Developing 21st century skills with inquiry learning, collaborative teaching, social media, and gamification

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Presentation outline

- What are 21st century skills
- Why are 21st century skills important?
- Teaching strategies that foster students’ 21st century skills development
  - Inquiry project based learning
  - Collaborative teaching approach
  - Use of social media technologies
  - Gamification
- Practical guides for implementing the strategies
- Assessment for 21st century skills (e.g., digital literacy)
What are 21st century skills
P21 framework for 21st century skills

Core subjects – 3Rs (reading, writing, arithmetic)

Digital literacy (Info, Media, & technology skills)
### What are 21\textsuperscript{st} century skills

#### P21 framework for 21\textsuperscript{st} century skills

<table>
<thead>
<tr>
<th>3 skill sets:</th>
<th>Learning and Innovation</th>
<th>Digital Literacies</th>
<th>Life and Career Skills</th>
</tr>
</thead>
</table>
| 12 components: | • Critical thinking and problem solving  
• Communication  
• Collaboration  
• Creativity and innovation | • Information literacy  
• Media literacy  
• Technology literacy | • Flexibility and adaptability  
• Imitative and self-direction  
• Social and cross-cultural interaction  
• Productivity and accountability  
• Leadership and responsibility |
Composition of 21st century skills
3Rs x 7Cs = 21st Century Learning

- More traditionally established skills
  - 3Rs: Reading, writing, arithmetic

- The second key component, the 7Cs, stand for
  - 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.

(Trilling and Fadel, 2009)
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Why are 21st century skills important?

- The acceleration of digital technology development in the 21st century has required people to acquire different sets of digital skills and knowledge (Black, 2009).

- Routine and manual work are being assigned to computers and jobs nowadays emphasize “expert thinking” (which involves critical thinking and problem solving) and “complex communication” (which involves interpretation of information and communicating ideas to the others) (Levy & Murname, 2004, p.5).

- Hence it is important for educators to find effective ways to help students develop these skills.
Plagiarism - 1

- German Defence Minister Karl-Theodor zu Guttenberg announced his resignation from all political offices in Berlin (01 March 2011)
- **Why did the Minister resign?**
Breaking News: German Research Minister Schavan Resigns in Plagiarism Scandal

by Gretchen Vogel and Kai Kupferschmidt on 9 February 2013, 11:45 AM | 1 Comment

Four days after the University of Düsseldorf revoked her doctorate degree, research Annette Schavan has resigned. At a press conference today with said that she had accepted Schavan's resignation "with a very heavy heart. challenge the university's decision in court, "the office must not be dishonor appointed Johanna Wanka, minister for education and research in the state Schavan.

Schavan has faced allegations of plagiarism in her 1980 dissertation, first r: accuser who posted a series of questionable passages from the dissertation University of Düsseldorf to investigate and in October a report from the prof was leaked to the press. It found roughly 60 passages in the 351-page diss sources without adequate citation. In January, a university committee decid revoke Schavan's degree. On 5 February the committee voted to do so. At visit in South Africa. She returned yesterday and offered Merkel her resigna

Sources:
- German Research Minister Faces Plagiarism Allegations
- German Research Minister Schavan Resigns in Plagiarism Scandal
Taiwan Defense Minister Resigns Over Plagiarism Allegation

Source: YouTube - http://www.youtube.com/watch?v=ZTfiCYHCf0I
Exam plagiarists caught out

Beatrice Siu

Monday, July 15, 2013

Twenty-three students from a private school were disqualified for plagiarism in a Chinese-language exam, and will not be able to enter a Hong Kong university.

The Hong Kong Examinations and Assessment Authority refused to identify the school in the Hong Kong Diploma of Secondary Education cheating but Modern College, a subsidiary of the famous tutorial center Modern Education, admitted the disqualified students were theirs.

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Books which inspired my work
Inquiry project-based learning (inquiry PjBL)

● The EDB (Education Bureau) of the HKSAR / Hong Kong Special Administrative Region (2002) defines Inquiry-based learning (IBL) as a student-centred approach that promotes the integration of skills, knowledge, and values in the learning of General Studies.

● In the *inquiry* process,
  ● *Students are active constructors of knowledge*
  ● *teacher is a facilitator of learning*

● Instead of the teacher giving the right answers, students have to raise questions, *find their own answers* and look for the necessary information.

● They are engaged in *identifying problems, collecting information and solving the problems* they encounter. (Education Bureau, 2007)
• IBL may occur in the best manner through the implementation of projects (Wilhelm, Sherrod, & Walters, 2008).

• Projects can capture students’ interests, provoke serious thinking, and enable them to apply their knowledge in a problem-solving context (David, 2008).

• IBL + project = inquiry PjBL (project-based learning)
Inquiry PjBL – Problems encountered

- Students seem to be lacking skills needed for inquiry projects
  
  - When students presented their project findings, one group had members hold up large sheets of paper for the entire presentation period, and the points shown on the sheets could only be seen by a limited number of students in the front rows.

  - Another group managed to produce a PowerPoint file with about 20 slides but were able to cover only the first few slides within their given presentation time.
To tackle the problems...

- Maximizing support for students
  - By bringing in teachers who could support students in inquiry PjBL in various ways
  - By bringing in relevant resources
    - E.g., WiseNews

- Proposition: If we can maximize students’ needed support, we can help them maximize their learning
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Teaching strategies that foster students’ 21st century skills development
- Collaborative Teaching Approach

- Research suggests that collaboration between different teachers promotes effective IBL (Thousand, et. al, 2006).
- Although there is much anecdotal evidence regarding successful teacher and librarian collaboration, there is scarce research that looks into the specific practice of teacher and librarian collaboration in primary schools (Montiel-Overall, 2007).
- Although there are professional guidelines for librarians to promote collaborative work with teachers to develop students’ information literacy (AASL, 1998), further research is needed to examine the effect of these practices on the academic achievement of students.
Study 1: Inquiry PjBL with collaborative teaching approach (1)

- Modeled behind Harada and Yoshina (2004) and Kuhlthau’s (2003, 2007) work, the Principal Investigator and the school principal provided guidance and leadership in bringing the teachers and the school librarian in this study to work together to guide the Primary 4 (P4) students on projects.
- Over the six months, students were asked to do two General Studies projects in two phases.
- The students were free to use any database, search engine, or printed sources.
- The grades for the two projects were not included in the final subject grades awarded to the students so as to minimize parents’ concern on how well their children had fared in the inquiry PjBL projects.
Study 1: Inquiry PjBL with collaborative teaching approach (2)

- The four teachers approach for Inquiry PjBL
  - The researchers of this study promote a close partnership between 4 kinds of teachers (General Studies, Chinese, IT, and School Librarian) to maximize the learning supports for students.
  - The study investigates the role of each type of the teaching staff and the collaboration between the teachers in guiding P4 students through inquiry group project-based learning.

(Chu, Tang, Chow, Tse, 2007)
Study 1: The Four Teachers’ role

Contributions of the collaborating teachers and librarian in the instructional design

- **General Studies**: Research skills
- **IT**: IT literacy skills e.g. Chinese keyboarding skills, Excel, PowerPoint
- **School Librarian**: Information literacy skills e.g. search the Web & WiseNews
- **Chinese**: Reading and writing abilities
Study 1: The inquiry project-based learning (IPjBL) model adopted for the general studies group projects

Study 1: Participants

- All P4 students of a local primary school participated in the study
- Three kinds of participants:

<table>
<thead>
<tr>
<th>Type of participants</th>
<th>Number of participants</th>
</tr>
</thead>
<tbody>
<tr>
<td>Students</td>
<td>141 (M=9 year-olds, 4 classes, 30-40 each)</td>
</tr>
<tr>
<td>Teachers</td>
<td>11 (4 subjects)</td>
</tr>
<tr>
<td>Parents</td>
<td>27 (interviewed by phone)</td>
</tr>
</tbody>
</table>
In inquiry learning, students are engaged in 5 kinds of learning: curriculum content, information literacy, learning processes, literacy competencies, and social abilities (Kuhlthau et al., 2007).

Eight dimensions representing some of the competencies of the five kinds of learning were identified and served as the dependent variables in this study.
### TABLE 1. Eight dimensions of skills, abilities, and knowledge for students’ improvement.

<table>
<thead>
<tr>
<th>Kind of learning</th>
<th>Dimension</th>
<th>Indicators of attainment</th>
</tr>
</thead>
<tbody>
<tr>
<td>Curriculum content</td>
<td>1. Subject knowledge</td>
<td>A good understanding of the subject areas the students are vocabulary in their chosen subject areas.</td>
</tr>
<tr>
<td>Information literacy</td>
<td>2. Information literacy</td>
<td>Students’ skills in searching for relevant information, in use of sources should be sharpened by their work on the with a greater variety of sources.</td>
</tr>
<tr>
<td></td>
<td>3. IT skills</td>
<td>Familiarity with the writing pad for Chinese-input or a goo methods; ability to use MS Excel in creating graphical pr</td>
</tr>
<tr>
<td>Literacy competence</td>
<td>4. Reading comprehension</td>
<td>Achieving a higher level of reading comprehension ability; enhancement in identifying the main points of a passage.</td>
</tr>
<tr>
<td></td>
<td>5. Writing ability</td>
<td>Manifested by the ability to write faster, longer, and better more sophisticated vocabulary) by the end of the projects</td>
</tr>
<tr>
<td>Social skills</td>
<td>6. Social and communication skills</td>
<td>Improved social skills such as sharing, listening, taking ti</td>
</tr>
<tr>
<td>Learning how to learn</td>
<td>7. Presentation skills</td>
<td>Enhanced ability to present information in multimedia for formal presentation of project findings.</td>
</tr>
<tr>
<td></td>
<td>8. Research skills</td>
<td>Improved investigative skills and problem-solving capability more skilled in asking questions and organizing their idea</td>
</tr>
</tbody>
</table>
Various perceptions related to the first IBL project were measured using a similar 5-point scale, with questions on project difficulty, helpfulness of project components, school support, and parental participation.

Gender and academic abilities were considered variables that might affect the students’ learning.

Interviews with the parents and teachers were conducted.

The General Studies teachers evaluated the group projects and the grades were compared with the project grades of the students who had followed the traditional approach the previous year.
T-tests showed statistically significant differences ($p<0.001$), with the inquiry PjBL group obtaining higher grades than the traditional group.
The 3 participant groups perceived the students’ learning dimensions to have improved, with the teachers generally rating the improvements higher than the students and the parents.

No statistically significant differences were observed - improvements of the students in these 8 dimensions of learning were perceived to be similar by the teachers, parents, and the students themselves.
Study 1: Findings and Discussion
3. Students’ Enjoyment and Perceptions of Inquiry PjBL Projects

- The students reported positive enjoyment ($3.77 \pm 1.02$)
- The teachers and the parents even reported higher levels of perceived student enjoyment of the projects (teachers: $3.9 \pm .568$; parents: $3.94 \pm .813$).
  - the differences were not statistically significant ($p>0.05$).
- Students’ reported enjoyment of the project appears to have a linear relationship with 5 of the 8 learning dimensions.
  - Regression analysis showed that there are significant linear relations between level of enjoyment & information literacy, reading ability, writing ability, subject knowledge, and communication skills (all have $p<0.001$).
  - These findings imply that learning may be facilitated by activities that the students enjoy.
Both the parents and the students rated the tasks as relatively easy, while the teacher’s ratings were in the middle of the scale, signifying a neutral perception.

no significant differences between the group ratings (p>0.05).
Study 1: Findings and Discussion
6. Implementation of the Collaborative Teaching Approach

**Enablers**

- Commitment and leadership of the school admin.
- Formal meetings for all stakeholders.
- Formal meetings between the research author and each of the four kinds of teaching staff.
- Informal meetings among the teaching staff.
Study 1: Findings and Discussion
6. Implementation of the Collaborative Teaching Approach

**Inhibitors**

- Teachers’ lack of time
- “extra workload”
Study 1: Findings and Discussion
6. Implementation of the Collaborative Teaching Approach

Benefits for the teachers and the school administration.

- The teachers noted that the implementation of the new method provided more opportunities for them to communicate with each other.
- The parents and teachers generally thought it was advisable to continue the implementation of inquiry PjBL in their school.
The project grades of the students who took part in the intervention were significantly higher than the grades of the control students.

Students made notable improvements in the eight dimensions of learning.

The participant students had enjoyed doing the projects and found the tasks challenging.
Data gained from interviews indicated aspects beyond the dimensions of learning that were reported to have improved as well, such as independence and self-confidence.

The perceived improvement in the dimensions of learning was not affected by the students’ gender.

Students with different academic abilities were all able to benefit from inquiry PjBL.
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Teaching strategies that foster students’ 21st century skills development
- Use of social media technologies

- Integrating social media (e.g., blogs, wikis) into education has been seen as beneficial in facilitating teaching and learning (Chu, Chan & Tiwari, 2012; Chu & Kennedy, 2011; Richardson, 2006)
- Wiki is often described as “a collaborative web space where anyone can add content and anyone can edit content that has already been published” (Richardson, 2006, p. 8)
- Pifarre and Starrman (2011) point out that wiki opens up shared dialogic spaces for students to discuss ideas and accomplish tasks together using such ideas, thus scaffolding their critical thinking and problem-solving skills (Woo et al., 2011).
Study 2: Instructional Design

Three main stages:
1. Implementation of P4 collaborative inquiry PjBL (with a project in Chinese)

2. Implementation of P5 collaborative inquiry PjBL with social media (with a project in Chinese)

3. Implementation of P5 collaborative inquiry PjBL with social media (with a project in English)

<table>
<thead>
<tr>
<th></th>
<th>Sept Term 2009</th>
<th>Feb Term 2010</th>
<th>Sept Term 2010</th>
<th>Feb Term 2011</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chinese Project</td>
<td>P4 Using traditional method</td>
<td>P4 Using inquiry PBL</td>
<td>P5 Using inquiry PBL</td>
<td>P5 Using inquiry PBL &amp; social media</td>
</tr>
<tr>
<td>English Project</td>
<td>P4 Using inquiry PBL</td>
<td>P5 Using inquiry PBL</td>
<td>P4 Using inquiry PBL</td>
<td>P5 Using inquiry PBL &amp; social media</td>
</tr>
</tbody>
</table>

Participating schools will be encouraged to use their acquired skills to refine their teaching approach for their 2nd batch of students.
Study 2: New teaching model
12 dimensions in students’ improvement

Twelve dimensions in students’ improvement:
1. Reading comprehension
2. Writing abilities
3. Subject knowledge
4. Cognitive abilities
5. Presentation skills
6. Problem-solving skills
7. Information literacy
8. IT skills
9. Social and communication skills
10. Self-directed learning skills
11. Self-confidence
12. Research skills
Study 2: Participants

- P4 (n=385) and P5 (n=420) students in four primary schools in Hong Kong

- The academic performance of the participating schools is average/above average
Study 2: Data Collection

(1) An online survey
● Administered to 420 P5 students who participated in the GS group project
● 20 questions adapted from the Hazari’s scale (Hazari, North & Moreland, 2009)
● Examined four factors regarding the use of wiki in supporting inquiry PjBL
   ● Learning/pedagogy
   ● Motivation
   ● Group interaction
   ● Technology

● Anchored on a 5-point Likert-type scale (with 1 being “strongly disagree”, 5 being “strongly agree”)

(2) Focus group interviews
● With a total of 42 students who took part in English collaborative writing
● Students’ insights on the use of wiki in collaborative writing were explored
Study 2: Sample of students’ GS project work on wiki

- Sample of students’ GS project work on Google Sites (with annotations in red)
## Learning/ Pedagogy

### Statements regarding wiki’s influence on students’ learning

<table>
<thead>
<tr>
<th>Statement</th>
<th>Mean (SD)</th>
<th>Sample Size</th>
</tr>
</thead>
<tbody>
<tr>
<td>A1. Use of the wiki enhanced my interest in the course</td>
<td>3.73 (±1.16)</td>
<td>385</td>
</tr>
<tr>
<td>A2. I would like to see wikis used in other courses</td>
<td>3.81 (±1.20)</td>
<td>384</td>
</tr>
<tr>
<td>A3. I will retain more material as a result of using the wiki</td>
<td>3.77 (±1.10)</td>
<td>384</td>
</tr>
<tr>
<td>A4. I participated in the assignment more because of using the wiki</td>
<td>3.65 (±1.10)</td>
<td>384</td>
</tr>
<tr>
<td>A5. Use of the wiki aided me in achieving course objectives</td>
<td>3.87 (±1.06)</td>
<td>385</td>
</tr>
</tbody>
</table>

A student reported that he had “little interest [in the beginning] but after doing this project, [he] want[s] to learn more.”
Study 2: Web 2.0 (wiki) technologies in inquiry GS group projects – Finding (2)

● Motivation

<table>
<thead>
<tr>
<th>Statements regarding wiki’s influence on students’ motivation in learning</th>
<th>Mean (SD)</th>
<th>Sample Size</th>
</tr>
</thead>
<tbody>
<tr>
<td>B1. Benefit of using the wiki is worth the extra effort and time required to learn it</td>
<td>3.58 (±1.12)</td>
<td>383</td>
</tr>
<tr>
<td>B2. I would recommend classes that use wikis to other students</td>
<td>3.71 (±1.15)</td>
<td>380</td>
</tr>
<tr>
<td>B3. I would prefer projects that use wikis over other projects that do not use wikis</td>
<td>3.71 (±1.19)</td>
<td>384</td>
</tr>
<tr>
<td>B4. I will continue to explore use of wikis for project-works</td>
<td>3.75 (±1.15)</td>
<td>384</td>
</tr>
<tr>
<td>B5. I stayed on the task more because of using the wiki</td>
<td>3.73 (±1.09)</td>
<td>383</td>
</tr>
</tbody>
</table>

● A student commented that when compared to the traditional pen-and-paper approach, working on wiki had given him “the motivation to accomplish tasks”. 
Study 2: Web 2.0 (wiki) technologies in inquiry GS group projects – Finding (3)

● Group Interaction

<table>
<thead>
<tr>
<th>Statements regarding wiki’s influence on students’ group interaction</th>
<th>Mean (SD)</th>
<th>Sample Size</th>
</tr>
</thead>
<tbody>
<tr>
<td>C1. I liked seeing other students’ interaction with material I posted in the wiki</td>
<td>3.56 (±1.10)</td>
<td>385</td>
</tr>
<tr>
<td>C2. Use of the wiki for the assignment helped me interact more with students</td>
<td>3.64 (±1.11)</td>
<td>381</td>
</tr>
<tr>
<td>C3. Because of using the wiki, my group was able to come to a consensus faster</td>
<td>3.61 (±1.10)</td>
<td>385</td>
</tr>
<tr>
<td>C4. I learned more because of information posted by other students’ in the wiki</td>
<td>3.63 (±1.11)</td>
<td>381</td>
</tr>
<tr>
<td>C5. Use of the wiki promoted collaborative learning</td>
<td>3.73 (±1.09)</td>
<td>383</td>
</tr>
</tbody>
</table>

● Student A: “it is easier to communicate [via wiki] with one another”
Technology

<table>
<thead>
<tr>
<th>Statements regarding the wiki technology</th>
<th>Mean (SD)</th>
<th>Sample Size</th>
</tr>
</thead>
<tbody>
<tr>
<td>D1. The wiki interface and features were overall easy to understand</td>
<td>3.93 (±0.98)</td>
<td>386</td>
</tr>
<tr>
<td>D2. Benefits of using the wiki outweighed any technical challenges of its use</td>
<td>3.52 (±1.17)</td>
<td>384</td>
</tr>
<tr>
<td>D3. Browsing/editing information in the wiki was easy</td>
<td>3.84 (±1.09)</td>
<td>386</td>
</tr>
<tr>
<td>D4. Compared to other online discussion board, the wiki was easier to</td>
<td>3.59 (±1.21)</td>
<td>384</td>
</tr>
<tr>
<td>D5. Technical features in the wiki helped enhance my learning</td>
<td>3.76 (±1.07)</td>
<td>385</td>
</tr>
</tbody>
</table>

Students found that the online working platform allowed them to work on their projects “anytime and anywhere” in a simultaneous manner.
Study 2: Sample of students’ English collaborative writing on wiki

Paragraph 5

I am Simon. I am studying in Kwun Tong Primary School. I live in Kwun Tong. I like doing archery with my mum because she likes doing archery, too. Mum and I sometimes doing archery form Lei Yue Mun Park. I like doing archery because it is exciting. Also, I like going mountain biking in Sha Tin. I take a bus to go there about 1 hour. I usually go mountain biking with my family. I like going mountain biking because it is challenging.

Comments made on grammar by various students and the corresponding revisions made by the group on their writing (indicated with words in red and green)
Peer Learning

“If we use Google Sites as the collaborative platform, we get to read the pieces of writing from other classes, exchange views and comment on our classmates’ work. If we write on paper, we can only read a few pieces.”

After reading his classmate’s work, a student wrote “Your writing is good but I do not [understand] the meaning of truthful”.

The writer responded, “truthful means honest.”
This research project is being carried out at a local secondary school, with F.1 and F.2 students.

The aim is to assess whether the use of wiki will facilitate students’ co-construction of their Liberal Studies group project works.

Scaffolding students’ development of plagiarism awareness and anti-plagiarism skills
Study 3a: Research setting

- Target: F.1 and F.2 students
- Number of sample (for the study of using wiki to facilitate co-construction): 238
  - Form 1 students: 95
  - Form 2 students: 143
- Format: survey
Study 3a: A survey on Google Sites
Five areas

- Area 1: Learning/Pedagogy
- Area 2: Motivation
- Area 3: Group Interaction
- Area 4: Technology
- Area 5: Knowledge management
Study 3a:
Area 1: Learning/Pedagogy

Note: The bar charts reflect the average number of students responding the questions regarding the respective areas. The scores “1.00”, “2.00”, “3.00”, “4.00” and “5.00” refer to “Strongly disagree”, “Disagree”, “Neutral”, “Agree” and “Strongly agree” respectively.
Study 3a:
Area 2: Motivation

Note: The bar charts reflect the average number of students responding the questions regarding the respective areas. The scores “1.00”, “2.00”, “3.00”, “4.00” and “5.00” refer to “Strongly disagree”, “Disagree”, “Neutral”, “Agree” and “Strongly agree” respectively.
Study 3a:
Area 3: Group Interaction

Note: The bar charts reflect the average number of students responding the questions regarding the respective areas. The scores “1.00”, “2.00”, “3.00”, “4.00” and “5.00” refer to “Strongly disagree”, “Disagree”, “Neutral”, “Agree” and “Strongly agree” respectively.
Study 3a: Area 4: Technology

Note: The bar charts reflect the average number of students responding the questions regarding the respective areas. The scores “1.00”, “2.00”, “3.00”, “4.00” and “5.00” refer to “Strongly disagree”, “Disagree”, “Neutral”, “Agree” and “Strongly agree” respectively.
Study 3a: Area 5: Knowledge management

Note: The bar charts reflect the average number of students responding the questions regarding the respective areas. The scores “1.00”, “2.00”, “3.00”, “4.00” and “5.00” refer to “Strongly disagree”, “Disagree”, “Neutral”, “Agree” and “Strongly agree” respectively.
Study 3b: Plagiarism in a HK secondary school

- The project aimed to understand the degree of plagiarism among junior secondary school students

Methodology

- Conduct plagiarism check
  - Evaluate the plagiarism levels of 15 Form 1 student group projects by an online free plagiarism checker, Small SEO Tools (http://www.smallseotools.com/plagiarism-checker/)

- Interview a teacher and 30 students
Study 3b: Plagiarism in a HK secondary school

- Research Questions
  - To what extent do the secondary school students understand the behavior of plagiarism?
    - Why do the students do poorly in avoiding plagiarism?
    - What are the secondary school students’ perspectives on plagiarism?
  - What have the teachers done in supporting their students to avoid plagiarism?
# Study 3b: 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</td>
</tr>
<tr>
<td>Level 2</td>
<td>Minor</td>
<td>• Copy a block of text from the student’s previous work</td>
</tr>
<tr>
<td></td>
<td></td>
<td>or</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Copy a block of text of <strong>less 40 words</strong> from others’ sources without any citation</td>
</tr>
<tr>
<td>Level 3</td>
<td>Moderate</td>
<td>• Copy a block of text of <strong>over 40 words</strong> from others’ sources without any citation, but</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Give references at the end of the work</td>
</tr>
<tr>
<td></td>
<td></td>
<td>or</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Give references in form of an attachment</td>
</tr>
<tr>
<td>Level 4</td>
<td>Serious</td>
<td>• Copy a block of text of <strong>over 40 words</strong> from others’ sources without any citation</td>
</tr>
</tbody>
</table>

**Remark:** APA Publication Manual suggest to give a quotation for copying a block of text of 40 or more words. (APA, 2009: p.171)
Study 3b: Online Plagiarism Check

- Serious
- None
- Minor
- Moderate
Why do the students do poorly in avoiding plagiarism?

- Most students have insufficient knowledge to identify which situation is plagiarism.
- They have not received any training regarding citation in their Primary School.
- They did not know:
  - how to do the citation in a proper way
  - how to do paraphrasing
Study 3b: Causes of Plagiarism: Teacher’s Perspective

- Why do the students do poorly in avoiding plagiarism?
  - Most students have not received any education regarding “Plagiarism” in Primary School
  - “Avoiding plagiarism” is not clearly stated in the project guideline; students paid less attention
Study 3c: Scaffolding students’ development of plagiarism awareness and anti-plagiarism skills

- Teach students information literacy and proper citation skills
- Assist students to make proper citations with a citation tool
- Check students’ work with an online plagiarism checker
Study 3c: Developing students’ information literacy with information literacy exercise – 1

Instructions:
1. Formulate your research topic.
2. Identify the keywords for research in your topic.
3. Finding books:
   Go to the electronic library of your school or Hong Kong Public Libraries to find books that are related to your research topic and record the searching steps and results.
4. Finding online magazine/online newspaper articles:
   Use either e.library or other search engines/databases to find e-magazine and online newspaper articles related to your research topic.
5. Finding freely available web sources:
   Using Google or any other search engines to find freely available web sources (e.g., from universities, governments) that are related to your research topic.
6. Using the Citation Machine (http://citationmachine.net/index2.php):
   Write down the search results for at least 2 books, 2 online newspaper or magazine articles, and 2 freely available web sources found in APA format. Use the reference tool Citation Machine to help citing your sources: “nd read the guidelines in English” or Chinese3 for further instructions.

1. Formulate your research topic:
   Example: 香港青少年自殺的調查
   Your research topic: 香港青少年自殺的調查

2. Identify the keywords for research in your topic: (Can be synonyms or related terms)
   Example:
   - 少年
   - 青年
   - 自殺
   - 香港
   Your keywords for the research topic:
   - 少年
   - 青年
   - 自殺
   - 香港

3. Finding books:
   Go to the electronic library of your school or Hong Kong Public Libraries to find books that are related to your research topic and record the searching steps and results.
3.1 Record your search steps:
   Example:
   - Use the Hong Kong public library website
   - Search “Advanced Search”
   - Select “Advanced Search”
   - Select “has all of these words” and enter search terms as follows:

   Any Field: 有這四個字
   Any Field: 有這四個字
   Any Field: 有這四個字
   Any Field: 有這四個字

   25 results are found

3.2 Record down at least 2 search results in APA format:
   Example:
   莫羅風（2005）。〈跨越明天：防治青少年自殺手冊〉。香港：香港心理衛生會。

3.1 Record your search steps:
1. Use the Hong Kong public library website.
2. Select “Advanced Search”.
3. Select “has all of these words”.
4. Search 少年．

3.2 Record down at least 2 search results in APA format:
1. 《少年的積極與治癒》/建議與建議，(2003).
2. 少年自殺障礙：夢想伴的壓力／治療的希望，

---

3 Your whole group should work on steps 1 and 2 together. For steps 3-6, each student needs to work on them alone.
4 How to Cite Electronic Database Sources (http://www.montgomerycollege.edu/library/citingdatabases.pdf)
Study 3c: Developing students’ information literacy with information literacy exercise – 2

4. Finding online magazine / online newspaper articles:
Find online magazine or online newspaper articles by using eLibrary or other search engines.
4.1 Record your search steps:
Example:
• Go to the Hong Kong Public Library website (http://www.hkpl.gov.hk/index.html)
• Select “Collections” (on top left).
• Under “Electronic Resources”, select “Web Access to e-Resources”
• Select “e-library curriculum Edition”
• Click “Accept and LogIn” (enter library card number and password or last 4 digits of telephone no.)
• In “Advanced Search”, construct a search with the below settings and enter the keywords: 
  News outside
  Data Range: [ ]
  Start: Any Month Any Day 2012
  End: Any Month Any Day 2012
  Reading level [ ]

4.2 Record down at least 3 search results in APA format, for example:
Newspaper:

Magazine:

4.1 Record your search steps:

4.2 Record down at least 2 search results in APA format (1 for online magazine and 1 for online newspaper):

5. Finding freely available web sources:
Using Google or other search engines, find freely available web sources that are related to your research topic.
5.1 Record your search steps:
Example:
• Search engine: Google Search (www.google.com.hk)
• Click [ ] (on top right) and go to “Advanced Search”. Configure the search as shown below:

5.2 Record down at least 2 search results in APA format by using the citation machine:
Example:

5.1 Record your search steps:

5.2 Record down at least 2 search results in APA format by using the citation machine:
Study 3c: Citation Machine
http://citationmachine.net/index2.php

We've decided to start this all again, and move into a new design a little more slowly. I am going to leave my mail buttons up so that if you should encounter any irregularities, please send me a note.
Study 3c: Citation Machine
http://citationmachine.net/index2.php

- Fill in information
- “Press” MAKE CITATION.
Study 3c: Citation Machine
http://citationmachine.net/index2.php

- List out the citation reference
Study 3c: Applying an online plagiarism checker

Small SEO Tools: http://www.smallseotools.com/plagiarism-checker/

Note: Clicking on the ad will open a new window with your favorite ad block software to be uninstalled.
Study 3c: An example of using Small SEO Tools

In this example, a paragraph is extracted from Wikipedia
My book on 21st century skills education

For the e-version, please visit:

http://web.edu.hku.hk/academic_staff.php?staffId=samchu
Study 4: Reading ability development with gamification

- Newly awarded project
  - Period: May 2013 - Feb 2016
  - Funding Body: HK Quality Education Fund
  - Funding amount: HK$2.86 million
  - Project Title: Strengthening students’ reading comprehension ability (both Chinese and English) through developing children’s literature e-quiz bank on cloud
  - Target beneficiaries: primary school students

- What does it mean by gamification?
- Why does it work?
Study 4: Project Goals

- enhance reading interest and strengthen reading comprehension ability
- scaffold students’ reading experience through an engaging, fun, and interactive e-quiz cloud service called the “Reading Battle” in 9 primary schools
- the 2nd phase of implementation is open to all other primary schools in HK (also welcome schools outside HK)
Study 4: Sample quiz

Colourful Coral Reefs

What does the picture below show?

- a. Flowers in the sea
- b. Sea anemones
- c. Sponges
- d. Eels

Confirm
Study 4: Instant feedback and prompts

Colourful Coral Reefs

What does the picture below show?

- a. Flowers in the sea
- b. Sea anemones
- c. Sponges
- d. Eels

Student can make one more attempt.
Study 4: Scaffolding support

What does the picture below show?

- a. A type of animals. ✔️
- b. A piece of plastics
- c. A group of eels
- d. A type of plants

Explanation: Sponges are animals that look like plants.
Study 4: Winning e-badges
### Study 4: Top scorers

#### Ranking

<table>
<thead>
<tr>
<th>Name</th>
<th>Class</th>
<th>School</th>
<th>Total Score</th>
<th>Completed Books</th>
<th>Average Score</th>
</tr>
</thead>
<tbody>
<tr>
<td>施璟成</td>
<td>P4D</td>
<td>Ho Lap Primary School</td>
<td>7446</td>
<td>81</td>
<td>92</td>
</tr>
<tr>
<td>余德政</td>
<td>P4D</td>
<td>Ho Lap Primary School</td>
<td>5273</td>
<td>75</td>
<td>70</td>
</tr>
<tr>
<td>黄溢僖</td>
<td>P4W</td>
<td>CCC HEEP WOH PRIMARY SCHOOL</td>
<td>4733</td>
<td>54</td>
<td>88</td>
</tr>
<tr>
<td>莫凯?</td>
<td>P4D</td>
<td>Ho Lap Primary School</td>
<td>3868</td>
<td>54</td>
<td>72</td>
</tr>
<tr>
<td>朱浩衡</td>
<td>P4D</td>
<td>Ho Lap Primary School</td>
<td>3825</td>
<td>55</td>
<td>70</td>
</tr>
<tr>
<td>程灏文</td>
<td>P4B</td>
<td>King's College Old Boys' Association Primary School No.2</td>
<td>3442</td>
<td>44</td>
<td>78</td>
</tr>
<tr>
<td>陈嘉昊</td>
<td>P4D</td>
<td>Ho Lap Primary School</td>
<td>2912</td>
<td>38</td>
<td>77</td>
</tr>
</tbody>
</table>
Presentation outline

- What are 21st century skills
- Why are 21st century skills important?
- Teaching strategies that foster students’ 21st century skills development
  - Inquiry project based learning
  - Collaborative teaching approach
  - Use of social media technologies
  - Gamification
- Practical guides for implementing the strategies
- Assessment for 21st century skills (digital literacy)
Implementing the strategies
- The Integrated Teaching Timetable at P4 level

The Integrated Teaching Timetable for P4 (1st term)

<table>
<thead>
<tr>
<th>Week</th>
<th>General Studies</th>
<th>Library Lesson</th>
<th>Language (Chinese)</th>
<th>Computer Studies</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td></td>
<td></td>
<td>Reading Comprehension Assessment 1 (Narrative)</td>
<td>Chinese Input Methods</td>
</tr>
<tr>
<td>2</td>
<td></td>
<td></td>
<td>Reading Comprehension Assessment 2 (Expository)</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td></td>
<td></td>
<td>Writing Assessment 1</td>
<td></td>
</tr>
<tr>
<td>4</td>
<td></td>
<td></td>
<td>Library search and web searching strategies and skills</td>
<td>Literacy training 1</td>
</tr>
<tr>
<td>5</td>
<td></td>
<td>WiseNews</td>
<td>Self-reflection 1</td>
<td>Excel</td>
</tr>
<tr>
<td>6</td>
<td></td>
<td>Media education</td>
<td>Literacy training 2</td>
<td></td>
</tr>
<tr>
<td>7</td>
<td></td>
<td>Information Literacy Assignment 1</td>
<td>Self-reflection 2</td>
<td>PowerPoint</td>
</tr>
<tr>
<td>8</td>
<td></td>
<td>(Students collecting information)</td>
<td>Literacy training 3</td>
<td></td>
</tr>
<tr>
<td>9</td>
<td></td>
<td></td>
<td>Self-reflection 3</td>
<td></td>
</tr>
<tr>
<td>10</td>
<td></td>
<td></td>
<td>Date analysis and writing up the report</td>
<td></td>
</tr>
<tr>
<td>11</td>
<td></td>
<td></td>
<td>Oral presentations (e.g., PowerPoint, drama, or video production)</td>
<td></td>
</tr>
<tr>
<td>12</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

The Integrated Teaching Timetable for P4 (2nd term)

<table>
<thead>
<tr>
<th>Week</th>
<th>General Studies</th>
<th>Library Lesson</th>
<th>Language (Chinese)</th>
<th>Computer Studies</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td></td>
<td></td>
<td>Reading Comprehension Assessment 3</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td></td>
<td></td>
<td>Reading Comprehension Assessment 4</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td></td>
<td></td>
<td>Writing Assessment 2</td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>Library lessons (School librarians are encouraged to design the teaching content according to their students' abilities and needs)</td>
<td></td>
<td>Literacy training 4</td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>KWL; SW=1H; Mind-mapping</td>
<td></td>
<td>Self-reflection 4</td>
<td>Excel</td>
</tr>
<tr>
<td>6</td>
<td>Groupings, topic chosen and information collection</td>
<td>Information Literacy Assignment 2</td>
<td>Self-reflection 5</td>
<td>PowerPoint</td>
</tr>
<tr>
<td>7</td>
<td>(Information collection)</td>
<td></td>
<td>Literacy training 6</td>
<td></td>
</tr>
<tr>
<td>8</td>
<td></td>
<td></td>
<td>Self-reflection 6</td>
<td></td>
</tr>
<tr>
<td>9</td>
<td></td>
<td></td>
<td>Information analysis</td>
<td></td>
</tr>
<tr>
<td>10</td>
<td></td>
<td></td>
<td>(Information collection)</td>
<td></td>
</tr>
<tr>
<td>11</td>
<td></td>
<td></td>
<td>Information analysis and writing up the report</td>
<td></td>
</tr>
<tr>
<td>12</td>
<td></td>
<td></td>
<td>Oral Presentations</td>
<td></td>
</tr>
</tbody>
</table>
## Implementing the strategies
- Roles of different subject teachers and the school librarian at P4 level

<table>
<thead>
<tr>
<th>GS Teachers</th>
<th>Language (Chinese) Teachers</th>
<th>Computer Studies Teachers</th>
<th>School Librarian</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Assist students in mastering their subject knowledge</td>
<td>• Facilitate the enhancement of students’ reading comprehension and writing abilities</td>
<td>• Equip students with IT skills</td>
<td>• Facilitate students’ development of information literacy skills (e.g., the ability to evaluate the usefulness of a piece of information)</td>
</tr>
<tr>
<td>• Facilitate students’ development of their research, social, communication, and presentation skills</td>
<td>• Give constructive feedback to students on their writing through the assessment of various writing tasks</td>
<td>• Provide training on Chinese input methods and the use of Excel and PowerPoint</td>
<td>• Ensure students’ access to a variety of information sources such as books, news clips and web sources that would address a variety of students’ needs</td>
</tr>
<tr>
<td>• Monitor and give constructive feedback on students’ questioning skills</td>
<td>• Provide students with reading passages that are related to the GS topics</td>
<td>• Train students to effectively use technology (presentation software such as PowerPoint) as a tool to enhance their presentation skills</td>
<td>•</td>
</tr>
<tr>
<td>• Teach students how to evaluate the relevance of information sources</td>
<td>• Develop students’ oral presentation skills by maximizing opportunities for students to use GS topics in their practice for oral presentations</td>
<td>•</td>
<td></td>
</tr>
<tr>
<td>• Assess students’ presentation using PowerPoint or other means such as staging a drama</td>
<td>• Foster students’ critical thinking skills through the implementation of peer evaluations</td>
<td>•</td>
<td></td>
</tr>
<tr>
<td>• Reinforce students’ ability to reflect by asking them to do a reflection on wiki upon project completion</td>
<td></td>
<td>•</td>
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</tr>
<tr>
<td></td>
<td></td>
<td>•</td>
<td></td>
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<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Implementing the strategies
- The Integrated Teaching Timetable at P5 level

The Integrated Teaching Timetable for P5 (1st term)

<table>
<thead>
<tr>
<th>Week</th>
<th>General Studies</th>
<th>Library Lesson</th>
<th>English</th>
<th>Chinese</th>
<th>Computer Studies</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Reading Comprehension Assessment 1 (Expository + Narrative)</td>
</tr>
<tr>
<td>2</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Writing Assessment 1</td>
</tr>
<tr>
<td>3</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Literacy training 1</td>
</tr>
<tr>
<td>4</td>
<td>KWL; 5W=1H;</td>
<td></td>
<td></td>
<td></td>
<td>Literacy training 2</td>
</tr>
<tr>
<td>5</td>
<td>Mind-mapping;</td>
<td>A review of</td>
<td></td>
<td>Use of wiki (e.g., Google Sites, PBworks)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Self-reflection 1</td>
<td>strategies and</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>skills for</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>library and</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>web searching</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>(optional)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>6</td>
<td>Grouping, topic selection and information collection</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>7</td>
<td>Information collection and uploading the references onto the wiki</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>8</td>
<td>Self-reflection 2 (Optional)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>9</td>
<td>Information analysis and report writing</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>10</td>
<td>Oral presentations (Students are encouraged to make their presentations using wiki)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>11</td>
<td>Organizing an exhibition for students’ parents, students in junior forms and the community (optional)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>12</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>13</td>
<td>Self-reflection 3</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

The Integrated Teaching Timetable for P5 (2nd term)

<table>
<thead>
<tr>
<th>Week</th>
<th>General Studies</th>
<th>English</th>
<th>Library Lesson</th>
<th>Chinese</th>
<th>Computer Studies</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td>Reading Comprehension Assessment 2</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td></td>
<td></td>
<td>Use of wiki (e.g., Google Sites, PBworks)</td>
<td>Writing Assessment 2</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td></td>
<td></td>
<td>WiseNews; Library catalog search; Web searching skills (searching for English resources)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>4</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5</td>
<td></td>
<td></td>
<td>English reading and writing assessment 3 (Pre-test)</td>
<td>Teachers can decide on the content according to students’ ability</td>
<td></td>
</tr>
<tr>
<td>6</td>
<td></td>
<td></td>
<td>Self-reflection 1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>7</td>
<td></td>
<td></td>
<td>Collaborative Writing on wiki</td>
<td></td>
<td></td>
</tr>
<tr>
<td>8</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>9</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>10</td>
<td></td>
<td></td>
<td>Self-reflection 2</td>
<td></td>
<td></td>
</tr>
<tr>
<td>11</td>
<td></td>
<td></td>
<td>English reading and writing assessment (Post-test)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
## Implementing the strategies
- Roles of different subject teachers and the school librarian at P5 level

<table>
<thead>
<tr>
<th>GS Teachers</th>
<th>Language Teachers (Chinese: [C]; English: [E])</th>
<th>Computer Studies Teachers</th>
<th>The School Librarian</th>
</tr>
</thead>
<tbody>
<tr>
<td>Guide students in mastering their subject knowledge</td>
<td>Facilitate the development of students’ reading comprehension and writing skills [C+E]</td>
<td>Equip students with IT skills (e.g., wiki)</td>
<td>Facilitate students’ development of information literacy skills (e.g., the ability to evaluate the usefulness of a piece of information)</td>
</tr>
<tr>
<td>Facilitate students’ development of research, social and communication, and presentation skills</td>
<td>Give students constructive feedback on their writing via assessment of various written tasks [C+E]</td>
<td>Provide training on Chinese input methods, Excel, PowerPoint and wiki</td>
<td>Provide students with access to a variety of information sources such as a block loan of books from public libraries, news clips and web resources, depending on their needs</td>
</tr>
<tr>
<td>Monitor students and give constructive feedback on questioning skills, credibility of information sources and appropriateness of presentation materials via assessment of their presentation using PowerPoint or wiki</td>
<td>Provide students with passages related to the GS topics to reinforce their learning [E]</td>
<td>Enhance students’ presentation skills through the effective use of presentation software (e.g., PowerPoint and Excel)</td>
<td>Equip students with the knowledge of citing different types of sources appropriately</td>
</tr>
<tr>
<td>Reinforce students’ ability to reflect by requiring them to do a reflection on wiki upon project completion</td>
<td>Encourage students to practice collaborative writing through group work [C+E]</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Foster students’ critical thinking skill via implementation of peer evaluations</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Presentation outline

- What are 21st century skills
- Why are 21st century skills important?
- Teaching strategies that foster students’ 21st century skills development
  - Inquiry project based learning
  - Collaborative teaching approach
  - Use of social media technologies
  - Gamification
- Practical guides for implementing the strategies
- Assessment for 21st century skills (digital literacy)
Assessment for 21st century skills - the Information Literacy Assessment (ILA)

- Modified from the Tool for Real-Time Assessment of Information Literacy Skills (TRAILS)
  - Translated into Chinese
  - Modified according to local context
- 14 questions assessing the information literacy level of students in five aspects
  - Develop Topic
  - Identify potential sources
  - Develop, use, and revise search strategies
  - Evaluate sources and information
  - Recognize how to use information responsibly, ethically, and legally
Assessment for 21st century skills
- the Information Literacy Assessment (ILA)

1. If you write an essay to introduce a religion, which one would not be included in the essay?
   A. World population
   B. Countries where the religion is found
   C. Customs and holidays
   D. Religious symbols

2. The main topic of the essay should not be too general; you need to select appropriate topics. Please select the appropriate topics from the following options:
   A. Outer space
   B. Planets

3. Why are you not recommending the materials you are referring to?
   A. You have not referred to the materials of the author's opinion
   B. Do you already have materials you have referred to
   C. Other people can check the materials you refer to
   D. Tell the readers where to buy the materials you refer to

4. When searching for information, you need to use the Google search engine. Before you enter “children obesity” for the search, you should first search for which website?
   A. “Healthy Adults” — www.healthyliving.org — health information for adults
   C. “Children’s health” — www.kidshealth.org — topics related to children’s health
   D. “Food for Life” — www.foodgoodforyou.com — health and dietary guidelines

5. If you want to search for a book, you should try the following categories:
   A. Title search
   B. Author search
   C. Subject search

6. Your friend asks you to download the latest songs from this website, you can download the copyright-protected songs. If you download the copyright-protected songs from this website, which copyright law would you violate?
   A. Copyright (Right of privacy)
   B. Copyright (Copyright)