

# Information Literacy Framework for Hong Kong: Building the capacity of learning to learn in the information age



Education and Manpower Bureau

# Information Literacy Framework for Hong Kong Students

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## Membership of the Information Literacy Framework Working Group

The Membership from 1 September 2004 to 28 February 2005 was as follows:

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# Chapter 1 Introduction

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## 1.1 Background

The 21<sup>st</sup> century is the beginning of a new era when knowledge can influence power. Of those who can construct knowledge from information sources, they are the ones who will, by and large, have the competitive edge to be successful over others at school, work or life. Knowledge construction is often seen as a process of inquiry in which students are engaged in searching, comprehending, organising, synthesising and evaluating information; articulating, reflecting upon and rectifying their thoughts; and negotiating meanings with others. Such inquiry process thus demands students to possess a wide range of skills which can be developed through independent, collaborative, life-wide and life-long learning. In this regard, the “Learning to Learn” curriculum reform document (Curriculum Development Council 2001) has already outlined a set of overarching principles to empower students to master such life-long skills that can be used beyond their classroom:

*‘Our overarching principle is to help students learn to learn, which involves developing their independent learning capabilities leading to whole-person development and life-long learning.’*

*‘Life-wide learning offers learning opportunities conducive to whole-person development. It offers learning in real contexts, and experimental learning that cannot be provided by classroom learning...’*

## 1.2 The Internet and its New Dimensions

With billions of websites relating to millions of topic areas, the question lies on how one finds, processes and rejects particular information relevant to the task given. Without knowing how to do so, knowledge will never be constructed. The Information Age has spawned the Internet as a primary tool for people to search for information. However, the Internet is not a thinking machine and that effective searches rely entirely on the searchers themselves (Laverty, C. 1997). The Information Technology Learning Targets (Curriculum Development Council 2000) states that:

‘After completing secondary 7, students should select and apply appropriate IT tools in different aspects of study, such as collecting and analyzing information, problem solving, as well as decision making.’

Very often, the information from the Internet comes to searchers in unfiltered formats through multimedia such as graphical, aural and textual. For many searchers who are at the beginner levels, to find relevant and accurate information involves only typing a word or two into a search engine. This raises the questions about its authenticity, validity and reliability because anyone can publish information on cyberspace without editorial or expert review as opposed to the traditional print reference materials.

Copyright issues can also be raised due to the ease of the “copy and paste” functions that allow the searchers to use one’s work and presenting it as their own without acknowledging that author. Relevant laws on copyright may, therefore, be violated as a result of effective but mindless acts from the searchers. The EMB believes that students should be aware of the intellectual property rights and copyright in using information from others and realize privacy issues possibly involved in accessing information via computer networks (Curriculum Development Council 2000).

### **1.3 Characteristics of the Information Process**

Knowledge construction is facilitated by means of processing information. The process can be defined as (Chandler A.N. 1998):

*‘a problem-solving process which involves decision-making, as well as critical and creative thinking. Learners are active and in control of the learning while engaged in developing a set of skills and strategies for the planning, gathering, interacting with, organizing, creating, sharing and evaluating of information.’*

As its name implies, one of the characteristics is that it is a process. This means that it involves a particular method of interacting with different things at the same time, where one finished step is required before the next step can be progressed. This information process can be described as developmental. It cannot be mastered through one teaching activity or project. Students accumulate their learning experiences and then apply them in similar future situations. Information reaches out to all aspects of the teaching and learning environment and so the information process is widespread. Learning does not operate in isolation from

others. At any given time, a student will be bringing all the learning processes together for the information process.

Metacognition is also one of the characteristics of the information process. Students are expected to think about thinking on how to achieve their goals from one step to the next. Two of the components of metacognition are reflection and self-regulation. These are part of the learning to learn skills that are transferable to new learning situations, in school and out of school (Branch, J.L., & Oberg, D. 2004). The information process itself is dynamic. Students are expected to learn actively rather than being passive observers. However, learning is not linear. Students will need to revisit, reformulate and reflect on their learning.

## **1.4 What is expected from an Information Literate Person?**

An information literate person is one who knows why and how to use information for achieving the purposes throughout his/her lifetime. That person is expected to be able to build on prior knowledge on 'what I already know' and 'what I want to know' and therefore, should be able to apply their knowledge in real life contexts. But more importantly, the information literate person should be expected to act ethically by not plagiarizing another's work when presenting the research to an audience.

Changing times require changing skills. The Information Age changes the way of how we perceive and use information. Information literacy is often being recognised as essential skills for workers to survive in a knowledge-based society. It is anticipated that within 10 years approximately half of the workforce in some developed countries, such as Canada, will be employed in information-based jobs (Gauntley, T. Kerr, L. & Dotten, R. 1998). With such high numbers of people being involved in information literacy, it is essential that everyone should prepare for change that is inevitable by start planning for the future now.

# Chapter 2 Information Literacy for the 21<sup>st</sup> Century

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## 2.1 The Quest for Information Literacy

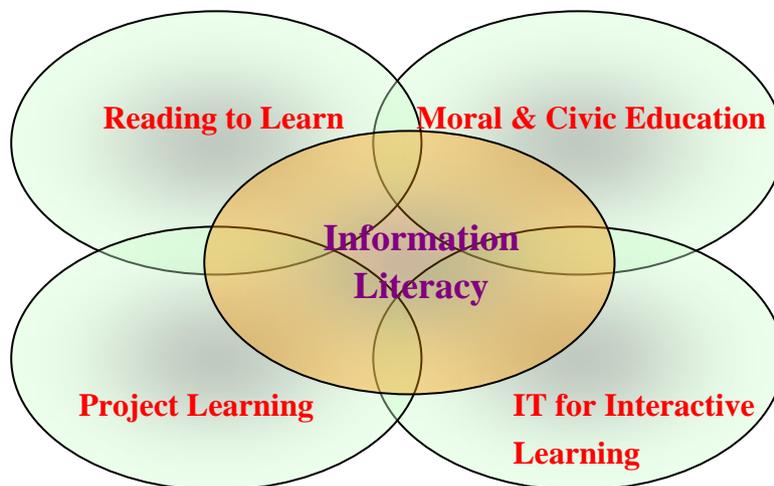
The ongoing, unprecedented growth of information and communication technology, coupled with the globalization of the economy, has created a huge challenge for education. The pursuit of information literacy in education has become widespread with the extensive pervasiveness of global networks. Information literacy education is thus seen as a way to address a growing awareness and demand for preparing students to effectively participate in the emerging global knowledge economy. Bates (2000) contend that, in order to struggle against social exclusion and to maintain competitiveness in a global economy, education must go beyond the framework of initial schooling in order to prepare and support citizens for life-long learning. In September, 2003, participants, representing 23 countries from all of the seven major continents, at the Information Literacy Meeting of Experts, organised by the US National Commission on Library and Information Science and the National Forum on Information Literacy, with the support of UNESCO, held in Prague, the Czech Republic, expounded six basic Information Literacy principles in the Prague Declaration (2003):

1. *The creation of an Information Society is key to social, cultural and economic development of nations and communities, institutions and individuals in the 21st century and beyond.*
2. *Information Literacy encompasses knowledge of one's information concerns and needs, and the ability to identify, locate, evaluate, organise and effectively create, use and communicate information to address issues or problems at hand; it is a prerequisite for participating effectively in the Information Society, and is part of the basic human right of life long learning.*
3. *Information Literacy, in conjunction with access to essential information and effective use of information and communication technologies, plays a leading role in reducing the inequities within and among countries and peoples, and in promoting tolerance and mutual understanding through information use in multicultural and multilingual contexts.*
4. *Governments should develop strong interdisciplinary programs to promote Information Literacy nationwide as a necessary step in closing the digital divide through the creation of an information literate citizenry,*

*an effective civil society and a competitive workforce.*

5. *Information Literacy is a concern to all sectors of society and should be tailored by each to its specific needs and context.*
6. *Information Literacy should be an integral part of Education of All, which can contribute critically to the achievement of the United Nations Millennium Development Goals, and respect for the Universal Declaration of Human Rights.*

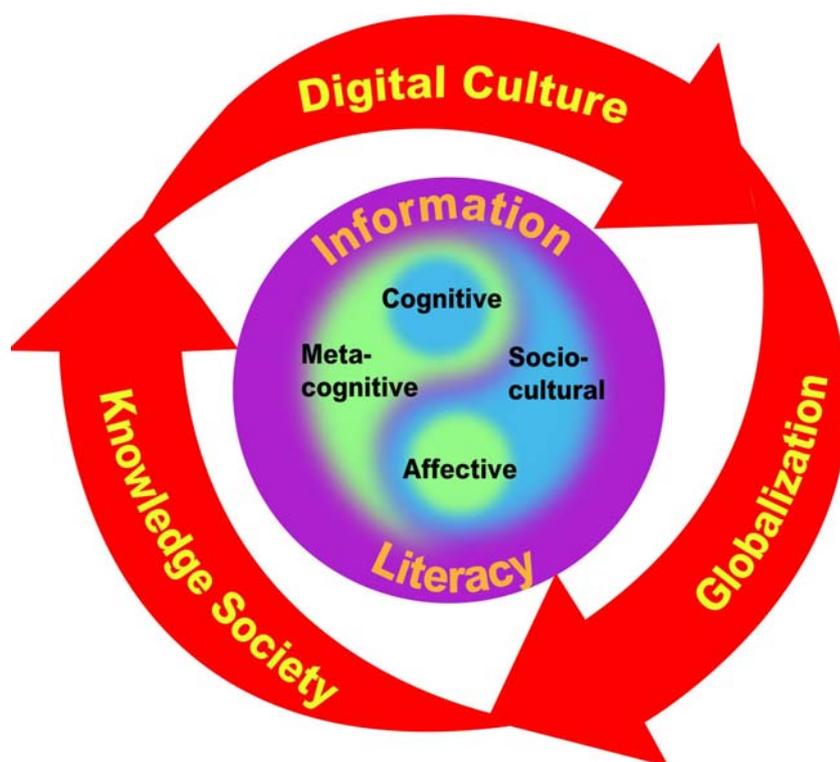
Information Literacy is conceived as part of the basic human right of lifelong learning and a vehicle for bridging the digital divide. Parallel to the current education and curriculum reforms in Hong Kong, the information literacy can therefore serve as a framework for teachers to frame learning and teaching activities pertaining to the four key tasks (CURRICULUM DEVELOPMENT COUNCIL 2001): reading to learn, project learning, IT for interactive learning and moral & civic education, in such a way that students are empowered to engage themselves critically in information processing and inquiry learning, to become more self-directed, and to assume greater autonomy and social responsibility over their own learning. In this regard, information literacy should be seen as an integral part of the entire curriculum reform initiative as illustrated in Figure 1.



**Figure 1: Relationship of Information Literacy with the Four Key Tasks.**

## 2.2 Definition of Information Literacy

The concept of information literacy has spawned a proliferation of literature in the past two decades. The notion of information literacy, emerging with the advent of information and communication technologies, has been shaping the way of how people perceive, process, use and create information. Most of the contemporary interpretations of information literacy are inextricably intertwined with lifelong learning (Candy 2002). Information literacy is deemed to be pivotal to the pursuit of both personal empowerment and economic development of a society. It is being recognised as a kind of “new economy” (O’Sullivan 2002) and lifelong learning skills essential for people to cope with the rapidly evolving changes in the era of information age. Thus, the emerging digital culture coupled with the trends in economic globalization and the needs for developing a knowledge-based society, as depicted in Figure 2, have underpinned the infusion of information literacy in education and all spheres of political, economical and social life of the twenty-first century.



**Figure 2: A conceptual model for Information Literacy**

Nevertheless, the traditional way of conceptualizing information literacy solely as either information retrieval skills or IT skills is seen as inadequate to encompass all these visions (Menou 2002). According to Sanford (2000), information literacy is a process of turning

information into meaning, understanding, and new ideas. This process would require students to understand the rationale behind using information as well as actually knowing the exact procedures of conducting the information search. Students need to ‘know-how’, but more importantly, they must first ‘know-why’. Hence, being information literate would contribute towards personal empowerment through the learning to learn principle.

In order to develop a global perspective on and deepen our understanding of the current trend in information literacy development, a set of representative information literacy frameworks developed in different regions were selected for scrutiny. A coding scheme Grounded on the analysis of the frameworks selected from SUNY<sup>1</sup>, ACRL<sup>2</sup>, AASL<sup>3</sup>, SCONUL<sup>4</sup>, AkASL<sup>5</sup>, WLMA<sup>6</sup>, ANZIIL<sup>7</sup> and JULM<sup>8</sup>, it was found that, as shown in Table 1, the information literacy standards derived from the frameworks can be classified accordingly into four key dimensions of learning: cognitive, meta-cognitive, affective and socio-cultural dimensions with respect to the coding scheme given in Figure 3.

Cognitive	Meta-cognitive	Affective	Socio-cultural
ANZIIL1, ANZIIL2, ANZIIL3, ANZIIL4, ANZIIL5, WL1, WL2, WL3, WL4, WL5, WL6, AkASL1, AkASL2, SCONUL1, SCONUL2, SCONUL3, SCONUL4, SCONUL5, SCONUL6, SCONUL7, AASL1, AASL2, AASL3, AASL4, AASL5, ACRL1, ACRL2, ACRL3, ACRL4, SUNY1, SUNY2, SUNY3, SUNY4, SUNY5, SUNY6, SUNY7, JULM1, JULM2, JULM3, JULM5, JULM6, JULM7	ANZIIL1, ANZIIL2, ANZIIL3, WL4, WL6, AkASL4, AASL1, AASL4, AASL5, ACRL1, ACRL2, ACRL3, ACRL4, SUNY1, SUNY2, SUNY9, JULM4	AkASL3, AkASL4, AASL4, AASL5, ACRL3, SUNY9	ANZIIL6, AkASL4, AkASL5, UK4, SCONUL 6, AASL3, AASL4, AASL7, AASL8, AASL9, ACRL4, ACRL5, SUNY3, SUNY7, SUNY8, JULM8

**Table 1 Classification of information literacy standards of the seven selected models.**

<sup>1</sup> State University of New York

<sup>2</sup> Association of College & Research Libraries

<sup>3</sup> American Association of School Librarians & Association for Educational Communications and Technology

<sup>4</sup> Standing Conference of National and University Libraries from United Kingdom

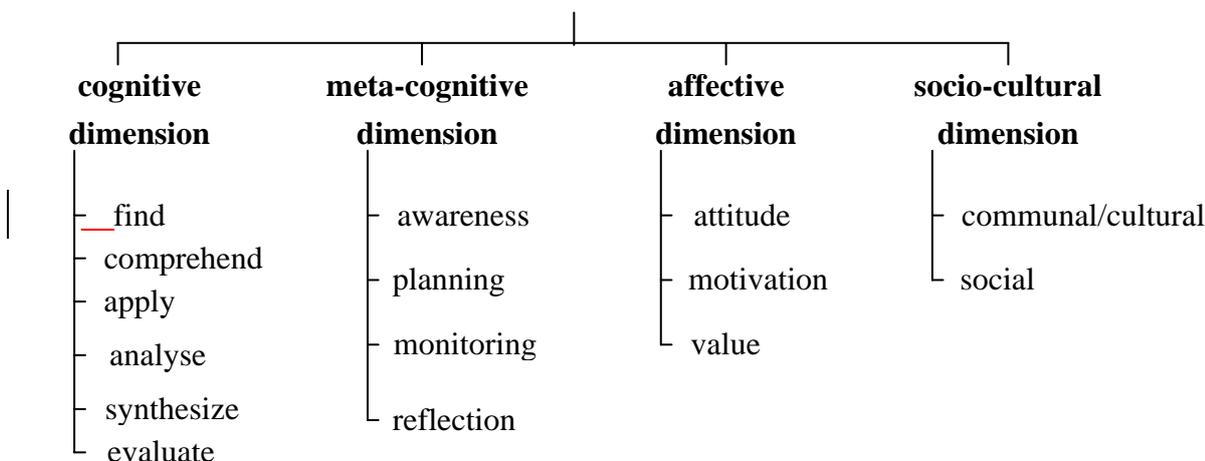
<sup>5</sup> Alaska Association of School Librarians

<sup>6</sup> Washington Library Media Association

<sup>7</sup> Australian and New Zealand Institute of Information Literacy

<sup>8</sup> Juarez University Libraries, Mexico

## Coding Scheme



**Figure 3: A coding scheme for analysing the selected models of information literacy.**

Despite the variations in scope and coverage exhibited among the selected models, most of them adopt a process-driven approach to develop students with a much wider spectrum of learning skills conducive to life-long learning. For instance, the cognitive dimension addresses the need to enable students to master the necessary skills to comprehend, locate, analyse, critically evaluate and synthesise information and apply their knowledge to inform decisions and problem solving, whilst the meta-cognitive dimension emphasises on developing students as reflective learners. To engage students in meaningful learning, learning by itself should not be divorced from its social context and student's experience. Along this vein, the affective and socio-cultural dimensions address the need to enable students to appreciate and enjoy the process of inquiry; and to empower them with greater autonomy and social responsibility over the use of information in their individual as well as collaborative learning. Thus, these four key dimensions of learning provide the theoretical underpinnings for the formulation of the entire information literacy framework.

### 2.3 Objectives of the Information Literacy Framework

Stemmed from the four key dimensions identified above, the overarching objectives of the information literacy framework are four fold:

1. To enable students to master the necessary skills to comprehend, locate, analyse, critically evaluate and synthesise information and apply their knowledge to inform decisions and problem solving;
2. To develop students as reflective learners who are able to plan, reflect upon and regulate

- their process of inquiry in a rapidly changing, information-based environment;
3. To enable students to appreciate that being an independent learner will contribute to personal growth, enjoyment and lifelong learning;
  4. To empower students with greater autonomy and social responsibility over the use of information in their individual as well as collaborative learning.

## **2.4 Information Literacy Standards**

To embrace all the aforementioned dimensions of information literacy, eleven standards and thirty-two indicators were subsequently formulated. Out of the eleven standards, four: C1, C2, C3 and C4 fall in the cognitive dimension, three: M1, M2 and M3 fall in the meta-cognitive dimension, two: A1 and A2 fall in the affective dimension whilst the other two: S1 and S2 fall in the socio-cultural dimension. Each standard is followed by a number of indicators that detail the descriptions of each corresponding standard and provide a guideline for the formulation of the expected learning outcomes of information literacy.

### **2.4.1 Cognitive dimension**

**C1. An information literate person is able to determine the extent of and locate the information needed.**

*Indicators:*

C1.1 Comprehend

An information literate person is able to:

1. frame appropriate questions based on information needs;
2. determine the nature and scope of the information needed;

C1.2 Find

An information literate person is able to:

1. identify a variety of potential sources of information;
2. develop strategies for locating information;
3. collect primary/empirical data to address the research questions;

**C2. An information literate person is able to apply information to problem-solving and decision making.**

*Indicators:*

### C2.1 Apply

An information literate person is able to:

1. apply information to inform decisions;
2. apply information in critical thinking and problem solving;

## **C3. An information literate person is able to analyse the collected information and construct new concepts or understandings**

### *Indicators:*

#### C3.1 Analyse

An information literate person is able to:

1. record, categorise and manage the information and its sources
2. critically analyze information collected;

#### C3.2 Synthesise

An information literate person is able to:

1. derive new concepts or understandings from the information collected;
2. make inferences, connections, and draws conclusions;

#### C3.3 Present

An information literate person is able to:

1. articulate and present their thoughts, ideas and feelings;

## **C4. An information literate person is able to critically evaluate information and integrate new concepts with prior knowledge.**

### *Indicators:*

#### C4.1 Evaluate

An information literate person is able to:

1. determine accuracy, relevance, and comprehensiveness of information;

#### C4.2 Integrate

An information literate person is able to:

2. assimilate new concepts into his or her knowledge base and value system;

## 2.4.2 Meta-cognitive dimension

**M1. An information literate person is able to be aware that information processing is iterative, time-consuming and demands effort.**

*Indicators:*

M1.1 Awareness

An information literate person is able to:

1. recognise that the information seeking process is evolutionary and changes during the course of investigation;
2. understand that information processing requires time, diligence, and practice;

**M2. An information literate person is able to plan and monitor the process of inquiry.**

*Indicators:*

M2.1 Planning & monitoring

An information literate person is able to:

1. decompose a complex task/problem into manageable components;
2. define a manageable focus and timeline;

**M3. An information literate person is able to reflect upon and regulate the process of inquiry.**

*Indicators:*

M3.1 Reflecting

An information literate person is able to:

1. reflect upon the inquiry process and identify areas of improvement;
2. devise strategies for revising, improving and updating self-generated knowledge;
3. review the information seeking process and revises search strategies as necessary;

## 2.4.3 Affective dimension

**A1. An information literate person is able to recognise that being an independent reader will contribute to personal enjoyment and lifelong learning.**

***Indicators:***

A 1.1 Attitude

An information literate person is able to:

1. read information for pleasure;
2. recognise and select materials appropriate to personal abilities and interests;

**A2. An information literate person is able to recognise that information processing skills and freedom of information access are pivotal to sustaining the development of a knowledge society.**

***Indicators:***

A 2.1 Motivation & Value

An information literate person is able to:

1. recognise that accurate and comprehensive information is the basis for intelligent decision making;
2. recognise that being an independent learner will contribute to lifelong learning;
3. recognise the importance of freedom of information access to a knowledge society

## **2.4.4 Socio-cultural dimension**

**S1. An information literate person is able to contribute positively to the learning community in knowledge building.**

***Indicators:***

S1.1 Communal

An information literate person is able to:

1. shares knowledge and information with others;
2. collaborate effectively in groups to pursue and construct knowledge;

**S2. An information literate person is able to understand and respect the ethical, legal, political and cultural contexts in which information is being used.**

***Indicators:***

S2.1 Social

An information literate person is able to:

1. recognise that information is underpinned by values and beliefs;
2. understand and respect the principles of equitable access to information;
3. understand and respect for the principle of intellectual freedom;
4. observe laws, regulations, institutional policies, and social etiquette related to the access and use of information resources.

## **2.5 Anticipated Learning Outcomes**

Each indicator of the IL standard entails a set of learning outcomes that detail the levels of proficiency in a particular performance area in information literacy. Levels I, II, III and IV indicate respectively the expected IL learning outcomes for students at Junior Primary, Senior Primary, Junior Secondary and Senior Secondary as shown in Appendix I. However, in light of students' abilities, teachers have the discretion to allow students to excel at a higher level other than the stipulated one. The table listed below also provide a cross comparison between the information literacy framework and the Information Technology Learning Targets (ITLT) (see Appendix II) formulated the Curriculum Development Council in 2000 (Curriculum Development Council 2000), indicating the connection and anchoring points between the two given frameworks.

# Chapter 3 Implementation

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## 3.1 Survey and Interviews

In order to solicit views from the stakeholders, a total of 15 focus group discussion sessions with each lasted for approximately 1 and a half hour, including associations in education, education bodies, IT pilot primary and secondary schools in 1998, secondary, primary and international schools were conducted during November and December 2004. The response rate of focus group discussions is 38.82%. A total of 11 groups of professional, including education, information technology, commercial and industrial, had been recruited for in-depth interviews during October, November and December 2004. Each interview lasted for approximately 1 and a half hour. A total of 3924 questionnaires were sent to 1308 primary and secondary schools in Hong Kong in December 2004 to invite participations of principals/curriculum coordinators, IT coordinators and teacher librarians of each school. The total number of questionnaires replied is 2608 and the response rate is 66.46%. In February 2005, a total of 8 consultation seminars, including 4 seminars for primary and 4 seminars for secondary, had carried out to seek advice from frontline educators about the implementation details of establishing an information literacy framework for Hong Kong students.

## 3.2 Recommendations on Assessing Students

After considering different opinions from participants in the consultation, recommendations on the nature and methods of students' assessment are derived.

On the nature of assessment, the IL assessment should be a generalized assessment method, which should be widely accepted, simple and easy to define. IL assessment should be formative and developmental as the assessment would be designed for developing the capability of learners in learning different subject disciplines, which would reflect the ultimate learning outcomes of the IL initiatives.

The assessment of IL in both cognitive and affective domains tends to measure the quality of a person. Adopting descriptive statements to describe the quality of a person will be inevitable and thus it is unavoidable that IL assessment inclined to be subjective. Although the assessment of IL is subjective in general, it can be more objective by adopting measures such as continual assessing throughout the developmental period and allow assessment by multiple assessors. Due to the subjective nature of IL assessment, the outcome of assessment

should be a concise one rather than a precise one even for summative assessment purpose. A summative assessment at the end of a key learning stage is necessary, which serves as a door for the smooth progression of a student to progress to the next key stage.

As for the methods of assessment, students could be assessed in an open assessment environment in which they would be given an open resources environment, such as the internet and library access to complete assigned tasks. Interviews in assessing the IL of students could also be conducted. Furthermore, continue assessment and multiple assessors using assessment rubrics are some appropriate elements to construct the methods of assessment. A number of teachers could participate in a number of IL assessments throughout each academic year. Teachers could assess students' attainment by marking according to the rubrics. The marks on the extremes are truncated. In this way, an objective assessment will be formed based on the subjective marks.

At an early stage, the assessment should be school-based. Whether a high-stake assessment across schools should be conducted requires further studies and investigations.

### **3.3 Recommendations on IL Implementation**

A school-based implementation of the information literacy framework should be considered. There are three proposed implementation options, namely IT/library lesson coordinating, curriculum infusion and PBL coordinating. IT/Library lesson coordinating option is to use existing IT/library lesson as a coordinating subject to implement the IL framework. Curriculum infusion option is to implement the IL framework by infusing in all curricular in basic education. PBL coordinating option is to use project-based learning across the curricular as a means. Schools could choose either ways that would be suitable for their own development. The implementation models are IT/Library lesson and curriculum infusion model, Curriculum infusion and PBL model, and IT/Library lesson and PBL model.

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# Appendix I A Matrix Depicting the Anticipated Learning Outcomes for Information Literacy

Dimension s	Standards	Indicators	Learning Outcomes							
			Level I	ITLT	Level II	ITLT	Level III	ITLT	Level IV	ITLT
Cognitive	An information literate person is able to determine the extent of and locate the information needed.	An information literate person is able to frame appropriate questions based on information needs	<ul style="list-style-type: none"> <li>➤ articulate the focus of the given research topic</li> <li>➤ have an idea of a topic from a resource</li> <li>➤ use graphic organisers to accomplish specific purposes for reading, viewing, and listening</li> <li>➤ identify the key features of what they read, hear and view</li> </ul>	Stage 1: St1.1 Sk1.1 Sk1.3	<ul style="list-style-type: none"> <li>➤ identify and clarify research inquiry</li> <li>➤ get an overview of a topic or problem from a variety of reference resources</li> <li>➤ use skimming or scanning and graphic organisers to accomplish specific purposes for reading, viewing, and listening</li> <li>➤ describe the purposes and key features of what they read, hear and view</li> </ul>	Stage 2: St2.1 Sk2.2 Sk2.4 St2.3 Sk2.3 St2.1 Sk2.4	<ul style="list-style-type: none"> <li>➤ formulate questions for research inquiry</li> <li>➤ describe and assess the strategies they use for reading, viewing, and listening for various purposes</li> <li>➤ use questioning, summarizing, skimming or scanning, and graphic organisers to accomplish specific purposes for reading, viewing, and listening</li> <li>➤ evaluate the purposes and ask the appropriate questions</li> </ul>	Stage 3: St3.1 Sk3.1	<ul style="list-style-type: none"> <li>➤ formulate and criticise own questions as essential and non-essential for research inquiry</li> <li>➤ independently develop research inquiry questions relating to specific topics or issues, with reference to purpose and audience</li> <li>➤ use questioning, predicting, summarizing, inferring, skimming or scanning, and graphic organisers to accomplish specific purposes for reading, viewing, and listening</li> <li>➤ integrate the questions into the research inquiry process</li> </ul>	Stage 5: St5.2 Sk5.1
		An information literate person is able to determine the nature and scope of the information needed	<ul style="list-style-type: none"> <li>➤ use simple mind-maps for brainstorming ideas &amp; thoughts</li> <li>➤ scan to locate and understand the given information</li> <li>➤ skim to identify simple key words</li> </ul>		<ul style="list-style-type: none"> <li>➤ construct simple mind-maps to articulate ideas &amp; thoughts</li> <li>➤ scan to locate and understand the given information</li> <li>➤ skim to identify key words and phrases</li> </ul>		<ul style="list-style-type: none"> <li>➤ construct mind-maps to frame research questions</li> <li>➤ scan to locate and understand self-selected information</li> <li>➤ skim to identify key concepts and arguments</li> </ul>	Stage 3: St3.3 At3.2 St3.2 Sk3.2	<ul style="list-style-type: none"> <li>➤ construct mind-maps to build research framework</li> <li>➤ scan to locate and understand self-selected information</li> <li>➤ skim to identify key concepts and their inter-relationships</li> </ul>	Stage 4: St4.5 Kn4.3  Stage 5: St5.2 At5.1

Dimensions	Standards	Indicators	Learning Outcomes							
			Level I	ITLT	Level II	ITLT	Level III	ITLT	Level IV	ITLT
Cognitive	An information literate person is able to determine the extent of and locate the information needed.	An information literate person is able to identify a variety of potential sources of information	<ul style="list-style-type: none"> <li>➤ bookmark relevant websites</li> <li>➤ begin to use catalogues to locate materials by call number</li> <li>➤ realise that there are different types of information (radio, TV, Internet, newspaper, books, etc.</li> <li>➤ use print and electronic media features</li> <li>➤ be aware of resources being classified within different classification systems</li> </ul>	Stage 1: St1.1 Sk1.3 St1.1 Sk1.2 St1.1 Sk1.2. St1.1 Sk1.3	<ul style="list-style-type: none"> <li>➤ organise the bookmarked websites into simple categories</li> <li>➤ use call number to locate materials</li> <li>➤ find the different types of information based on the problem</li> <li>➤ use print and electronic media features identify how resources are classified within different classification systems</li> </ul>	Stage 2: St2.1 Sk2.3	<ul style="list-style-type: none"> <li>➤ organise the bookmarked websites into a more sophisticated structure, such as a tree structure, etc.</li> <li>➤ use call number to locate materials</li> <li>➤ identify differences in purpose and coverage of different periodicals, newspapers and Internet news websites</li> <li>➤ describe and evaluate a variety of strategies for locating information in print and electronic resources, including mass media</li> <li>➤ use print and electronic media features</li> <li>➤ employ a variety of communication tools to seek information from experts</li> <li>➤ identify how resources are classified within different classification systems</li> </ul>	Stage 3: St3.1, Kn3.1 St3.3 Sk3.3	<ul style="list-style-type: none"> <li>➤ organise the bookmarked websites into a more sophisticated structure, such as a tree structure, etc.</li> <li>➤ use call number to locate materials</li> <li>➤ identify differences in purpose and coverage of different periodicals, newspapers and Internet news websites</li> <li>➤ describe and evaluate a variety of strategies for locating information in print and electronic resources, including mass media</li> <li>➤ use print and electronic media features</li> <li>➤ employ a variety of communication tools to seek information from experts</li> <li>➤ identify how resources are classified within different classification systems</li> </ul>	Stage 4: St4.1 Sk4.3

Dimensions	Standards	Indicators	Learning Outcomes							
			Level I	ITLT	Level II	ITLT	Level III	ITLT	Level IV	ITLT
Cognitive	An information literate person is able to determine the extent of and locate the information needed.	An information literate person is able to develop strategies for locating information	<ul style="list-style-type: none"> <li>➤ find reference information by using simple searching method from digital encyclopedias</li> <li>➤ use simple keywords to search for information with search engines</li> <li>➤ use simple keywords to search library catalogues</li> <li>➤ browse library shelves to locate information</li> </ul>	Stage 1: St1.2 Kn1.3 St1.1 Sk1.3 St1.1 Sk1.1 St1.1 Sk1.1	<ul style="list-style-type: none"> <li>➤ find reference information by using advanced searching method from digital encyclopedias</li> <li>➤ use keywords with logical operators to search for information with search engines</li> <li>➤ use the electronic library catalog system to conduct basic searching</li> <li>➤ use keywords with logical operators to search library catalogues</li> </ul>	Stage 2: St2.2 Sk2.3 St2.1 Sk2.3 St2.1 Sk2.3 St2.1 Sk2.3	<ul style="list-style-type: none"> <li>➤ use keywords with logical operators to search for information with search engines; sort and rank the information in search engines</li> <li>➤ use the electronic library catalog system to conduct basic &amp; advanced searching</li> <li>➤ access on-line library catalogues and electronic resources from other locations</li> </ul>	Stage 3: St3.1 Sk3.1 St3.1 Sk3.1 St3.1 Sk3.1	<ul style="list-style-type: none"> <li>➤ use keywords with logical operators to search for information with search engines; sort and rank the information in search engines using a range of strategies available in a variety of meta-search engines</li> <li>➤ use the electronic library catalog system to conduct basic &amp; advanced searching</li> <li>➤ expand the search for information beyond the school library, such as, use public libraries, use college and university libraries, access on-line library catalogues and electronic resources from other locations, etc.</li> </ul>	,Stage 4: St4.2 Sk4.3 St4.2 , Sk4.3 Stage 5: St5.2 Sk5.2
		An information literate person is able to collect primary/empirical data to address the research questions	<ul style="list-style-type: none"> <li>➤ conduct a simple survey</li> </ul>		<ul style="list-style-type: none"> <li>➤ conduct simple surveys and short interviews</li> </ul>		<ul style="list-style-type: none"> <li>➤ conduct simple surveys, short interviews and devise simple questionnaires</li> </ul>	Stage 3: St3.1 Kn3.4	<ul style="list-style-type: none"> <li>➤ conduct surveys, interviews and devise simple framework for formulating questionnaires</li> </ul>	

Dimensions	Standards	Indicators	Learning Outcomes							
			Level I	ITLT	Level II	ITLT	Level III	ITLT	Level IV	ITLT
Cognitive	An information literate person is able to apply information to problem-solving and decision making.	apply information to inform decisions	➤ make choices based on the information collected		➤ make choices based on the information collected	Stage 2: St2.3 Kn2.2	➤ make judgments and draw conclusions from research to solve problems		➤ make judgments and draw conclusions from research to solve problems	
		An information literate person is able to apply information in critical thinking and problem solving	➤ draw simple conclusion from information collected		➤ draw simple conclusion from the information collected and understand its implications		➤ draw conclusion from the information collected and apply the knowledge to solve problems of similar nature		➤ apply the knowledge learned from one context to solve problems of different nature	
	An information literate person is able to analyse the collected information and construct new concepts or understandings	An information literate person is able to record, categorise and manage the information and its sources	➤ use simple keywords or phrases to label information		➤ use multiple simple keywords or phrases to label information		➤ use multiple keywords or phrases to label information; categorise and connect the concepts derived from information	Stage 3: St3.1 Sk3.3	➤ use multiple keywords or phrases to label information; use diagrams or any graphical forms to categorise information	
			➤ identify and describe details and feelings conveyed by the information		➤ identify agreement and disagreement among sources		➤ integrate the agreement and disagreement among sources		➤ integrate the agreement and disagreement among sources	
		➤ make simple analogies to illustrate ideas		➤ make analogies to connect and illustrate ideas in a variety of formats		➤ use efficient note-taking strategies		➤ use efficient note-taking strategies		
		➤ recognise layout of the computer keyboard and know the proper method for typing for effective communication		➤ manage basic keyboarding skills for effective communication in Chinese and English medium		➤ use efficient note-taking strategies				
	An information literate person is able to critically analyze information collected	➤ arrange categories in logical order	Stage 1: St1.1 Sk1.1	➤ create simple spreadsheets and tables to organise information	Stage 2: St2.1 Sk2.1	➤ use simple graphing and statistical software such as spreadsheet to analyze data	Stage 3: St3.5 Kn3.5, At3.3	➤ create relational databases and spreadsheets and show information in a variety of ways	Stage 4: St4.1 Sk4.1 St4.2 Sk4.3	
		➤ be aware of the use of the spreadsheet to do simple "what-if" analysis		➤ use of spreadsheet to do simple "what-if" analysis	St2.1 Sk2.1	➤ use of spreadsheet to do simple "what-if" analysis	St3.2 Sk3.2	➤ use spreadsheet to do simple simulation and modelling of data		

Dimensions	Standards	Indicators	Learning Outcomes							
			Level I	ITLT	Level II	ITLT	Level III	ITLT	Level IV	ITLT
Cognitive	An information literate person is able to analyse the collected information and construct new concepts or understandings	An information literate person is able to derive new concepts or understandings from the information collected	➤ understand the use of mind-map to illustrate thoughts and ideas		➤ use simple mind-maps to illustrate thoughts and ideas		➤ use mind-maps to illustrate thoughts and ideas	Stage 3: St3.5 Kn3.3	➤ use mind-maps to illustrate thoughts and ideas	
		An information literate person is able to make inferences, connections, and draws conclusions			➤ make simple generalizations from the evidence collected		➤ make inferences and simple generalizations from the evidence collected	St3.5 Kn3.5	➤ Think critically, including formulating hypotheses and supporting arguments; ➤ make inferences and simple generalizations from the evidence collected	
		An information literate person is able to articulate and present their thoughts, ideas and feelings	➤ organise information into a sequenced presentation that includes a beginning, middle and end ➤ use word processing and simple multimedia software to present ideas ➤ present via brainstorming	Stage 1: St1.1 Sk1.1, Sk1.2	➤ organise information from a variety of sources into a structured presentation using more than one form of representation ➤ present ideas using simple information technology tools ➤ present using limited organization skills	Stage 2: St2.4 At2.4	➤ select and use a variety of information technology tools for making the presentation ➤ proficiently use a variety of technologies to facilitate and enhance representation ➤ plan, revise, and deliver written and oral presentations	St3.2 Sk3.2 St3.2 Sk3.2	➤ use a variety of communication technology to enhance the presentation ➤ proficiently use a variety of technologies and media elements to facilitate and enhance representation ➤ ensure logical and organised oral and written presentation of information	Stage 4: St4.4 Sk4.4, At4.3 St4.4 Sk4.4

Dimensions	Standards	Indicators	Learning Outcomes							
			Level I	ITLT	Level II	ITLT	Level III	ITLT	Level IV	ITLT
Cognitive	An information literate person is able to critically evaluate information and integrate new concepts with prior knowledge	An information literate person is able to determine accuracy, relevance, and comprehensiveness of information	<ul style="list-style-type: none"> <li>➤ know where to locate selected information</li> <li>➤ proof-read and revise draft</li> <li>➤ distinguish primary and secondary sources of information</li> <li>➤ evaluate the credibility and reliability of various sources</li> </ul>		<ul style="list-style-type: none"> <li>➤ describe what is known about topics or issues and check for gaps in the information available</li> <li>➤ proof-read and revise draft</li> <li>➤ distinguish primary and secondary sources of information</li> <li>➤ evaluate the credibility and reliability of various sources</li> </ul>	Stage 2: St2.4 At2.4	<ul style="list-style-type: none"> <li>➤ identify gaps in information obtained</li> <li>➤ proof-read and revise draft</li> <li>➤ distinguish primary and secondary sources of information</li> <li>➤ identify differences in purpose and coverage of different periodicals, newspapers and Internet news websites</li> </ul>	Stage 3: St3.3 Sk3.4	<ul style="list-style-type: none"> <li>➤ locate other information to fill in the identified gaps</li> <li>➤ proof-read, edit, revise and re-write the whole draft if necessary</li> <li>➤ distinguish primary and secondary sources of information</li> <li>➤ develop criteria for evaluating the accuracy, reliability and objectivity of the information found in a variety of print and electronic sources, including mass media</li> </ul>	
		An information literate person is able to assimilate new concepts into his or her knowledge base and value system	<ul style="list-style-type: none"> <li>➤ relate ideas in materials to personal knowledge and experience</li> </ul>		<ul style="list-style-type: none"> <li>➤ relate ideas in materials to personal knowledge and experience</li> </ul>		<ul style="list-style-type: none"> <li>➤ identify and explain connections between new ideas and information and their previous beliefs, values, and experiences</li> </ul>		<ul style="list-style-type: none"> <li>➤ identify and explain connections between new ideas and information and their previous beliefs, values, and experiences</li> </ul>	

Dimensions	Standards	Indicators	Learning Outcomes							
			Level I	ITLT	Level II	ITLT	Level III	ITLT	Level IV	ITLT
Meta-cognitive	An information literate person is able to be aware that information processing is iterative, time-consuming and demands effort.	An information literate person is able to recognise that the information seeking process is evolutionary and changes during the course of investigation	➤ be aware of the general principles of conducting good research		➤ be aware of the general principles of conducting good research		➤ understand general principles of conducting good research		➤ understand general principles of conducting good research	
		An information literate person is able to understand that information processing requires time, diligence, and practice	➤ be aware that a problem have different ways to solve ➤ know the research process requires time, diligence and practice		➤ be aware that a problem have different ways to solve and that other people may have different opinions on same problem ➤ know the research process requires time, diligence and practice		➤ relate other people's opinions to solving a problem ➤ recognise the importance of taking time to internalise questions and findings at all stages of the research process		➤ know how to solve a problem using different ways ➤ recognise the importance of taking time to internalise questions and findings at all stages of the research process	
	An information literate person is able to plan and monitor the process of inquiry.	An information literate person is able to decompose a complex task/problem into manageable components		➤ use simple statements to describe the purpose of the given task		➤ identify the key components for the given task ➤ priorities questions for significance, relevance and practicality		➤ identify the key components for the task; arrange the components into sequences and rankings for effectively completing the task ➤ priorities questions for significance, relevance and practicality	Stage 4: St4.2 Sk4.2 , Stage 5: St5.3 At5.2	
		An information literate person is able to define a manageable focus and timeline	➤ complete tracking sheets	➤ define the timeline for the project work ➤ complete tracking sheets		➤ define the timeline for the project work and revise it if necessary; use a variety of planning tools, including outlines, webs, flow charts, and diagrams to formulate plans ➤ complete tracking sheets; articulate the stages of the research process		➤ define the timeline for the project work and revise it if necessary; use a variety of planning tools, including outlines, webs, flow charts, and diagrams to formulate plans ➤ complete tracking sheets; articulate the stages of the research process		

Dimensions	Standards	Indicators	Learning Outcomes							
			Level I	ITLT	Level II	ITLT	Level III	ITLT	Level IV	ITLT
Meta-cognitive	An information literate person is able to reflect upon and regulate the process of inquiry.	An information literate person is able to reflect upon the inquiry process and identify areas of improvement	➤ comment on the ease and difficulty of a task	Stage 1: St1.1 Sk1.4	➤ understand the self-ability to handle the task		➤ know how to identify the flaws of the task		➤ set objectives to improve on those flaws of the task	
		An information literate person is able to devise strategies for revising, improving and updating self-generated knowledge	➤ complete simple self-evaluation charts	Stage 2: St1.2 At1.3	➤ complete simple self and peer evaluation charts		➤ complete self and peer evaluation on the research product and process by identifying strengths and weaknesses; set goals for improvement in the next research activity	Stage 3: St3.1 Kn3.1	➤ complete self and peer evaluation on the research product and process by identifying strengths and weaknesses; set goals for improvement in the next research activity	Stage 4: St4.1 Kn4.1 Stage 5: St5.1 Kn5.1
		An information literate person is able to review the information seeking process and revises search strategies as necessary	➤ be aware of the importance of self-reflection for improving learning		➤ complete learning logs and response journals ➤ compare information selected and interpreted with information needs		➤ complete learning logs and response journals ➤ compare information selected and interpreted with information needs and adjust research strategies if necessary		➤ use e-journals or e-logbooks to keep track of the research product and process ➤ suggest areas for further research	Stage 5: St5.1 Sk5.1
Affective	An information literate person is able to recognise that being an independent reader will contribute to personal enjoyment and lifelong learning	An information literate person is able to read information for pleasure					➤ appreciate and derive meaning from literature and other sources of information		➤ appreciate and derive meaning from literature and other sources of information ➤ demonstrate pride and satisfaction in creating and expressing thoughts, ideas and feelings	Stage 4: St4.1 Sk4.1 , Stage 5: St5.2 Kn5.2

Dimensions	Standards	Indicators	Learning Outcomes							
			Level I	ITLT	Level II	ITLT	Level III	ITLT	Level IV	ITLT
Affective	An information literate person is able to recognise that being an independent reader will contribute to personal enjoyment and lifelong learning	An information literate person is able to recognise and select materials appropriate to personal abilities and interests	➤ identify topics of interest and seek relevant information about them	Stage 1: St1.3, At1.1	➤ identify topics of interest and seek relevant information about them  ➤ relate literature and other creative expressions of information to personal experiences		➤ identify topics of interest and seek relevant information about them  ➤ relate literature and other creative expressions of information to personal experiences		➤ identify topics of interest and seek relevant information about them  ➤ relate literature and other creative expressions of information to personal experiences	
	An information literate person is able to recognise that information processing skills and freedom of information access are pivotal to sustaining the development of a knowledge society.	An information literate person is able to recognise that accurate and comprehensive information is the basis for intelligent decision making	➤ recognise that information can be used to make decisions	St1.3 At1.1	➤ recognise that accurate information is basic to sound decisions		➤ recognise that freedom of information access is essential to sound decisions	Stage 3: St3.1 Kn3.4, Kn3.6	➤ recognise that freedom of information access is essential to sound decisions	
		An information literate person is able to recognise that being an independent learner will contribute to lifelong learning	➤ demonstrate self-motivation for their own learning; be aware of the responsibility for their own learning  ➤ demonstrate willingness to work on given topics for independent learning	St1.3 At1.3  St1.3 At1.2	➤ demonstrate self-motivation for their own learning; assume the responsibility for their own learning  ➤ demonstrate willingness to identify and work on topics for independent learning		➤ demonstrate self-motivation for their own learning; enjoy the responsibility and autonomy of being a self-learner  ➤ demonstrate willingness to identify topics for independent learning to meet individual learning needs and interests	St3.1 Sk3.4	➤ demonstrate self-motivation for their own learning; enjoy the responsibility and autonomy of being a self-learner  ➤ demonstrate willingness to explore new topics for independent learning to meet individual learning needs and interests	Stage 4:  St4.1 Sk4.3, At4.4 , St5.2 At5.1
		An information literate person is able to recognise the importance of freedom of information access to a knowledge society	➤ recognise that freedom of information access helps people make right judgment		➤ recognise that freedom of information access inform decision making in everyday life		➤ recognise that freedom of information access inform decision making and contribute to community-wide knowledge building	St3.1 Sk3.1	➤ recognise that the freedom of information access is pivotal to intellectual, economical, political and social development of a society	

Dimensions	Standards	Indicators	Learning Outcomes							
			Level I	ITLT	Level II	ITLT	Level III	ITLT	Level IV	ITLT
Socio-cultural	An information literate person is able to contribute positively to the learning community in knowledge building.	An information literate person is able to share knowledge and information with others	<ul style="list-style-type: none"> <li>➤ discuss with peers/teachers via BBS or discussion forum</li> </ul>	Stage 2: St2.5 At2.2	<ul style="list-style-type: none"> <li>➤ collaborate and share resources with peers/teachers via BBS or discussion forum</li> </ul>	Stage 2: St2.4 At2.4 St2.4 Sk2.2	<ul style="list-style-type: none"> <li>➤ collaborate and share resources with peers/teachers via BBS or discussion forum; manage BBS or discussion forum</li> <li>➤ share information with others via limited electronic media, such as personal homepages on Internet</li> </ul>	Stage 4: St4.1 Sk4.1 , Stage 5: St5.2 Sk5.1 Stage 3: St3.4 At3.3	<ul style="list-style-type: none"> <li>➤ collaborate and share resources with peers/teachers via BBS or discussion forum; manage BBS or discussion forum; conduct an electronic conference to collect ideas from students and experts</li> <li>➤ share information with others via a range of electronic media, such as groupware, virtual learning environment, etc.</li> </ul>	Stage 4: St4.3 At4.3 St4.3 At4.3
		An information literate person is able to collaborate effectively in groups to pursue and construct knowledge	<ul style="list-style-type: none"> <li>➤ take turns speaking in a group, sharing ideas</li> <li>➤ brainstorm ideas in groups during research process</li> </ul>		<ul style="list-style-type: none"> <li>➤ listen to, acknowledge and consider different opinions for group work</li> <li>➤ brainstorm ideas and discuss on topics in groups during research process</li> </ul>		<ul style="list-style-type: none"> <li>➤ respect and accept divergent ideas and opinions expressed by classmates and others and able to resolve conflicts</li> <li>➤ use synchronous mode of communication to facilitate decision-making among group members</li> <li>➤ use informal debate strategies to explore ideas during the research process</li> </ul>		<ul style="list-style-type: none"> <li>➤ respect and accept divergent ideas and opinions expressed by classmates and others and able to manage conflicts</li> <li>➤ use synchronous mode of communication to facilitate decision-making among group members</li> <li>➤ use formal and informal debate strategies to explore ideas during the research process</li> </ul>	

Dimensions	Standards	Indicators	Learning Outcomes							
			Level I	ITLT	Level II	ITLT	Level III	ITLT	Level IV	ITLT
Socio-cultural	An information literate person is able to understand and respect the ethical, legal, political and cultural contexts in which information is being used.	An information literate person is able to recognise that information is underpinned by values and beliefs	➤ distinguish between facts and opinions		➤ distinguish between facts and opinions of different sources of information		➤ understand the socio-cultural context in which the opinions are being formulated		➤ understand the underlying socio-cultural values and beliefs behind the collected information	Stage 5: St5.3 At5.2
		An information literate person is able to understand and respect the principles of equitable access to information	➤ be aware of and observe the stipulated rules and regulations when participating in discussion groups or forums		➤ observe the stipulated rules and regulations when participating in discussion groups or forums		➤ create rules and regulations for joining electronic communication environments		➤ demonstrate a commitment to the ethical and legal use of all electronic communication environments	Stage 5: St5.3 At5.2
		An information literate person is able to understand and respect for the principle of intellectual freedom	➤ be aware of others' freedom of expression		➤ understand and respect others' freedom of expression		➤ understand and respect others' freedom of expression		➤ understand and respect others' freedom of expression	

Dimensions	Standards	Indicators	Learning Outcomes							
			Level I	ITLT	Level II	ITLT	Level III	ITLT	Level IV	ITLT
Socio-cultural	An information literate person is able to understand and respect the ethical, legal, political and cultural contexts in which information is being used.	An information literate person is able to observe laws, regulations, institutional policies, and social etiquette related to the access and use of information resources.	<ul style="list-style-type: none"> <li>➤ be aware of the importance of information security</li> <li>➤ understand what is unethical information, such as pornography and information provoking violence</li> <li>➤ describe where the information source originated; be aware of the ideas of intellectual property rights</li> </ul>		<ul style="list-style-type: none"> <li>➤ be aware of a variety of solutions to protect information</li> <li>➤ identify unethical information</li> <li>➤ respect and acknowledge the ownership of the information source; be aware of the laws governing intellectual property rights</li> </ul>	Stage 2: St2.5 At2.1	<ul style="list-style-type: none"> <li>➤ recognise the potential risks related to Internet activities and be aware of a variety of solutions to protect information such as anti-virus software and encryption technologies</li> <li>➤ identify unethical information; use information ethically</li> <li>➤ respect and acknowledge the ownership of the information source and understand different standards of citations; be aware of the laws governing intellectual property rights and privacy</li> </ul>	Stage 3: St3.5 Kn3.5 St3.5 At3.3 St3.5 At3.3	<ul style="list-style-type: none"> <li>➤ recognise the potential risks related to Internet activities and be aware of a variety of solutions to protect information such as anti-virus software and encryption technologies</li> <li>➤ identify unethical information; use information ethically</li> <li>➤ respect the ownership of the information source and use one of the standards of citations e.g. APA and MLA, etc.; be aware of the laws governing intellectual property rights and privacy; respect institutional policies for proper use of and access to information</li> </ul>	Stage 5: St5.3 At5.2

# Appendix II Mapping Anticipated Learning Outcomes with IT Learning Target

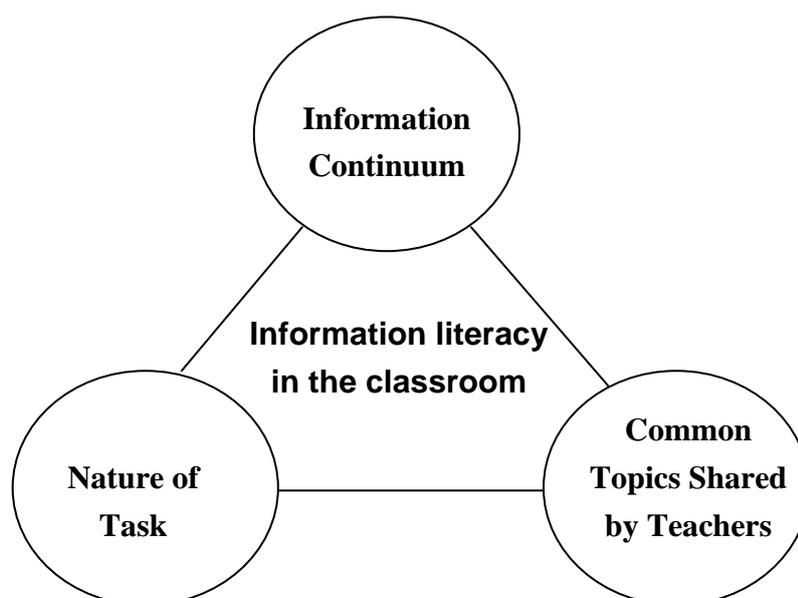
Stage	Stage Targets (St)	Knowledge (Kn)	Skills (Sk)	Attitude (At)
I P.1-P.3	St1.1 Know how to operate computer and related devices	Kn1.1 Name common IT tools available in schools	Sk1.1 Operate computers in schools	At1.1 Develop interest and positive attitude in using IT
	St1.2 Aware that IT are commonly used in daily life	Kn1.2 Be aware of the functions of these IT tools	Sk1.2 Input Chinese Characters with a handwriting recognition device	At1.2 Work cooperatively with peers in classrooms
	St1.3 Demonstrate an interest in using IT as learning tools	Kn1.3 Name some examples of using IT in daily life.	Sk1.3 Use multimedia resources to support learning with the help of teachers Sk1.4 Communicate and handle information with IT tools in learning activities	At1.3 Act appropriately in using IT
II P.4-P.6	St2.1 Use IT tools to support learning	Kn2.1 Name some common applications of IT using appropriate and accurate terminology	Sk2.1 Use a number of software packages for word-processing, calculation, image-processing, and other learning activities	At2.1 Be aware of intellectual property rights, copyright and privacy
	St2.2 Access information via computer networks	Kn2.2 Be aware of issue related to using IT in information processing	Sk2.2 Input Chinese characters with a handwriting recognition device and with the aid of a Chinese input method	At2.2 Be aware of indecent elements in computer network and other media
	St2.3 Develop simple techniques in information processing		Sk2.3 Access information via computer networks and other media	At2.3 Recognise the need for protecting oneself in using the internet
	St2.4 Develop communication skills to facilitate cooperative learning		Sk2.4 Process information using IT tools	At2.4 Willing to share perspectives with peers
	St2.5 Demonstrate concern about various issues involved in IT usage			

Stage	Stage Targets (St)	Knowledge (Kn)	Skills (Sk)	Attitude (At)
III S.1-S.3	St3.1 Use IT tools in information processing and learning	Kn3.1 Understand the usage of various IT tools and resources in information processing and learning	Sk3.1 Use appropriate IT tools to facilitate learning	At3.1 Demonstrate interest in emerging IT tools and their usage
	St3.2 Develop the capability to process and present information	Kn3.2 Identify the applications of IT in daily life	Sk3.2 Use IT tools and strategies for processing and presenting information	At3.2 Realise the importance of accurate and reliable information
	St3.3 Demonstrate the ability to verify and evaluate the accuracy and reliability of information	Kn3.3 Understand legal and ethical issues related to using IT	Sk 3.3 Communicate with others via electronic mail	At3.3 Beware of the legal, social and ethical responsibility in using IT
	St3.4 Working collaboratively with peers in project assignments	Kn3.4 Be aware of the impact of IT on the society	Sk3.4 Verify and evaluate the accuracy and reliability of information	At3.4 Participate actively in project assignments
	St3.5 Behave ethically in applying IT in information processing	Kn3.5 Know how to protect oneself in using Internet Kn3.6 Have a basic idea on Chinese computing		
IV S.4-S.5	St4.1 Develop the ability to select and use appropriate IT tools to support further study and lifelong learning	Kn4.1 Understand and compare the function of a variety of IT tools	Sk4.1 Improve self productivity	At4.1 Be responsible in using information
	St4.2 Demonstrate the ability to understand and analyze information	Kn4.2 Know the social implication of improper use of information	Sk4.2 Compare the effectiveness of various ways, including the use of IT tools, to solve a given problem	At4.2 Demonstrate an initiative to cope with the technological development
	St4.3 Share information on the internet	Kn4.3 Recognise legal responsibility in using information	Sk4.3 Use and analyze information	At4.3 Be willing to share information with different people in different places on the internet
	St4.4 Reflect on the use of IT by oneself and others		Sk4.4 Produce multimedia presentation	At4.4 Have a critical mind in using information
	St4.5 Demonstrate a will to be responsible in using information			
V S.6-S.7	St5.1 Become frequent and sophisticated IT users in future studies and work	Kn5.1 Understand the positive and negative impact of widespread use of IT and the effect of IT in specific fields of study	Sk5.1 Integrate the uses of a wide range of IT tools to fulfil specific purposes	At5.1 Actively explore the usage of emerging IT tools
	St5.2 Generalise the experiences of using IT and employ appropriate IT tools for specific purposes	Kn5.2 Identify the capabilities and limitations of emerging IT tools and evaluate the effectiveness of applying these tools	Sk5.2 Select and apply appropriate IT tools in different aspects of study, such as collecting and analyzing information, problem solving and decision making	At5.2 Advocate legal, social and ethical responsibility regarding the use of information and IT tools
	St5.3 Evaluate critically the usefulness of emerging IT tools			

# Appendix III Exemplar

## 3.1 Information Literacy in the Classroom

When implementing the information literacy elements of teaching into the classroom, the teacher will need to consider the following three factors:



### 1. Information Continuum

The teacher will need to consider how much guidance (s)he shall give to the students for conducting a research according to an information continuum. This is related to what students of different education levels are expected to be able to achieve.

Generally speaking, students at the lower levels of education (i.e. primary 1) will be more dependent on the teacher's guidance to conduct a research than students of higher levels of education (i.e. secondary 7) at the different stages of the information process. In other words, the higher the levels of education, the more student directed becomes. For instance:

<b>Information Process Stage</b>	<b>Primary 1 (Teacher Directed)</b>	<b>Secondary 7 (Student Directed)</b>
1. Initiating a task	Teacher helps students develop	Students develop research

	and organise questions to guide research.	questions.
2. Gathering information	Teacher helps students find a variety of appropriate and accessible sources of information.	Students find their own variety of appropriate and accessible sources of information.
3. Exploring information	Teacher helps students to distinguish between fact and opinion.	Students distinguish between fact and opinion, and between hypothesis and generalization.
4. Organising information	Teacher provides a format to record simple bibliographic information.	Students record information needed for bibliography, footnotes and direct quotes, according to standard form.
5. Creating new information	Teacher helps students combine information to answer research questions.	Students formulate alternative answers or recommendations to research questions.
6. Sharing & Presenting information	Students present information to a partner or small group within the class.	Students present to individuals or groups within or out of the school.
7. Assessing & Evaluating	Teacher and students reflect on the complete research process, noting areas of strength for improvement.	Students reflect on the complete research process, noting specific ideas for transfer to other situations.

## **2. Nature of the Task**

The common misconceptions about the information processing model are that the stages follow a linear pattern and that the *sharing and presenting information* stage has the greatest emphasis over the other stages because the end product is easier to assess by the teacher.

Depending on the nature of the task, the teacher is not bound to follow the model's linear structure and that other stages of the model may have greater importance over the presentation stage at different points in time. For example:

Subject	Task	Possible order of approaching the task	Stage emphasis
Chinese Language	Debates on <i>economic welfare have priority over environmental protection.</i>	<p><b><u>Before the debate</u></b></p> <ol style="list-style-type: none"> <li>1. Initiating a task</li> <li>2. Gathering information</li> <li>3. Exploring information</li> <li>4. Organising information</li> <li>5. Assessing &amp; Evaluating</li> </ol> <p><b><u>During the debate</u></b></p> <ol style="list-style-type: none"> <li>6. Sharing &amp; Presenting information</li> <li>7. Gathering information</li> <li>8. Exploring information</li> <li>9. Creating new information</li> <li>10. Sharing &amp; Presenting information</li> </ol> <p><b><u>After the debate</u></b></p> <ol style="list-style-type: none"> <li>11. Assessing &amp; Evaluating</li> </ol>	<p>Gathering informing</p> <p>Sharing &amp; Presenting information</p> <p>Assessing &amp; Evaluating</p>

### **3. Common Topics Shared By Teachers**

Traditionally, there are different teachers for different subjects. When teaching in the classroom, every teacher has a different focus which tends to be their field of expertise. For example, a mathematics teacher may choose a topic which has no relation to a topic chosen by a languages teacher. As a result, the knowledge constructed by the students is often diverse and isolated when considering school education as a whole.

Cohesion between different subject teachers is required for determining common topics for the students. By doing so, this will allow students to think analytically of essentially the same issue but from multiple perspectives. This is an objective of

implementing the information literacy elements of teaching into the classroom. For example:

### **“Hong Kong, My Home”**

<b>Subject</b>	<b>Area of Research</b>	<b>Research Question</b>
Chinese Language	Debate	Does economic welfare have priority over environmental protection?
Mathematics	Measurements and ratios	Which are the 10 tallest buildings in Hong Kong?
Economic and Public Affairs	Transport management	What are the procedures for driving a vehicle lawfully in Hong Kong?

## **3.2 Exemplar 1**

### **Hong Kong, My Home**

**Topic: Hong Kong, My Home**  
**Area of research: Transport Management**  
**Education level: Secondary**  
**Subject: Economic and Public Affairs**

### **1. Initiating a Task**

**(a) Identify an area of research**

Teacher can set out the topic area for the students to investigate, e.g. Hong Kong, my home – transport management.

**(b) Suggest question for investigation**

Students can decide on their research questions under the topic of transport management with or without teacher supervision, e.g.

*‘What are the procedures for driving a vehicle lawfully in Hong Kong?’*

**(c) Decide what information is needed to complete the investigation**

Students are to search the Internet for information.

**(d) Identify audience and presentation format**

Students are to share their researched information with the teacher and other classmates via PowerPoint display.

**(e) Establish evaluation criteria**

Teacher is to assess students and also students are to assess themselves.

## **2. Gathering Information**

### **(a) Finding relevant information sources related to the investigation**

Internet websites such as the Hong Kong Government's would address issues concerning transport and law.

<http://www.info.gov.hk>

### **(b) Identify and select sources of information**

One approach to the research question is to research on the driving licence application procedures. The Transport Department's homepage would be the most appropriate.

<http://www.info.gov.hk/td/>

### **(c) Locate the individual sources**

The section of *Licences and Permits* within the Transport Department provides information that relates specifically to driving in Hong Kong.

[http://www.info.gov.hk/td/eng/services/lp\\_menu\\_index.html](http://www.info.gov.hk/td/eng/services/lp_menu_index.html)

### **(d) Find information within sources**

To find out the application procedures for the driving licence, the section on *Vehicle and Driving Licences* provides the details and downloadable application forms.

[http://www.info.gov.hk/td/eng/services/lp\\_menu\\_index.html](http://www.info.gov.hk/td/eng/services/lp_menu_index.html)

## **3. Exploring Information**

### **(a) Establish a focus for inquiry**

Identify the requirements and details for applying a driving licence.

[http://www.info.gov.hk/td/eng/services/lp\\_menu\\_index.html](http://www.info.gov.hk/td/eng/services/lp_menu_index.html)

### **(b) Engage information within a source**

Download application guidelines on *How to Apply for a Driving Licence*.

[http://www.info.gov.hk/td/eng/services/drive\\_index.html](http://www.info.gov.hk/td/eng/services/drive_index.html)

**(c) Systematic scanning and organizing of data**

Browse through all the sections of [Requirements for Obtaining a Driving Licence](#); *Procedures for Obtaining a Full Driving Licence with Driving Test*; *Driving in Hong Kong for Overseas Driving Licence Holders*; *General Information on Driving Licence*; and Appendices.

**(d) Record the main idea from the source**

Take written notes to summarise all the sections, including their flow charts.

**(e) Examine, select and reject information/ideas**

Choose the sections that are particularly relevant to the research question, e.g. *Requirements for Obtaining a Driving Licence* and *Procedures for Obtaining a Full Driving Licence with Driving Test*.

[http://www.info.gov.hk/td/eng/services/drive1\\_index.html](http://www.info.gov.hk/td/eng/services/drive1_index.html)

[http://www.info.gov.hk/td/eng/services/drive2\\_index.html](http://www.info.gov.hk/td/eng/services/drive2_index.html)

#### **4. Organising Information**

**(a) Extract relevant information**

Using the *Flow Chart for Obtaining a Full Driving Licence* to search and use extracts within the section to complement each stage in the chart.

**(b) Arrange and rearrange information fragments until patterns emerge**

Begin to add sections to the flow chart which can provide a more macro picture to the research question.

**(c) Record and store information**

Complete the new flow chart which incorporates the requirements for those who are and are not qualified for applying a full driving licence; and how to apply for learner's driving licence.

**(d) Evaluate information**

The information at hand is sufficient for answering the research question. However, further research can be conducted to give more information to the audience.

### **5. Creating New Information**

**(a) Specify need for particular information**

Besides the procedures for applying a driving licence, there are other information such as ordinances that also stipulate the legality of driving in Hong Kong.

**(b) Gather information pertinent to the focused topic**

A variety of codes and guidelines to driving can be found under the *Advice to Road Users* in the Transport Department's website, e.g. drink driving, using the mobile phone whilst driving, passengers not wearing seats and so on.

[http://www.info.gov.hk/td/eng/td29\\_flash.html](http://www.info.gov.hk/td/eng/td29_flash.html)

**(c) Interpret, analyse and synthesise information collected**

Add the new information to complement the flow chart and the overall presentation.

**(d) Revise and edit**

Examine the new information for inconsistencies with the information that already answers the research question. Draw links between the new and existing information.

**(e) Review plan for research**

Students are to refer back to the information process for any significant stages that they have omitted which prove to be crucial for the research.

## **6. Sharing & Presenting Information**

### **(a) Present findings in written/oral form**

Students are to present to their classmates by using PowerPoint displays which feature flow charts and bullet points to illustrate the significant findings from the research.

### **(b) Present recommendations to audience**

Students are to draw conclusions by offering their solutions on how to drive a vehicle in Hong Kong legally and safely.

### **(c) Interact with audience**

A question time is to be allocated at the end of the presentation for the audience to discuss with the presenters about further issues arising from the research topic.

## **7. Assessing & Evaluating**

### **(a) Judge the effectiveness of end product**

The teacher is to judge the end product based on criteria such as the style of presentation, validity, reliability and so on.

### **(b) Gain feedback from wider community**

Input from the audience are to be gained for criticising and also improving the end product of whether the topic is worth further researching.

### **(c) Judge the efficiency of information research process**

Rubrics can be used to assess the components the whole process.

### **(d) More research needed before reporting?**

Review the information process of whether there was sufficient information gathered for the presentation.

(e) **Evaluate the information research process**

Criteria for every stage of the information process are to be assessed by the teacher and students for their own performances.

## Assessment Criteria for Teachers

*(Evaluation marks: 1 = Needs attention; 5 = Excellent)*

**Student Outcomes**  
**Achievement Effort**

**1. Initiating a Task**

Overall, the student has:

- |  |                          |                          |
|--|--------------------------|--------------------------|
| (a) set the research question on their own               | <input type="checkbox"/> | <input type="checkbox"/> |
| (b) understood what needs to be achieved                 | <input type="checkbox"/> | <input type="checkbox"/> |
| (c) chosen a research question that fits the curriculum  | <input type="checkbox"/> | <input type="checkbox"/> |
| (d) brainstormed for a variety of sources of information | <input type="checkbox"/> | <input type="checkbox"/> |
| (e) developed further questions to guide research        | <input type="checkbox"/> | <input type="checkbox"/> |

*Teacher comment:*

**2. Gathering Information**

Overall, the student has:

- |   |                          |                          |
|---|--------------------------|--------------------------|
| (a) found useful resources for the research question                | <input type="checkbox"/> | <input type="checkbox"/> |
| (b) generated possible search terms using subject heading lists     | <input type="checkbox"/> | <input type="checkbox"/> |
| (c) gathered sufficient information to answer the research question | <input type="checkbox"/> | <input type="checkbox"/> |
| (d) used technological equipment appropriately                      | <input type="checkbox"/> | <input type="checkbox"/> |

*Teacher comment:*

### **3. Exploring Information**

Overall, the student has:

- |   |                          |                          |
|---|--------------------------|--------------------------|
| (a) reviewed materials collected and made preliminary list of resources | <input type="checkbox"/> | <input type="checkbox"/> |
| (b) used standard location tools, e.g. computer catalogue               | <input type="checkbox"/> | <input type="checkbox"/> |
| (c) determined if information is applicable to the research question    | <input type="checkbox"/> | <input type="checkbox"/> |
| (d) considered accuracy of the source                                   | <input type="checkbox"/> | <input type="checkbox"/> |
| (e) recorded research information                                       | <input type="checkbox"/> | <input type="checkbox"/> |

*Teacher comment:*

### **4. Organising Information**

Overall, the student has:

- |   |                          |                          |
|---|--------------------------|--------------------------|
| (a) recognised the adequacy of information                          | <input type="checkbox"/> | <input type="checkbox"/> |
| (b) understood strategies of reading, such as skimming and scanning | <input type="checkbox"/> | <input type="checkbox"/> |

- |   |                          |                          |
|---|--------------------------|--------------------------|
| (c) distinguished between fact from opinion     | <input type="checkbox"/> | <input type="checkbox"/> |
| (d) compared information from different sources | <input type="checkbox"/> | <input type="checkbox"/> |

*Teacher comment:*

### **5. Creating New Information**

Overall, the student has:

- |   |                          |                          |
|---|--------------------------|--------------------------|
| (a) combined information to answer research question      | <input type="checkbox"/> | <input type="checkbox"/> |
| (b) recorded simple bibliographic information             | <input type="checkbox"/> | <input type="checkbox"/> |
| (c) generalised and stated relationships between concepts | <input type="checkbox"/> | <input type="checkbox"/> |
| (d) decided which tools would be most appropriate for use | <input type="checkbox"/> | <input type="checkbox"/> |
| (e) found results to the research question                | <input type="checkbox"/> | <input type="checkbox"/> |

*Teacher comment:*

### **6. Sharing & Presenting Information**

Overall, the student has:

- |  |                          |                          |
|--|--------------------------|--------------------------|
| (a) decided on the format of which results are presented appropriately | <input type="checkbox"/> | <input type="checkbox"/> |
| (b) followed-up enquiries raised by the audience                       | <input type="checkbox"/> | <input type="checkbox"/> |
| (c) identified the target audience                                     | <input type="checkbox"/> | <input type="checkbox"/> |

*Teacher comment:*

**7. Assessing & Evaluating**

Overall, the student has:

- |   |                          |                          |
|---|--------------------------|--------------------------|
| (a) understood what were achieved from the research assignment                | <input type="checkbox"/> | <input type="checkbox"/> |
| (b) assessed individual and group participation skills adequately             | <input type="checkbox"/> | <input type="checkbox"/> |
| (c) identified research results provide sufficient value for further research | <input type="checkbox"/> | <input type="checkbox"/> |

*Teacher comment:*

# Self-Assessment Criteria for Students

*(Evaluation marks: 1 = Needs attention; 5 = Excellent)*

**Student Outcomes**  
**Achievement Effort**

## 1. Initiating a Task

Overall, I have:

- |  |                          |                          |
|--|--------------------------|--------------------------|
| (a) identified what I really want to find out  | <input type="checkbox"/> | <input type="checkbox"/> |
| (b) defined my purpose                         | <input type="checkbox"/> | <input type="checkbox"/> |
| (c) understood why I need to find out          | <input type="checkbox"/> | <input type="checkbox"/> |
| (d) understood the key words/ideas of the task | <input type="checkbox"/> | <input type="checkbox"/> |
| (e) understood what I need to do               | <input type="checkbox"/> | <input type="checkbox"/> |

*Student comment:*

## 2. Gathering Information

Overall, I have:

- |  |                          |                          |
|--|--------------------------|--------------------------|
| (a) found the information needed                   | <input type="checkbox"/> | <input type="checkbox"/> |
| (b) understood what I already know                 | <input type="checkbox"/> | <input type="checkbox"/> |
| (c) recognized what I still need to find out       | <input type="checkbox"/> | <input type="checkbox"/> |
| (d) identified the sources and equipment can I use | <input type="checkbox"/> | <input type="checkbox"/> |

*Student comment:*

### **3. Exploring Information**

Overall, I have:

- |  |                          |                          |
|--|--------------------------|--------------------------|
| (a) identified what information I really need to use       | <input type="checkbox"/> | <input type="checkbox"/> |
| (b) omitted information that were unnecessary for the task | <input type="checkbox"/> | <input type="checkbox"/> |
| (c) understood the relevancy of information I have found   | <input type="checkbox"/> | <input type="checkbox"/> |
| (d) found credibility of the information                   | <input type="checkbox"/> | <input type="checkbox"/> |
| (e) recorded the information I need                        | <input type="checkbox"/> | <input type="checkbox"/> |

*Student comment:*

### **4. Organising Information**

Overall, I have:

- |  |                          |                          |
|--|--------------------------|--------------------------|
| (a) made best use of this information                | <input type="checkbox"/> | <input type="checkbox"/> |
| (b) recognised sufficient information for my purpose | <input type="checkbox"/> | <input type="checkbox"/> |
| (c) identified the need to use all this information  | <input type="checkbox"/> | <input type="checkbox"/> |
| (d) combined information from different sources      | <input type="checkbox"/> | <input type="checkbox"/> |

*Student comment:*

### **5. Creating New Information**

Overall, I have:

- |   |                          |                          |
|---|--------------------------|--------------------------|
| (a) addressed complex issues                    | <input type="checkbox"/> | <input type="checkbox"/> |
| (b) presented points of view backed by evidence | <input type="checkbox"/> | <input type="checkbox"/> |

- |   |                          |                          |
|---|--------------------------|--------------------------|
| (c) enhanced the impact of imaginative writing      | <input type="checkbox"/> | <input type="checkbox"/> |
| (d) used technology to serve communication purposes | <input type="checkbox"/> | <input type="checkbox"/> |
| (e) found alternative solutions/recommendations     | <input type="checkbox"/> | <input type="checkbox"/> |

*Student comment:*

**6. Sharing & Presenting Information**

Overall, I have:

- |   |                          |                          |
|---|--------------------------|--------------------------|
| (a) presented information appropriately                   | <input type="checkbox"/> | <input type="checkbox"/> |
| (b) understood what to do with this information           | <input type="checkbox"/> | <input type="checkbox"/> |
| (c) shared this information with the appropriate audience | <input type="checkbox"/> | <input type="checkbox"/> |

*Student comment:*

**7. Assessing & Evaluating**

Overall, I have:

- |   |                          |                          |
|---|--------------------------|--------------------------|
| (a) identified what I learned from this                   | <input type="checkbox"/> | <input type="checkbox"/> |
| (b) fulfilled my purpose                                  | <input type="checkbox"/> | <input type="checkbox"/> |
| (c) recognized how did I go with each step of the process | <input type="checkbox"/> | <input type="checkbox"/> |
| (d) recognized how did I go presenting the information    | <input type="checkbox"/> | <input type="checkbox"/> |
| (e) considered where do I go from here                    | <input type="checkbox"/> | <input type="checkbox"/> |

*Student comment:*

### **3.3 Exemplar 2**

**Is Bit Torrent an Angel or a Devil?**

Source from [http://res.hkbu.edu.hk/BT\\_webquest.doc](http://res.hkbu.edu.hk/BT_webquest.doc)

## 1. Introduction

There has been lengthy discussion on [Bit Torrent](#) or [Videora](#) and how they are [disrupting the entertainment industries](#), especially the lucrative business of selling DVDs. The members of the BT community do not have to pay any fees to enjoy the latest movies and pop music. These high-tech tricks address the desires that have become standard in an age of instant media gratification: the desire to watch what you want, when and how you want it. The peer-to-peer file transfer technology is undeniably an innovation to solve the bandwidth demand problem in exchanging large files, while it also creates huge intellectual property right issues. In this respect, is BT an angel or a devil? How can we cope with and make the best use of technological innovations?

## 2. Background

**Newspaper Clipping 1** (Extracted from South China Morning Post 14/1/2005)

VIVIENNE CHOW

### **Jobless man in world-first copyright arrest**

An unemployed Hong Kong man has become the first person in the world arrested for uploading three movies on to the internet using the latest Bit Torrent technology. Customs officers, who arrested the man, 38, on Wednesday at his Tuen Mun home, said he uploaded the initial seeds - data that can be used to download a movie or music - for Hollywood releases Daredevil, Red Planet and Miss Congeniality onto the newsgroup bt.newsgroup.com.hk on January 10 or 11. It was the first arrest for a taskforce set up less than a month ago to tackle Bit Torrent (BT) peer-to-peer technology, the fastest-growing system for illegal downloading. Motion Picture Association International's Greater China director of operations Sam Ho Wai-hung said details of the arrest had been sent to the association's home office in California. He said it would act as a useful reference for enforcers in western countries. Customs officers also confiscated the man's two computers, computer-related equipment and about 400 video compact discs - half with pirated movies and the rest authentic products. Assistant Commissioner (Intelligence and Investigation) William Chow Oi-tung said the arrest followed co-operation from various parties: the film industry, internet service providers and newsgroup managers. He said the taskforce, set up on December 16, had targeted seed-makers, who make the downloading possible. We have been monitoring related websites non-stop for three weeks and we

successfully tracked down this man. Mr Chow said although there was no evidence to show the arrested man had profited from uploading the movies, he had still infringed copyright laws. Secretary for Commerce, Industry and Technology John Tsang Chun-wah said he hoped the arrest would remind Hong Kong people not to commit such infringements. BT is the world's fastest-growing illegal downloading technology. Mr Ho said that last year there were more than 2,400 cases worldwide of illegal peer-to-peer file swapping - compared with just 107 in 2003 - with more than 600,000 movie files illegally downloaded. At about \$50 for a movie ticket, the total daily loss to the film industry could be up to \$30 million. Federation of Hong Kong Filmmakers vice-chairman Cheung Tung-joe welcomed the government's action against illegal downloading but said arresting end users involved technological difficulties. It's a debatable issue. For example, purchasing pirated VCDs or DVDs is not considered a criminal act, Mr Cheung said. But at least it tells young people that this ... act can destroy Hong Kong's creative industry. Mr Ho said the association had also found a few BT seeds of Stephen Chow Sing-chi's action comedy Kung Fu Hustle, but they came from Guangdong.

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### **3. Investigation**

Students are required to write a proposal to the government to describe the current situation regarding the use of P2P technologies and its impacts on the society, and to suggest recommendations to cope with the challenges envisaged.

#### **3.1 Guiding questions**

SET 1. What is BitTorrent (BT) about?

How does Peer-to-Peer technology work?

How does it differ from the traditional client/server model?

In terms of security, are there any potential threats in using BT for file uploading and downloading?

SET 2. How did people from the Custom Service Department detect or trace these illegal P2P file transfer activities?

Are there any problems in law enforcement?

What will you suggest the CSD to do in order to enhance the law enforcement?

SET 3. What are the impacts of P2P technology to the film and entertainment industries and the wider community?

In Hong Kong, are there any laws that prevent people from infringing the intellectual property right?

Do we have enough legal measures to prevent illegal P2P file transfer? Why?

SET 4. How to strive a balance between upholding the freedom of information access and protecting the intellectual property right?

Is BT an angel or devil?

How do we cope with and make the best use of technological innovations?

## **4. Implementation**

4.1 Expected content standards that students will learn in this project.

1. data transmission
2. basic principles of Internet operations
3. network security
4. intellectual property right
5. impacts of technological innovations and ways to protect ourselves in face of the advancement in technologies

4.2 Plan A (*Educational level: Secondary 3 – Secondary 4*)

.

1. The class will be divided into groups of 4 students;
2. The entire project will be divided into FOUR phases. At different phases, each group is expected to address different research questions as listed below.  
[Phase I (SET 1 questions); Phase II (SET 2 questions); Phase III (SET 3 questions) and Phase IV (SET 4 questions)];
3. Students are required to present their work at the end of Phase IV.

4.3 Plan B (*Educational level: Secondary 3 – Secondary 4*)

1. The class will be divided into groups of 4 students;

2. The entire project will be divided into TWO phases. At the first phase, each group is required to address SET 1 questions. At phase II, each group can choose to address questions from either SET 2 or SET 3 or SET4.
3. Students are required to present their work at the end of each phase.

## 5. Map the Project

*Do the tasks give all students the opportunity to demonstrate what they learned?*

Look at one major product for the project and analyze the tasks necessary to produce a high-quality product. What do students need to know and be able to do to complete the tasks successfully? How and when will they learn the necessary knowledge and skills?				
Knowledge and skills needs	have Already learned	Taught before the project	Taught during the project	acquired by students
1. components of a network				
2. data transmission				
3. basic principles of Internet operations				
4. BT and development of P2P technology				
5. Definition of copyright				
6. Impact of BT on industries				
7. Impacts of BT on information sharing				
8. Law and society				
9. knowledge society and freedom of information access				

## 6. Mapping with IL Standards

Standard	Exemplar on BT (S)
C1 An information literate person is able to determine the extent of and locate the information needed	Y
C2 An information literate person is able to apply information to problem-solving and decision making.	Y
C3 An information literate person is able to analyse the collected information and construct new concepts or understandings	Y
C4 An information literate person is able to critically evaluate information and integrate new concepts with prior knowledge.	Y
M1 An information literate person is able to be aware that information processing is iterative, time-consuming and demands effort.	Y
M2 An information literate person is able to plan and monitor the process of enquiry.	Y
M3 An information literate person is able to reflect upon and regulate the process of enquiry.	Y
A1 An information literate person is able to recognise that being an independent reader will contribute to personal enjoyment and lifelong learning.	Y
A2 An information literate person is able to recognise that information processing skills and freedom of information access are pivotal to sustaining the development of a knowledge society	Y
S1 An information literate person is able to contribute positively to the learning community in knowledge building.	Y
S2 An information literate person is able to understand and respect the moral, legal, political and cultural contexts in which information is being used.	Y

## 7. Useful Resources

### Newspaper Clippings

[http://hk.business.yahoo.com/041223/216/17vj4.html?cat=bs\\_in\\_audiovisual](http://hk.business.yahoo.com/041223/216/17vj4.html?cat=bs_in_audiovisual)

<http://latelinenews.com/ll/fanti/1344968.shtml>

[http://hk.business.yahoo.com/050113/216/18i7f.html?cat=bs\\_in\\_audiovisual](http://hk.business.yahoo.com/050113/216/18i7f.html?cat=bs_in_audiovisual)

[http://hk.business.yahoo.com/050113/216/18i7g.html?cat=bs\\_in\\_audiovisual](http://hk.business.yahoo.com/050113/216/18i7g.html?cat=bs_in_audiovisual)

**Principles of BitTorrent technology:**

<http://www.nkhc.edu.tw/2400/teacher/bowie/download/bt.htm>

<http://big5.pconline.com.cn/b5/www.pconline.com.cn/news/nw/0412/507283.html>

<http://www.bitcomet.com/doc/principle.htm>

<http://dessent.net/btfaq/>

**Lego issues related to PtoP download:**

<http://taiwan.cnet.com/news/ce/0,2000062982,20094984,00.htm>

[http://solicitor.com.hk/news\\_main.cfm?NewsID=1791](http://solicitor.com.hk/news_main.cfm?NewsID=1791)

[http://www.898.com.hk/epgs\\_vw.asp?epgID=988](http://www.898.com.hk/epgs_vw.asp?epgID=988)

**8. Plan the Assessment**

*(The following materials are adopted and modified from the rubrics produced by*

- *Buck Institute for Education BIE*  
[http://www.bie.org/pbl/pblhandbook/BIE\\_PBLrubrics.pdf](http://www.bie.org/pbl/pblhandbook/BIE_PBLrubrics.pdf) ;
- <http://www.denison.k12.ia.us/ms/courses/rain/rubric.htm> ;
- <http://www.sdcoe.k12.ca.us/score/actbank/collaborub.html>)

**Creating a rubric for accessing information**

<b>Criteria</b>	<b>limited</b>	<b>Developing</b>	<b>Proficient</b>	<b>Advanced</b>	<b>exemplary</b>
Display a strategic approach when accessing information	Searches for information randomly or without an explicit search strategy		Provides evidence of a strategic approach and describes explicit plan		Can explain and demonstrate an explicit and comprehensive search strategy appropriate for the question being addressed
Accessing a variety of information source					
Searches for a variety of perspectives.					
Uses information					

retrieval systems and technology.					
Asks appropriate questions about information access.					
Seeks assistance when needed.					

### Creating a rubric for processing information

<b>Criteria</b>	<b>limited</b>	<b>Developing</b>	<b>Proficient</b>	<b>Advanced</b>	<b>exemplary</b>
Draws connections between ideas.	Reads and records verbatim information. Does not comment on connections among ideas.		Notes and summaries show interconnections between ideas within a single source.		Notes and summaries contain insightful comments on the relationship between ideas across multiple sources
Identifies and labels Key information and ideas.					
Organizes data and ideas.					
Labels and categorizes notes.					
Interprets information.					
Summarizes information.					

### Creating a rubric for Individual Task Management

<b>Criteria</b>	<b>limited</b>	<b>Developing</b>	<b>Proficient</b>	<b>Advanced</b>	<b>exemplary</b>
Solicits and uses feedback.	Does not see the need for feedback; does not solicit or use feedback.		Uses feedback to improve performance.		Seeks out feedback and use information to improve products or performance
Sets appropriate and realistic goals.					
Works independently with minimal supervision.					
Perseveres appropriately.					
Carries out tasks carefully and diligently.					
Meets deadlines.					

## Rubric for Thinking Skills Assessments

<http://www.denison.k12.ia.us/ms/courses/rain/rubric.htm>

Criteria	limited	Proficient	Exemplary
State the problem	Showed no understanding of the underlying problem.	Showed basic understanding of the problem. no depth to statement of problem.	Clearly stated the problem and elaborated. Gave extra details or possible ramifications.
Recognize and generate multiple solutions	Generated one or no solution. Was not logical or reasonable.	Generated at least two reasonable, logical solutions.	Solutions show understanding of problem and were plausible. Student demonstrated problem solving skills.
Identify and evaluate different viewpoints	Summarized viewpoints but not able to evaluate different opinions.	Student identified viewpoints and formed an opinion based on information give.	Student identified viewpoints and formed an opinion based on information given. Student also justified their evaluation.
Flexibility	Student was unable to understand other viewpoints.	Student was able to relate to another position other than their own, but was not able to give solid reasons why.	Student was able to relate to another position other than their own and substantiated their own reasons.
Be observed applying thinking skills	Student did not participate in debate or didn't show understanding.	Student reiterated other's ideas, or put forth shallow ideas of their own.	Supports arguments in a debate making valid points, arguments, & connections.
Describe thinking that takes place in their heads	Thinking process is not clearly explained.	Described steps of thought process but did not elaborate reasons.	Clearly and logically spelled out steps of their thought process and told why.
Integrate their past knowledge	Student was unable to make the obvious comparisons.	Student made the obvious comparisons, but didn't state the more subtle.	Student's comparisons between the problem and the film were relevant and insightful.
Formulate and select solution	Reasons were not clearly stated or seemed invalid.	Reasons given were valid but needed more elaboration.	Student showed solid justification and reasoning in division of land.

# Collaboration Rubric

Source: <http://www.sdcoe.k12.ca.us/score/actbank/collaborub.html>

## 4 - Thorough Understanding

- Consistently and actively works toward group goals.
- Is sensitive to the feelings and learning needs of all group members.
- Willingly accepts and fulfills individual role within the group.
- Consistently and actively contributes knowledge, opinions, and skills.
- Values the knowledge, opinion and skills of all group members and encourages their contribution.
- Helps group identify necessary changes and encourages group action for change.

## 3 - Good Understanding

- Works toward group goals without prompting.
- Accepts and fulfills individual role within the group.
- Contributes knowledge, opinions, and skills without prompting.
- Shows sensitivity to the feelings of others.
- Willingly participates in needed changes.

## 2 - Satisfactory Understanding

- Works toward group goals with occasional prompting.
- Contributes to the group with occasional prompting.
- Shows sensitivity to the feelings of others.
- Participates in needed changes, with occasional prompting.

## 1 - Needs Improvement

- Works toward group goals only when prompted.
- Contributes to the group only when prompted.
- Needs occasional reminders to be sensitive to the feelings of others.
- Participates in needed changes when prompted and encouraged.