. Hoping to save time, they usually directly get information from Google or Yahoo in order to complete their work. This leads to the frequent occurrence of cryptomnesia.

The technology advancement aggravated the plagiarism incidents. Mages and Garson (2010) pointed out that online search platforms (e.g. Google, Bing and Yahoo) are easily accessible to locate information; therefore, “termed textual plagiarism” happens, which means, students copy one to two sentences each from different Internet sources (Sisti, 2007; Zimerman, 2012) and form a new piece of work but not properly crediting the original digital creators. This scenario in fact is common among students who lack language skills and want to seek for fast-track solutions (Pecorari, 2003; Riasati and Rahimi, 2013).

According to Yeung’s (2012) research which with interview groups from Hong Kong, among all 27 project teams interviewed, the students in the target groups couldn’t meet the citation requirements set by the teachers. Worse still, 22 of them were discovered to the commitment to plagiarism. Most of the Level 1 (minor) plagiarism cases derived from a new plagiarism assessment scale were due to the lack of citation knowledge. Worse still, four project teams remained the references section as blank. Most of the students could understand citation format for books more but not for the Internet’s documents. Over half of them could even provide a hyperlink or authors’ names. The behavior of copying progress reports that were submitted for the same project
before was considered as ‘minor’ level plagiarism. The subject teacher seldom provide the project guidelines to students about the submissions of halfway done work like progress reports as part of their final report probably because of the overestimation of students’ capability to comprehend and avoid plagiarism. As a result, student misunderstood that they were allowed to do so and did not know they in fact were committing self-plagiarism.

Moreover, without adequate understanding of how to cite sources properly, among 29 project teams (60%), 18 of them directly attached the screenshot images of the materials used, or only quoted the hyperlinks of the websites without explanations. The students ascribe the the improper referencing to the shortage of citation training at the junior levels like at primary or S1 level. The majority of them think that trainings could increase their attention to academic integrity. Although guidances by teachers on the correct citation methods did help them to do citations properly, some deemed that it was difficult to do so. As it was not a compulsory item on the project guidelines, they decided to ignore the citation and disregard whether proper citation was used.

2.3 Lack of time among teachers
In fact, the lack of time among teachers seems to the major hindrance during the implementation of inquiry projects. Since teachers usually take up more than one subject on top of General Studies and more marking and paperwork are necessary after the project implementation (Chu, 2009). The teachers may not be able to cope with the increased workload. Although this problem was being discussed in the formal meetings in schools and some remedies were rolled out to solve the problem of increasing workloads among teachers, there is still unresolved issue.

2.4 Teachers' lack of training
Teachers play a crucial role in guiding students to work in inquiry group projects. Some students stated that the teachers' detailed and clear instructions on how to cite had helped them avoid plagiarism (Yeung, 2012). There are several findings suggested that students are able to avoid plagiarism effectively after they acquired proper knowledge of citation (Elander et al., 2010; Smith et al., 2007), or received guidance about plagiarism (Risquez et al., 2011). In Yeung (2012)’ s study in Hong Kong, the subject teachers interviewed agreed with the aforesaid statement and echoed that students should have started receiving training in how to use information ethically as soon as possible like in primary school and they considered that the shortage of EDB curriculum guidelines at the junior level on teaching referencing was the major reason they did not work well in carrying out the detecting plagiarism work. Furthermore, teachers may be deterred from correcting citation mistakes by students due to the packed teaching schedules, and sometimes, teachers themselves might find difficulty in including technology use in the classroom too (Wallace, Kupperman, Krajcik, & Solloway, 2000).

Solutions to all: UPCC Model
Based on the observation that students seemed to lack certain resources, skills, and knowledge they needed to do well in their inquiry PBL projects, a collaborative teaching approach was initiated by this research. Plagiarism-free inquiry project-based learning with UPCC (Understanding plagiarism, Paraphrase, Cite and Check their work for originality) pedagogy is introduced. This strategy involved bringing in different kinds of teaching staff to equip students with the aforesaid necessary resources and skills.

Furthermore, ICT teachers shall be involved to help parties involved who lack IT skills to use the online collaborative platform. As for the overall anti-plagiarism pedagogy, the inquiry project teachers should take in charge. Chow et al. (2007) discovered that a news database (WiseNews) was beneficial to the inquiry learning projects among the primary school students. The results of the study stated that Primary 4 students could gain productive information search skills and critical thinking by a database like this. As to the problem of plagiarism among students, teaching of citations, synthesizing, summarizing and paraphrasing by language teachers is helpful. Librarians are important in developing information literacy during the regular curricula (Montiel-Overall, 2008). Regarding the problem of lacking time among teachers, a collaborative teaching team shall be formed and support from administration is necessary. Moreover, highlighted by the educators using inquiry PBL, IT and information literacy skills become the main components in productive learning, i.e. learning of students can be enhanced by using computers and information search through the internet (Owens, Hester, & Teale, 2002).

In the following chapters, a description on how the UPCC pedagogy was implemented in a local secondary school will be detailed.

References:


Chapter 3: Using wikis (PBworks) to facilitate students’ group project work

Group inquiry projects based on wikis have gained great popularity in modern education. Using wikis to facilitate students’ group project work has been a trend for supporting teaching and learning. Inquiry projects, as a student-centered teaching and learning methodology, highly enhances the students’ learning initiative. With the use of wikis, students can better manage their works and teachers can give timely feedback to their students anytime and anywhere. In this chapter, you can learn how to use PBworks, a wiki, and to facilitate students’ group project work.

3.1 How to create a workspace?


2. Click “EDUHub”.

![PBworks EDUHub](image1)

![PBworks EDUHub](image2)

4. Enter URL name and tick the box to agree to non-commercial use, then click “Next”.
5. As to the security settings of the workspace, choose “only people I invite or approve”. Tick the box to accept PBworks terms of service, then click “Take me to my workspace”.

6. Once you are in your workspace, click “Invite more people”.
7. Enter the e-mail addresses of the students in the same group and choose the permission level as “Editor”, then click “Add users”.

8. Instruct students to look for the e-invitation in their inbox. They can activate their account by following the link in the invitation email. The link will direct them to set up their account. They can enter their “Name” and choose their own password.
9. Once logged in, users can set the preferred frequency of e-mail notification.

3.2 How to login?

1. Go to the workspace URL (e.g., http://2013ntnucgp1.pbworks.com).
2. Enter your email address and password, then click “log in”.

3. Once logged in, the workspace interface will be shown as follows. The “EDIT” button allows you to make changes to the content of the page. The “Navigator” section shows you all the pages and files available on your workspace. The “SideBar” acts as a table of content, including links that direct you to different pages of your workspace.
3.3 How to create a new page?

1. Click “create a page” on the right hand side of the page.

2. Enter the name of page. If necessary, you can choose to put the new page under a specific folder. Then click “Create page”.

3.4 How to edit the content on a specific page?

1. Go to SideBar.

2. Select the which you want to edit. For example, “Background of Study”.
3. Click “EDIT” to edit the content.

4. The editing tools in PBworks highly resemble those in MS Word. Texts can be inputted in both Chinese and English.
5. You can format the text using the bold, underline and italics functions.

6. Reminder: Do not copy texts directly from Word to PBworks as some of the formatting styles are incompatible. To avoid formatting problems, you may copy the texts from Notepad (which helps erase all formatting styles) to PBworks.
3.5 How to insert a table?

1. Select “Table” and click “Insert table”, then select the required columns and rows.

2. Adjust the table size by pulling the corner of the table.

Remark: Adjust table size via pulling the corner of the table (some browsers may not work)
3.6 How to insert a YouTube video?

1. Choose the desired place for video, click “Insert”, then click “Video”, select “YouTube”.

2. Enter the URL in the box, then click “Next”.

   ![Instructions for inserting a YouTube video]

   1. Choose the required place for video, Click “Insert”
   2. Click “Video”
   3. Select “You Tube”
   4. Enter URL, Click “Next”
3. Click “Insert Plugin”.

5. Click “Insert Plugin”

4. Upload successfully, then click “Save and Continue”.

6. Upload successfully! Click “Save and Continue”
3.7 How to insert images?

1. Click “Images and files”, then click “Insert Image from URL”.

2. Enter the image URL in the box, and then click “Enter”. Click “Save and Continue” to save all changes.

3. Enter URL, Click “Enter”

4. Upload successfully! Click “Save and Continue”
3.8 How to cite sources using URL?

1. Enter image source, e.g. “Source”, and select required area, then click “Add Link”.

2. Enter URL, click “Enter”.

3. Click “Add Link”.

4. Enter URL, Click “Enter”.
3. Link added successfully! Please click “Save”.

5. Link added successfully!! Click “Save”

3.9 How to check recent activity?

1. Go to “Recent Activity”, then click “More activity”.

1. Go to “Recent Activity”

2. Click “More activity”
3.10 How to upload files?

1. Select “Images and files”, then click “Upload files”. (Reminder: Turn on the edit mode).

2. Select required file and click “Open”.

3. Drag files to the left of this workspace page. Upload successfully then click “Save and Continue”.

4. Drag the file to the left

5. Upload successfully!! Click “Save and continue”

3.11 How to review page history?

1. Click “Page history”. (Reminder: A new version is saved each time when there is any change in the page.)
2. Page shows editor, edit date and time. Select two versions to compare, then click “Compare”.

3. Remarks: deleted content in red, and newly added content in green.

3.12 Useful resources

If you want to get more information about using wikis (PBworks) to facilitate your group project works, please go to the following links. You may find the following tutorial videos helpful in providing your students a step-by-step guide on using PBworks.

How to open a PBworks account?
https://www.youtube.com/watch?v=QM2Ih_5TC4A&feature=youtu.be
How to use PBworks? (Part 1)
https://www.youtube.com/watch?v=L56s9wjI0x0&feature=youtu.be

How to use PBworks? (Part 2)
https://www.youtube.com/watch?v=34RhdVf_w_Fg&feature=youtu.be
Chapter 4 Enhancing students' ability in information literacy

4.1 The importance of developing information literacy among students
When students engage in group projects, it is an incredibly fruitful yet challenging process. From the very first day when they are told to develop a project topic, to the time when they all sit in front of the computers trying to look for relevant information, to the very last stage when they put together everything and produce the final product of their project; all these do not come naturally without the appropriate training and guidance from teachers.

In an information literacy test administered to F.1 to F.3 students (2015 – 2016) in a local secondary school, students scored 2.15/4 (develop topic), 2.53/3 (identify potential sources), 2.36/4 (search strategies), 2.20/3 (evaluate sources), and 1.42/3 (ethical use of information). Therefore, there is room for improvement in all aspects, especially in the ethical use of information.

4.2 The five key areas of information literacy
Information literacy consists of five key areas, each corresponding to a different stage of a research work. The five key areas include:

➔ Develop a topic
➔ Identify potential sources
➔ Develop, use, and revise search strategies
➔ Evaluate sources
➔ Recognize how to use information ethically & legally (Chu, 2012)

4.2.1 Develop a topic
Nothing is more important in an inquiry project than to develop a practicable yet prolific research focus. This section talks about strategies to help students come up with a project topic that is neither too broad nor too narrow. An overtly broad project topic results in a vague and desultory study while a topic that is too narrow makes the entire research restrictive and futile.
Broad topics are usually written in one or two words. Usually, if you go to the library and find an endless list of reference books relevant to your topic, it is a good sign that your topic is too broad. Some examples of broad topics are:

➔ Poverty
➔ Education
➔ What is the importance of education?

Topics that are too narrow usually go into too much details. This results in a limited availability of resources, making the research process extremely difficult. Some narrow topics can be answered with just one or two sentences, leaving little space for research. Some topics ask for simple factual answers. Here are a few examples of narrow topics:

➔ What education options are available to Hong Kong citizens?
➔ How many people are living in poverty in Hong Kong in 2016?
➔ What is the percentage of children entering university with a family income lower than 10,000HKD in 2001 in Kwun Tong District?

To help students recognize the hierarchical relationships of broader and narrower topics, we can advise students to identify resourceful and appropriate individuals to help them focus a topic. For example, if a group has chosen to explore something about library usage, they may find it helpful if they consult a librarian who can give them insight on specific areas to investigate. Moreover, students should be reminded to align the scope of their research to the parameters of the assignment. If they are asked to produce only a 200-word essay, it might not be advisable for them to set a research topic that takes 2,000 words to answer.

4.2.2 Identify potential sources

Once students have got a meaningful and manageable topic for their project, the next step is to get their hands dirty and start looking for potential sources of information. To enable students to select the most productive information sources for their project, we need to equip them with the following knowledge:

*Understanding the types of containers in which information is housed*

➔ In this era and age, information is not only stored in printed books but also in online databases, catalogs, and search engines. We need to broaden students’ repertoire by introducing them the variety of resources available. Some examples of information “containers” are:

<table>
<thead>
<tr>
<th>Printed materials</th>
<th>Non-printed materials/ databases</th>
</tr>
</thead>
<tbody>
<tr>
<td>Books</td>
<td>E-books</td>
</tr>
<tr>
<td>Dictionaries</td>
<td>Google</td>
</tr>
<tr>
<td>Magazines</td>
<td>Online journals</td>
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<tr>
<td>Newspaper</td>
<td>WiseNews</td>
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<td></td>
<td>Wikipedia</td>
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<td></td>
<td>YouTube</td>
</tr>
</tbody>
</table>

*Table 4.1 Examples of printed and non-printed information sources*

*Understanding the types of information that can be found within each type of container*

➔ What students can find in a traditional library is essentially different from what is available in some of the online databases. For example, WiseNews, an online news database, is a handy search tool if students want to get hold of old news articles that are no longer available in physical form in most libraries.
4.2.3. Develop, use, and revise search strategies

Now we have told students where to fish, but we have not yet given them the fishing equipment. The third area of information literacy focuses on search strategies that we use to generate the most valuable list of references for our study. The following are some crucial techniques that our students need to know:

Understanding how to use a given type of information container in order to retrieve information

Some information containers include a special search tool that facilitates information search. For example, instead of flipping over every single page of a book, students may find the index and table of contents in a book much more convenient. For online search engines, students have to learn how to select effective search terms and use boolean operators. The following two sections will go talk about these in greater details.

Selecting search terms

Novice searchers often perform a search by putting every word of their research topic to the search bar. This ends up with a highly restrictive search as the search engine matches all search words to their information repertoire, and only produces results that are completely compatible with the search words. It is hence important for students to select appropriate search terms. Search terms are usually keywords in their research topic. Here is an example:

Research topic: 翹腳坐觸發坐骨神經痛
Possible search terms: 翹腳, 坐骨, 神經痛

Bear in mind that search terms do not limit to words within the research topic. Students can also make use of synonyms or more general/specific terms to broaden/narrow their search results.

Understanding how to use Boolean operators

Most search engines (e.g., Google, Yahoo, WiseNews) support the use of boolean operators, in combination with search terms, to produce a more focused result. Some commonly used boolean operators include AND, OR, and the use of double quotation marks “...”

Here is an example that demonstrates the functions of boolean operators AND / OR:

<table>
<thead>
<tr>
<th>Search 1 (without boolean operators):</th>
<th>Search 2 (with AND / OR):</th>
</tr>
</thead>
<tbody>
<tr>
<td>翹腳慢性自殺</td>
<td>翹腳 and (自殺 or 坐骨 or 肌症 or 骨刺 or 壞處 or 後果)</td>
</tr>
</tbody>
</table>

| Result: 14,000 entries | Result: 550 entries |

Table 4.2 Examples to demonstrate the functions of boolean operators AND / OR
The below example shows the function of double quotation marks:

---

**Search 1:** 躕腳坐觸發坐骨神經痛

**Search 2:** “躥腳坐觸發坐骨神經痛”

---

Table 4.3 Examples to demonstrate the functions of double quotation marks

<table>
<thead>
<tr>
<th>Search 1</th>
<th>Search 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>躥腳坐觸發坐骨神經痛</td>
<td>“躥腳坐觸發坐骨神經痛”</td>
</tr>
</tbody>
</table>

Result: 3,020 entries | Result: 380 entries

---

The key of using these strategies is to be flexible. Students should bear in mind that there is no one-size-fit-all strategy for all searches. They should revise search strategies when too few, too many, or irrelevant results are returned.

### 4.2.4 Evaluating sources

If you are a teacher with the experience of working with students’ inquiry projects, it should not be surprising for you to see that most students rely solely on one or two information sources. Perhaps the most commonly referenced information source is Wikipedia. Surely, Wikipedia is a highly powerful and resourceful online encyclopedia where you can find an entry for almost everything in our galaxy; however, its open editing system has long been questioned for the credibility of its information.

Some students tend to believe that as long as they can find the information online, it is accurate and true. But teachers should remind students to evaluate the accuracy, authority, coverage, currency, and relevancy of information and information sources when they choose to cite them in their study. We also need to educate students to differentiate facts from opinions.

### 4.2.5 Recognizing how to use information ethically and legally

As we discussed in previous chapters, plagiarism has become an increasingly alarming issue with the easy accessibility of online information sources. To help students foster a proper attitude and habit of using information ethically and legally is of paramount importance as an early preparation for their future work and study. The following are the four key areas we need to address when we prepare students for inquiry projects:

- To help students understand the concept of intellectual property (especially copyright, fair use, and plagiarism).
- To help students understand the concept of intellectual freedom.
- To help students recognize how to paraphrase information correctly.
- To enable students to create bibliographies and parenthetical citations according to an appropriate style manual.

Helping students get rid of plagiarism in their project work requires more than just the teaching of information literacy. Read on to Chapter 5 where we detail the implementation of a UPCC pedagogy in a local secondary school to reduce cases of plagiarism among students.
Chapter 5 Enhancing students’ ability in avoiding plagiarism with UPCC

5.1 What is plagiarism?
Plagiarism is equivalent to stealing, regardless of it being unconsciously or intentionally done (Mitchell, 2007). According to Merriam-Webster online dictionary (2016), plagiarism is a serious violation of academic credit, in which one presents others’ words, work, or ideas as one’s own without acknowledgement of sources. Plagiarism is a serious infringement to intellectual property, and causes frustrations among academic staff (Angélil-Carter, 2014). Garg and Singh (2014) hold the view that plagiarism is involved with copyright issues. Moreover, self-plagiarism is also a serious ethical issue, which refers to reusing a part of one’s own previously published work without acknowledgement (Barczak, 2014).

5.2 Severity of plagiarism
The following chart is developed by the authors to assess secondary students’ level of plagiarism in their group project writing.

<table>
<thead>
<tr>
<th>Level</th>
<th>Label</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Level 0</td>
<td>None</td>
<td>No plagiarism has been found.</td>
</tr>
<tr>
<td>Level 1</td>
<td>Minor</td>
<td>Copy a block of text from the student's previous works, 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 2</td>
<td>Moderate</td>
<td>Copy a block of text of over 40 words 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</td>
</tr>
<tr>
<td></td>
<td></td>
<td>document)</td>
</tr>
<tr>
<td>Level 3</td>
<td>Serious</td>
<td>Copy a block of text of over 40 words without any citation or reference in any form</td>
</tr>
</tbody>
</table>

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

Table 5.1 Assessment of plagiarism level

Level 0 indicates that students had sufficient anti-plagiarism awareness and were able to produce plagiarism-free work.

Level 1 shows that students committed self-plagiarism or made incorrect citations. These levels are acceptable for S1 and S2 students because they have not previously received any formal plagiarism avoidance training.

Level 2 represents a moderate level of plagiarism.

Level 3 indicates the most serious situation, in which students copied several sentences totaling over 40 words from others’ works (e.g. Wikipedia) without any acknowledgment, or paraphrasing or word changes (Yeung, Chu, Chu, & Fung, 2014).
5.3 Proportion of junior secondary students who admitted to have committed different levels of plagiarism in an elite local school

In a study conducted by the authors and other collaborators, it was found that the majority of the junior secondary students in an academically strong secondary local school plagiarized in their liberal studies group project work. Over 85% committed minor to serious plagiarism (Yeung, Chu, & Chu, 2012). Plagiarism is therefore a prevailing problem in students’ project work.

5.4 Collaborative teaching framework for plagiarism-free inquiry project-based learning with UPCC pedagogy

Using this model, students will be taught to understand what plagiarism is and how to avoid plagiarism using proper citations, and appropriate paraphrasing, synthesizing and summarizing skills (Chu, 2014).
5.4.1 “Understanding” in UPCC
Students are required to have the ability to identify plagiarism and have a clear understanding on the importance of avoiding plagiarism.

5.4.2 “Paraphrasing” in UPCC
After attaining a good understanding on plagiarism, students need to practise ‘Paraphrasing’ (restate a text or passage in own words), ‘Synthesizing’ (generalize ideas from a number of different sources) and ‘Summarizing’ (make conclusion from a text or passage) (PSS) to present ideas in their own words to avoid committing plagiarism.

Why use Summarizing, Paraphrasing, and Synthesizing?
● Provide support for claims or add credibility to your writing
● Refer to work that leads up to the work you are now doing
● Give examples of several points of view on a subject
● Call attention to a position that you wish to agree or disagree with
● Highlight a particularly striking phrase, sentence, or passage by quoting the original
● Distance yourself from the original by quoting it in order to cue readers that the words are not your own
● Expand the breadth or depth of your writing

5.4.2.1 Paraphrasing
Key Features of Paraphrasing:
● It is a restatement of the original information
● It is therefore as long as (or longer than) the original.
● It involves “translating” someone’s words so that all ideas are conveyed. The goal is NOT to boil it down to a shorter version of the ideas.
● Two steps are vital in paraphrasing, changing both the wording of the quote/passage and the structure.

Examples of Paraphrasing

<table>
<thead>
<tr>
<th>Original Text</th>
<th>Paraphrased Text</th>
</tr>
</thead>
<tbody>
<tr>
<td>The potentialities of journal citation measures have been intensively discussed during the past decades, not only among bibliometric experts, but also in the broader scientific community and among research managers, librarians, journal editors and scholarly publishers. The following three statements represent a consensus among most if not all participants: 1. Journal performance is a complex, multi-dimensional concept that cannot be fully captured in one single metric. 2. In the construction and interpretation of journal citation measures it is crucial to take into account differences in communication and citation practices between research fields. 3. Although journal quality is an aspect of research performance in its own right, journal impact measures should not be used as surrogates of actual citation impact of an individual’s or group’s publications.</td>
<td>Resultantly, in a recently published manuscript, Moed, Colledge, Reedijk, Moya-Anegon, Guerrero-Bote, Plume and Amin (2012) assert that there is mounting consensus among bibliometricians that the concept of journal evaluation is so multifaceted, and therefore complex, that it “cannot be captured in one single metric” (p.368). Cheang, B., Chu, S.K.W., Li, C. &amp; Lim, A. (2014). A Multidimensional Approach to Evaluating Management Journals: Refining PageRank via the Differentiation of Citation Types and Identifying the Roles that Management Journals Play. Journal of the American Society for Information Science and Technology, 65(12): 2581-2591.</td>
</tr>
<tr>
<td>Moed, H. F., Colledge, L., Reedijk, J., Moya-Anegon, F., Guerrero-Bote, V., Plume, A., &amp; Amin, M. (2012). Citation-based metrics are appropriate tools in journal assessment provided that they are accurate and used in an informed way. Scientometrics, 92(2), 367-376.</td>
<td></td>
</tr>
</tbody>
</table>
香港電台電視部從 2000 年 7 月 19 日推出全新節目「中醫新里程」，以推動中醫在香港的普及性與發展。香港大學新聞及傳媒研究中心進行一項名為「港人對中醫中藥的認識與看法」的意見調查，當中發現了越多八成受訪者對中醫認識不多，更越半年沒有向求診，而大部份受訪者對醫的信心比西醫的低，但對中醫在香港的日後發展也頗有信心，並提出不少建議，例：加強中醫藥人員的培訓等。

於中醫在香港的未來發展，逾六成為受訪者表示「非常有信心」及「幾有信心」。就中醫發展方向的重要性，有最多受訪者認為應加強中醫藥人員的培訓（百份比二成四），其次是加強設立中醫門診部（百份比一成六）、加強對中醫的監管（百份比一成六）及設立公立中醫院等（百份之九點三）。

一連八集的「中醫新里程」紀錄片，主要介紹中醫學的基本理論，香港常見的中醫療法與調理，中草藥的療效和發展。節目內容深入淺出，幫助觀眾掌握中醫中藥的基本知識，同時消除對傳統中醫學的迷信與誤解。每集節目分兩部份，第一部份針對中醫理論，如陰陽五行、五臟六腑、氣血精津、望聞問切、六淫七情等等；第二部份以中藥為主，介紹常見及新興的中草藥。節目亦會走訪中醫學權威人士及國內中醫院，分析中醫中藥的發展源流及未來展望。

「中醫新里程」由黃德如主持，節目於七月十九日起，逢星期三晚上七時正，在亞洲電視本港台播出。


| Poor example from students | 現時在名校就讀中七的王詩傑，在中五暑假開始玩《天堂》，不消一個星期已沉迷。
|                           | 「玩網上遊戲是與人競爭，我不想落後於人﹗」不用上學的時候，他從中午玩至第二天早上七時才睡，下午一時起床吃飯後，又繼續玩。
|                           | 到了中六，王詩傑寧願不吃午飯，也要到學校附近的網吧玩網上遊戲。
|                           | 王詩傑替家人的關係惡劣，大約每兩至三日就與家人吵架一次。他屢勸不改，有一次，他父親一怒之下關掉了總電掣，王詩傑便憤然離家出走，他說：「父母日日都在責罵，我忍受不了，便收拾校服及金錢出走一晚，第二天放學才回家。」 | 現時在名校就讀中七的王詩傑，在中五暑假開始玩《天堂》，不消一個星期已沉迷。
|                           | 「玩網上遊戲是與人競爭，我不想落後於人﹗」不用上學的時候，他從中午玩至第二天早上七時才睡，下午一時起床吃飯後，又繼續玩。
|                           | 到了中六，王詩傑寧願不吃午飯，也要到學校附近的網吧玩網上遊戲。
|                           | 王詩傑替家人的關係惡劣，大約每兩至三日就與家人吵架一次。他屢勸不改，有一次，他父親一怒之下關掉了總電掣，王詩傑便憤然離家出走，他說：「父母日日都在責罵，我忍受不了，便收拾校服及金錢出走一晚，第二天放學才回家。」 |
### Table 5.2 Examples of paraphrasing

#### 5.4.2.2 Synthesizing

**Key Features of a Synthesis:**
- It accurately reports information from the sources using different phrases and sentences.
- It is organized in such a way that readers can immediately see where the information from the sources overlap;
- It makes sense of the sources and helps the reader understand them in greater depth.

**Examples of Synthesizing**

<table>
<thead>
<tr>
<th>Original Text</th>
<th>Summarized Text</th>
</tr>
</thead>
<tbody>
<tr>
<td>Jenkins, C., Corritore, C.L., &amp; Wiedenbeck, S. (2003). Patterns of information seeking on the web: A qualitative study of domain expertise and web expertise. IT &amp; Society, 1(3), 64–89.</td>
<td>People with a high level of domain knowledge are more capable of effectively processing information and have a better chance of benefiting from the flood of information without being overwhelmed. Jenkins et al. (2003) found that, compared with low-knowledge individuals, high-knowledge individuals seek information more extensively and show more variability in information sources while searching. Through the help of the Internet, they have a better chance of recognizing relevant documents that are authored by lower status authors published from an earlier period or in lower status journals. Therefore, we hypothesize that, compared with low-knowledge researchers, high-knowledge research- ers are more likely to cite those documents in the web-prevalent period than in the pre-web period. Wu, L., Huang, M., &amp; Chen, C. (2012). Citation patterns of the pre-web and web-prevalent environments: The moderating effects of domain knowledge. J Am Soc Inf Sci Tec, 63(11), 2182-2194.</td>
</tr>
<tr>
<td>音乐教育对孩子成长的影响</td>
<td>題目：音樂教育對孩子成長的影響 讀完這篇文章後，給了我很多新的念頭，例如音樂能對兒童成長和發育的身體健康有益、對增加兒童智力有益、道德情感都是有益的。同時，這篇文章又舉出許多的例子，有愛因斯坦、雨果，及一些研究證明，增加文章的可信程度和說服力。 <a href="http://m.blog.sina.com.cn/s/blog_5e0b8eb90101fx8a.html#page=3">http://m.blog.sina.com.cn/s/blog_5e0b8eb90101fx8a.html#page=3</a></td>
</tr>
<tr>
<td>風很大的時候</td>
<td>題目：風很大的時候 有一個風很大的日子。windy day, 風很大的時候，樹木搖晃，風吹得特別大，我感覺特別冷。</td>
</tr>
</tbody>
</table>
果指出，开启人类智慧宝库的钥匙有三把：一是数学，一是语言，一是音符，数学使人学会思维，语言使人获得知识，音符使人富于想象；而当代一系列的科学实验表明，从小对儿童进行音乐教育，不仅可以使他们受到艺术美的熏陶，还对其身心健康和发展有着不可忽视的重大影响，儿童音乐教育也越来越多地受到家长、老师、专家的普遍关注。

那么，音乐对儿童的影响具体体现在哪些方面？

1. 音乐对儿童成长发育及身体健康的影响：生理学家和医学家们认为，节奏有序、柔和优美的音乐可以引起循环系统和呼吸的谐和律动，调节人体内的生物节律，从而影响孩童的成长发育和身体健康。

2. 音乐对儿童智力的影响：现代科学研究证实，音乐能够刺激大脑皮层的活动，并对大脑边缘系统和脑干网状结构产生直接影响，调节大脑功能，促进大脑和感觉器官的发育，提高儿童的思维能力和想象能力，增强和恢复记忆力，促进智力的发展和提高。

此外，音乐还可以帮助大脑左右半球的平衡发展。音乐活动能使大脑的左右半球互相沟通、互相联系，协调发展。国外有人做过调查，发现音乐课成绩优秀的学生，往往数学课的成绩也非常出色。音乐还能非常有效地提高儿童的想像力和创造力。

爱因斯坦从小就深受音乐的陶冶，且终身于音乐结下了不解之缘。他6岁的时候已经能演奏乐器，而当他到苏黎学院报道时，手里还拿着一把小提琴。爱因斯坦曾经说过：“音乐世界赋予我的直觉，对我的新发现运动物体的光学原理有着极大的帮助。”

3. 音乐对儿童道德情感的影响：通过音乐，不仅可以潜移默化地渗透对儿童的审美教育，还可以锻练他们的意志，促进其良好健康的道德品质和精神面貌的形成，为完善型人格的形成打下基础。

日本幼儿教育协会的追踪调查表明，从婴儿期开始喜欢音乐的孩子，长大了在品行上很少有劣迹，他们会变得更加善良和诚实。美国国会议员及五百强企业的高级主管中，有将近九成的人曾在幼年时学过音乐，可见孩提时期的音乐训练，对日后的性格养成，甚至对领导技巧的提高都有着非常大的助益。

家長不應把手機當成頭號敵人，把責任全推在電話上，並應和孩子和電話和平相處，遇到問題時花時間和子女溝通，一起解決難題。


事實上，其他調查指出，青少年每日平均發送的短訊多於八十三封，使用頻率過高。擁有智能手機的人會用手機聽歌、上網、發電郵，花在玩電話的時間更多。


<table>
<thead>
<tr>
<th>5.4.2.3 Summarizing</th>
</tr>
</thead>
<tbody>
<tr>
<td>Summarizing involves explaining the gist of another person’s writing. It</td>
</tr>
<tr>
<td>● is shorter than the text you read</td>
</tr>
<tr>
<td>● touches on main ideas only</td>
</tr>
<tr>
<td>● represents ideas in terms of importance author intended</td>
</tr>
</tbody>
</table>

Examples of Summarizing

<table>
<thead>
<tr>
<th>Original Text(s)</th>
<th>Synthesized Text</th>
</tr>
</thead>
</table>
| List of references:
  - Moraveji, N., Morris, M. R., Morris, D., The emergence of wiki technology has opened up new possibilities for implementing collaborative learning (Carroll, Diaz, Meiklejohn, Newcomb, & Adkins, 2013; Li, Chu, & Ki, 2014). Many online platforms have been developed and implemented to allow multiple learners to co-create and co-edit the web content collectively through a web browser, such as Search-Together (Morris & Horvitz, 2007), ClassSearch (Moraveji, Morris, Morris, Czerwinski, & Riche, 2011), Classroom Wiki (Khandaker & Soh, 2010), MediaWiki (Hadjarrouit, 2011), and Wikispaces (Lee, 2013). These wiki-based CW tools (or wikis in short) provide users with synchronous access, version control, change tracking, and comment functionalities, which are beneficial to the collaborating writers (Noël & Robert, 2004). Easily accessible and functional, a wiki is seen as a


The wiki is a viable tool to extend CW beyond the confines of the traditional classroom. It provides a virtual platform for collaborating learners to have immediate access to the latest version of their joint written work and serves as a ubiquitous means of coordinating their writing efforts. At the same time, educators can make use of the same platform to access every version of the students’ developing work and offer appropriate support and scaffolding without the constraints of time and space. This makes the study of the wiki’s educational potential rather important.
| Poor example from students | 1. 開明權威型
(1) 父母比子女擁有更大的權力
(5) 鼓勵子女發展個性及獨立性。
(6) 親子之間採開放式的溝通。
2. 專制權威型
(1) 父母對子女的要求是嚴苛的。
(2) 嚴格控制子女提出或表達自己的需求。

5.4.3 “Citation” in UPCC

The use of citation software (http://www.citationmachine.net) will help students generate citations in proper format.

Figure 5.3 Usage of Citation Machine
5.4.4 “Checking” in UPCC

Students can develop a habit of checking their writings before submission using a plagiarism-detection software. (e.g. http://smallseotools.com/plagiarism-checker/)

![Plagiarism Checker](Image)

Figure 5.4 Usage of Small Seo Tools

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**Reference:**


Chapter 6: Learning Analytics and “Wikiglass”

6.1 Introduction
Wiki, as introduced in earlier chapters, is widely regarded as a useful tool to facilitate project-based learning, but the amount of learning evidence available on Wikis may be overwhelming for teachers to make the most of it, due to the perceived increase of workload in continuous student assessment. Learning analytics is for helping to alleviate the dilemma.

Learning analytics is an emerging field related to utilizing information technology in education in recent years. It measures, collects, analyzes and reports data collected in a learning environment, with automated means. These help obtain knowledge about student learning in near real time, and thereby help improve teaching and learning in classrooms.

Wikiglass is such a learning analytic tool, specifically designed for secondary and primary schools. It visualizes students contributions on Wiki platforms such as PBworks. Both computer and mobile access are supported. This tool helps teachers monitor students’ group work and progress as well as promoting the importance of self-monitoring and peer monitoring among students. Since few existing tools work with student writings in Chinese or for secondary/primary school teachers, Wikiglass serves as a pioneering learning analytic tool for group projects in schools of Hong Kong.

6.2 Features and Functions of Wikiglass
Wikiglass automatically calculates and visualizes student contributions and progress in Wiki platforms on the class, group and individual levels. There are two visualization modes on Wikiglass - Statistics Mode and Timeline Mode.

6.2.1 Statistics Mode
The statistics mode allows teachers and student to compare statistics (e.g., revision counts, word counts, number of pages revised, etc.) of groups in a class, or individual students in one group.

6.2.1.1 Inter-group comparison in a class
The first page of the Statistics mode displays bar charts that compare groups in one class side by side. Each bar chart shows one statistic measure of group contributions. The measures include:

Revision Counts in each group: As shown in Figure 6.1, the bar chart displays how many revisions in total each group has made to date since the beginning of the project. As the readers have learned in previous chapters, each Wiki may contain multiple pages and each page can be revised many times. This measure is the total number of revisions aggregated across all pages in each group’s Wiki. It is an indicator of group efforts and contributions. From this chart, teachers and students can be informed of each group’s contribution to date and can make comparison across groups.

![Figure 6.1 Revision Counts in each group](image)

Latest Word Counts in each group: As shown in Figure 6.2, the bar chart shows the total number of words each group has written to date since the beginning of the project. This measure is the total number of words written aggregated across all pages in each group’s Wiki.
6.2.1.2 Comparison within a group

Clicking any of the bars in the aforementioned bar chart leads a user to the group page of the Statistics mode where pie charts are shown to compare the performance of members within a group. Each pie chart shows one statistic measure of group member contributions. The measures include:

**Number of Pages Revised by each student:** As shown in Figure 6.3, the pie chart displays how many pages each group member has revised to date since the beginning of the project. It is an indicator of individual efforts and contributions. From this chart, teachers and students can make comparison on members within a group.

**Number of Revisions Made by each student:** As shown in Figure 6.4, the pie chart displays how many revisions in total each group member has made to date since the beginning of the project. This measure is another indicator of individual efforts and contributions. Again, teachers and students can make intra-group comparison.
Number of Words Added by each student and Number of Words Deleted by each student: As shown in Figure 6.5, the bar charts respectively display how many words each group member has added and deleted to date since the beginning of the project. This measure is an indicator of individual word amendment counts compared to other group members.
6.2.1.3 Individual student
Clicking any sector of the pie in the aforementioned pie charts leads a user to the page of that individual student which displays two bar charts of individual contributions:

**Revision Counts in each page:** As shown in Figure 6.6, the bar chart displays how many revisions in total an individual student has made in each page of the group Wiki since the beginning of the project. This measure is an indicator of individual efforts and contributions made to each page. From this chart, teachers and students can be informed of this student’s contribution across pages.

![Figure 6.6 Revision Counts in each page for an individual](image)

**Word Amendment Counts in each page:** As shown in Figure 6.7, the bar chart displays how many words an individual student has added and deleted in each page of the group Wiki since the beginning of the project. From this chart, teachers and students can be informed of how much this student has edited across pages.

![Figure 6.7 Word Amended in each page for an individual](image)
6.2.2 Timeline Mode
The Timeline Mode displays statistics accumulated across time on a weekly or daily basis. It allows teachers and students to monitor the progress of groups or individual students throughout the project period in a clear and easy manner.

6.2.2.1 Inter-group comparison in a class
The first page of the Timeline mode displays line charts that compare groups. Currently, two line charts are shown:

Revision Counts Timeline: As shown in Figure 6.8, the line chart shows how many revisions each group has made in different time points throughout the project period. This measure is the accumulated number of revisions aggregated across all pages in each group’s Wiki, at the specific timepoints. It is an indicator of group efforts and contributions over time. From this chart, teachers and students can be informed of the trend of each group’s contribution along the time and can compare across groups.

Word Amendment Count Timeline: As shown in Figure 6.9, the line chart shows how many words each group has added and deleted in different time points throughout the project period. It is an indicator of word amendment in a group’s Wiki over time. From this chart, teachers and students can make comparison on word amendment counts across groups.

6.2.2.2 Comparison within a group
Clicking any line in the above line chart leads users to the Timeline mode of the group page where line charts are displayed to compare members in a group. Similar to the Timeline mode of the class page, Revisions Counts and Word Amendment Counts of each group members are shown here. Figure 6.10 shows the:
**Word Amendment Count Timeline** of members in a group: Each line shows how many words the corresponding group member has added and deleted in different time points throughout the project period. From this chart, teachers and students can be informed of the trend of each individual’s word amendment count along the time and can make comparison across group members.

![Word Amendment Count Timeline](image)

**Figure 6.10 Word Amendment Count Timeline**

6.2.3 Selection of date range for display
In the Statistics Mode, users of Wikiglass can view the statistics in a specific date range they select. This can help teachers focus on a certain period of time such as the first month of the project or the last week before the project deadline.

![Statistics Mode](image)

6.2.4 Weekly email summary
To facilitate teachers’ use of Wikiglass, every week, teachers will receive an email with a summary of students’ performance in their progress of the group project. It shows the average number of revisions in the class, the top three groups, and the bottom three groups, in terms of their revision counts during that week. The email also displays the performance of individual students, showing the top students and those who have not made any revisions. Teachers may use the information to give feedback to students in need (e.g., those who have not been engaged) in a timely manner. The email also reminds teachers to log in to the Wikiglass site for more details. Figure 6.11 shows an example of weekly email summary (with all names being pseudo-names).
6.3 Implementation in a local secondary school

From October 2015 to June 2016, the Faculty of Education of HKU was in collaboration with a local secondary school in Hong Kong on the research project titled “Learning Analytics for Wiki-based Learning Environments in Primary and Secondary Schools”. Liberal Studies (L.S.) subjects of eight classes from Form Two and Form Three were involved in this research.

Before being introduced to Wikiglass, when assessing students’ performance in the L.S. group project, teachers had to manually count statistics such as word counts and number of revisions by going through pages on PBworks. Moreover, since teachers were already very busy and class time was limited, teachers were more likely to know students’ performance and progress towards the end of the project period.

For the first round of development of Wikiglass at the school, L.S. teachers were given access to Wikiglass with respect to the classes they taught. Students were given access to Wikiglass w.r.t. the classes they are in. Participating teachers were trained with how to use Wikiglass, and participating students were taught by the HKU team on what Wikiglass can do for them and how to use it. Surveys and interviews with both teachers and students were conducted before, during, and after the implementation of Wikiglass. In general, most teachers had positive reviews of Wikiglass.

6.3.1 Feedback from Teachers

As a supplementary reference on project development

Wikiglass allows teachers to know more about students’ learning process during the project period. The information provided by Wikiglass provides teachers with a quick and comprehensive reference on the development of the project, apart from the final product. This information can also reflect students’ engagement in the project along the time.

Offering an overview of class progress and group collaboration

Wikiglass enables teachers to see a comprehensive picture of the progress of different groups in a class. In fact, since teachers can access Wikiglass to view students’ progress, this helps save their time from tracking down...
each Wiki page on PBworks. Statistics shown on Wikiglass also reduce teachers’ efforts in maintaining an overview of group collaboration.

**Providing objective evidence for feedback, intervention and assessment**
As teachers have access to the statistics of all groups and individual students, Wikiglass helps empower teachers with the useful information that can act as objective evidence. Teachers can always make good use of such evidence for ensuring fair work distribution in a group, implementing intervention whenever necessary, and assessing students’ efforts. Furthermore, the information can serve as additional evidence for diagnosis, for instance, when exploring why a certain group has a poorer progress.

**Improving assessment of students’ contribution and collaboration**
In addition to evaluating the content of student works on PBworks, teachers might also assess students’ degree of devotion and collaboration. With information on Wikiglass, teachers can fine-tune their assessment of the group projects by taking group collaboration patterns and individual students’ contribution into consideration.

**Teachers’ perceived benefits for students**
From the perspective of teachers, Wikiglass benefits not only teachers but also students in a number of ways. Since students are able to view their group members’ progress on Wikiglass, they take the responsibility in monitoring their own progress rather than relying on the teachers only. This enhances their abilities in self-directed learning. In particular, Wikiglass encourages students to have a self-reflection on their contribution and collaboration. Also, as students are aware of teachers’ progress checks on Wikiglass, they recognize the need of being more engaged and productive in working on the project. On the group level, Wikiglass can motivate students to coordinate with their group-mates to work harder. On the class level, students can view the progress of other groups in the same class, thus inducing a (healthy) sense of competition and thereby stimulating mutual monitoring between groups.

### 6.3.2 Feedback from Students
Opinions from students are equally important. In general, Wikiglass also receives positive acclaims from a majority of students. Most of the feedback from students are consistent with the teachers’ perceptions as shown in the last section. Below are some additional feedback from students.

**Wikiglass being easy to use**
The ease of use, along with convenient navigation on Wikiglass, are by far the most praised features of Wikiglass by students. The straightforward presentation of information on Wikiglass saves students’ (and teachers’) time in exploring details such as how to access specific pages, or the meaning of certain graphic information.

**Attractive and useful visualizations**
Various colours and labels on graphs and charts make it convenient for students to have a quick look at the progress of different groups or students. Specifically, students can quickly identify individual students of their interests (usually self or group mates) from others.

**Ensuring fair work distribution**
Since Wikiglass shows the contributions of the several members of a group, students can adjust their contributions from time to time in accordance with even work distribution, either through online or personal discussions after accessing the relevant information from Wikiglass.

**Facilitating planning and scheduling of work**
Throughout the project period, Wikiglass facilitates the planning and scheduling of work among group members. The timeline visualizations of other group members and other groups, as reflected on Wikiglass, influence the pace of development of the project. Students in a group, ranging from the group leader to the members, have the freedom to constantly adjust their progress and contributions.

**Help in identifying free-riders**
As solid evidence, the information on Wikiglass plays a key role when students identify free-riders who make little contributions or have an unsatisfactory progress. Students can therefore take appropriate follow-up actions, for example, pushing those students for a higher productivity, or reporting the case to the teachers for intervention.
Recognition of efforts paid
The project report on PBworks is a final product collaboratively done by students. Nonetheless, how students have collaborated with each other and progressed along the whole project period are also significant to the development of the project. Statistics presented on Wikiglass in different forms serve as an unbiased and effective recognition of efforts paid by the students. They can motivate students to keep up with the progress and their achievement.

6.4 Wikiglass as an ever-growing learning analytic tool
A professional team of developers are constantly improving Wikiglass in terms of its usability, features and functions, based on suggestions and opinions of the primary users: teachers and students. In discussion with teachers and students, new feature requirements are identified. Upcoming features include indicators of writing quality (e.g., levels of cognitive thinking, discourse cohesion etc.) and visualizations of students’ interactions.

6.5 Conclusion and Best Practice
Wikiglass displays the visualizations of different statistics pertaining to students’ work. With its ease of use and user-friendly interface, Wikiglass offers an overview of class progress and group collaboration to both teachers and students. It also helps identify free-riders in a project. For teachers, Wikiglass provides objective evidence for giving feedback, making interventions, and improving assessment. Information from Wikiglass can also act as an additional reference for teachers on the development of group projects. For students, Wikiglass facilitates work distribution and scheduling, and recognizes the efforts made by students. More importantly, Wikiglass can induce healthy competition and self and peer monitoring in a class, motivating students to strive for excellence in their work.

Being a pioneering learning analytic tool, Wikiglass is most helpful for group projects with Chinese writings done by students from secondary and primary schools. To fully maximize the potential of Wikiglass, teachers’ commitment is very important as students are highly aware of teachers’ usage of such a tool, no matter when teachers demonstrate using it in class or when teachers mention referring to its information for assessment. Aside from teachers’ influence, students’ devotion to the project itself is also vital to fully utilizing Wikiglass to facilitate the entire learning process.

References:

Wikiglass - Tutorial Guide for Teachers: https://www.youtube.com/watch?v=vVj4g4JlgjQ&feature=youtu.be

Question Answering on Wikiglass: https://www.youtube.com/watch?v=cowKoT4HYYA&feature=youtu.be
Chapter 7: Conclusion

With the ever changing world of this technology era, educators are facing an unprecedented challenge in reshaping education to suit the needs of the modern globalized society. Students are expected to be equipped with new sets of skills that enable them to adapt to the highly mobile, knowledge-intensive and collaborative business style (Dunning, 2000). Different frameworks have been developed to articulate the competencies emphasized by today’s world. The pedagogy put forward in this book revolves around the framework proposed by P21, which entails three major skills sets: Learning and Innovation; Digital Literacies; and Life and Career Skills.

To enable students to hone such skills in a practical and authentic setting, the authors have implemented the UPCC pedagogy in a local secondary school. UPCC is a comprehensive teaching model that addresses the existing problems of inquiry project-based learning: the prevalence of plagiarism cases, the lack of research skills among students, the extra burden on teachers and the lack of relevant training among teaching staff. Empirical evidence and positive feedback from teachers and students have supported that UPCC is an effective pedagogy in helping students get rid of plagiarism in their group projects.

One of the staples of UPCC is the concept of collaborative teaching. The pedagogy calls upon experts of various fields to help students develop a holistic understanding and skills to carry out plagiarism-free inquiry projects. UPCC tackles academic dishonesty in four levels: (1) to help students understand plagiarism through the teaching of information literacy; (2) to help students develop skills in paraphrasing, synthesizing and summarizing ideas; (3) to teach students how to cite sources and provide user-friendly tools to help them cite properly; and (4) to provide user-friendly tools for students to check their final work for originality.

Another staple of UPCC is the use of wikis (e.g., PBworks) as a collaborative platform for inquiry projects. Wikis allow students to work on their group projects collaboratively anywhere and anytime, provided that internet access is available. The track history function of wikis also enables teachers and students to trace back to how information has been paraphrased, synthesized and summarized. It also makes referencing and originality check very convenient as students can easily switch from the wiki site to the online citation and originality check tools.

Coupled with UPCC, Wikiglass visualizes student contributions on Wiki platforms, assisting teachers in monitoring student progress in both group and individual levels and promoting the importance of self and peer monitoring among students. Wikiglass is also a pioneering learning analytic tool due to its ability in analyzing Chinese writings, especially useful for group projects in Hong Kong primary and secondary schools.

Wikiglass utilizes automated means to calculate and visualize student contributions and progress on Wiki platforms on the class, group and individual levels. Two visualization modes are available on Wikiglass, namely the Statistics and Timeline Modes. The Statistics Mode allows teachers and students to compare various statistics of groups in a class, and individuals in a group, including revision counts, word counts and number of pages revised. Meanwhile, the Timeline Mode displays accumulated statistics across time that allow teachers and students to monitor the progress of groups or individual students throughout the project period. Other features of Wikiglass include the selection of date range for display that enables users to focus on the statistics of a specific time period, and a weekly email with the summary of student progress, giving teachers an overview of the group and individual progress in class.

Statistics displayed on Wikiglass act as a supplementary reference for teachers on knowing about the development of student projects over time, apart from the performance from their final products. It offers teachers a comprehensive picture of the class progress and group collaboration, providing unbiased evidence for giving feedback, implementing interventions, and improving assessments of student contributions and collaboration.

Wikiglass also benefits students to a large extent. It encourages students to take the responsibility to monitor their own progress instead of only relying on teachers. It also promotes self-reflection and improves intra-group coordination. Planning and scheduling of project group work can also be facilitated. Wikiglass ensures fair work distribution while helping identify free-riders. Healthy competition among groups can arise through peer monitoring across and within groups of students. Last but not least, the information shown on Wikiglass also serves as a recognition of efforts paid by students throughout the project period.
Currently, Wikiglass has launched several new features including the analysis of students’ writing quality and visualizations of student interactions. Besides the Liberal Studies subject as illustrated in the case of implementation in Chapter 6, Wikiglass can be used in other subjects with group projects such as Chinese, Science, English and Mathematics. It is hoped that teachers and students can maximize the potential of Wikiglass, learning analytics, and more importantly, the implementation of information technology in the classroom.

If you are interested in knowing more about UPCC, Wikiglass, and how they can be incorporated into your teaching, you may go to the project website: http://kefetwgss.pbworks.com/

References:
Testimonials

As a school administrator and a frontline teacher, it is a nightmare to receive students’ assignment full of plagiarism. How can we lift up teachers’ awareness in detecting students’ plagiarized homework? How can we help students to provide plagiarism-free assignment? It is easily said than done and is a challenging task for every educator!

There are many reasons for students to submit plagiarized work. Some may due to their ignorant on plagiarism but some may think that there are no ways for teachers to discover their mischief. We need to work strategically to improve the situation by addressing the root problems leading to plagiarism.

This year, all Junior form Liberal Studies teachers from TWGSS work closely with Dr CHU K.W, Samuel and Dr HU, Xiao from the Division of Information and Technology Studies, Faculty of Education, HKU to tackle the problems. A series of tailor-made workshops on “Plagiarism: What it is and How to recognize and avoid it using UPCC Model” were held throughout the year for both teachers and students and the UPCC Model and how it can be applied in daily learning and teaching activities to avoid plagiarism were clearly explained to all participants. Besides, newly developed I.T. tools like Wikiglass and Schoology were introduced so as to further enhance the effectiveness of “Self-regulated Learning” in classroom teaching and educational programmes which served as means to monitor the progress of students’ work. All these measures were proved to be effective in enhancing students’ skills to avoid plagiarism by paraphrasing, summarizing and synthesizing or proper citation. Besides, a positive impact on changing their attitude towards “plagiarism avoidance” was evidenced through interviewing with both students and teachers.

Moreover, through the In-house teachers’ training workshop and frequent sharing / interflow with the university scholars, teachers now are equipped with both knowledge and skills in identifying plagiarized works and are more confident in assisting students to provide plagiarism-free assignments.

It is hoped that all such effective measures and strategies in avoiding plagiarism can be continued in the days to come and any good practices thus developed can be shared to other frontline teachers so as to further combat plagiarism among school students in the territory.

Mr CHIN Yiu-ming
Assistant Principal
Tsuen Wan Government Secondary School

As a whole, the UPCC project is an excellent project, the use of web-platform such as “Schoology”, “Webquest” and “PB works” and other UPCC software helped to promote self-directed and interactive learning among students. The UPCC program also helps to raise the awareness of plagiarism and the seriousness of copying material from the internet directly. Students were guided to avoid plagiarism in the future when they come across the same project learning.

In the near future, teachers can further emphasize the importance of checking for originality and the proper citation format. Further lesson can be put on the students’ writing skills so that they have the ability to rephrase, synthesize and summarize while doing their literature review.”

TONG Tak-shing
Liberal Studies teacher
Concerning the UPCC, it would be very good to let students know plagiarism is a serious problem in research based project as early as the age of S1. The video made by HKU about the common problems of TWGSS is found to be very useful and usable when explaining some of the technical problems to the students and thus the students find it easier to follow the instruction. The students are also very fond of using the plagiarism softcopy in checking the uniqueness of their work. The difficulty I encountered in teaching was that it would be quite hard to explain to students the format of proper quotation at the S1 level, as they are just at the beginning of project learning, they have quite a lot to learn like setting proper title, focus questions of project, research methodology, etc, so it is quite uneasy for S1 students to digest so many things at the same time.

Tom Cheng
Liberal Studies teacher