Study on the Characteristics of Effective Information Literacy Programs for High School Students in Japan

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As of today many schools have conducted and organized information literacy (IL) program. However, despite many programs to promote IL at schools, recent studies show that high school students still lack of IL skills (Gross & Latham, 2012; Murai, 2015). Therefore, this study aimed to examine present characteristics and issues of IL practices for students in Grades 9 through 12 by using two IL models (Guided Inquiry and PLUS model). Two studies were done to examine IL practices at two different types of schools: international high schools (Study 1) and public high schools (Study 2) in Japan because of differing IL concepts at each schools type. Based on research, most of international schools adopted IL concept defined by American Library Association (ALA) and public schools adopted 'the skill to use information effectively' defined by Ministry of Education, Culture, Sports, Science, and Technology (MEXT). In addition, the relationship between these two concepts together with 'information skills' concept by Herring was shown in this study. In study 1 web survey and questionnaire methods were utilized. Participants included teachers, teacher-librarian, and school librarian. Three case studies of IL practices at international high schools were collected; 'Independent Inquiry', 'Personal Project', and 'Extended Essay'. Results showed a good point of practice in which during the 'gather useful information' stage students utilized outside experts as main information sources in order to collect reliable information within a limited amount of time. An issue regarding the combination of stage 'build background knowledge' and stage 'exploring ideas' was found. These two stages should be divided as illustrated in the Guided Inquiry. In study 2 a questionnaire survey and face to face interview were utilized to gather data. Three cases were collected in this study; 'Media and Its Characteristics', 'What I Want to Introduce', and 'Expression and Communication' classes. Information for the case study on the 'Media and Its Characteristics' class was collected from interview session and other cases studies were collected from questionnaires. Results showed a good point regarding the evaluation by classmates activity. There is an issue regarding the limited information resources as students mainly used internet to collect data. Activities for skimming, scanning, and understanding meaning of text should also be included. Task initiation activity, using multiple resources and interviewing professionals as shown in Study 1 are recommended for future practices at public schools. The evaluation by classmates activity found in Study 2 is not a typical practice at international schools, thus it is recommended to be included in future IL practices at international schools.

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CHAPTER 1 INTRODUCTION

1.1 The Importance of Information Literacy

The amount of information and knowledge grows daily in this information age. Students are required to collect, interpret, organize, and communicate information to others. They need to be equipped with essential knowledge and skills to acquire useful and relevant information. To do that, they must distinguish between valuable information and meaningless information, which information is reliable, and at the same time must act ethically in handling and reusing the information gathered. Therefore, it is crucial for schools to promote information literacy (IL) to students. According to American Library Association (ALA), IL is defined as an ability to find, evaluate, and use information effectively (American Library Association, 1989).

IL is agreed to be important in many aspects and situations not only in daily life but also in educational settings. Because of the advancement of technology, there are many information resources available nearly everywhere accessible at any time. In the past, students used to refer to printed material or textbooks to obtain information. Nowadays, information can be obtained from many resources such as electronic books, online databases, internet news, and etcetera. Increasing amounts of new knowledge and information are also being produced. As a consequence, students need to be effective not only in seeking information, but also in using and sharing the information with others.

Additionally, IL is considered fundamental in promoting lifelong learning (American Library Association, 2007; Bundy, 2004; Ralph, 2000). Lifelong learning is a term that described by the European Employment and Labour Market Committee as "....All purposeful learning activity, whether formal or informal, undertaken on an ongoing basis with the aim of improving knowledge, skills and competence." (Commission of the European Communities, 2000). Put simply, lifelong learning is the pursuit of continuous learning to build all forms of skills and knowledge throughout a lifetime. Ralph (2000) also discussed lifelong learning, its elements, and the relation

with information literacy. Based on Ralph's paper, the links between information literacy and lifelong learning are illustrated in Figure 1.

Bruce (2004) also wrote that information literacy education is important "to transform the information society of today into the learning society of tomorrow" (Bruce, 2004). Therefore, there is a need to teach students about information literacy and to help them develop the ability throughout the learning process. As of today, many schools (outside of Japan) have conducted and organized information literacy program to ensure students are becoming information literate (American Library Association, 2016). However, despite many programs organized to promote IL at schools, recent research shows that high school students still lack many necessary IL skills (Gross & Latham, 2012; Head, 2013; Smith, Given, Julien, Ouellette, & DeLong, 2013). These studies illustrate a need to investigate the present characteristics of and issues surrounding IL practices in high schools.

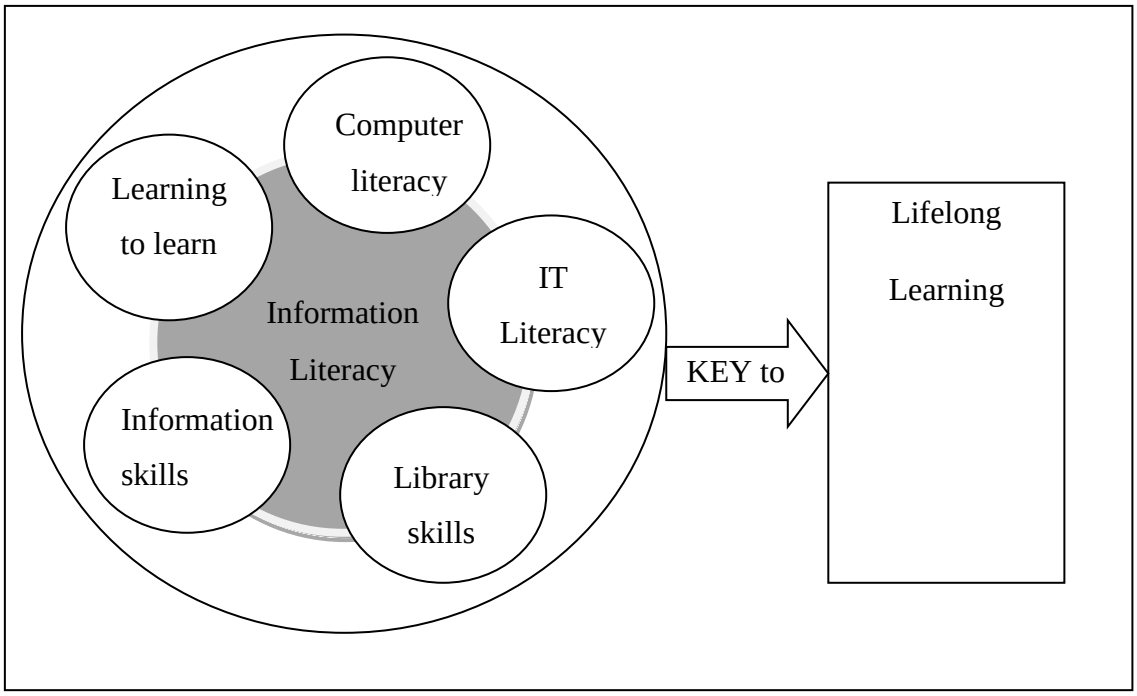

Figure 1. Key to lifelong learning by (Ralph, 2000)

The following sections in this chapter provide a review of IL concepts worldwide, the integration of IL into the high school curriculum, and an explanation of important terms used in detail.

1.2 Definitions of Information Literacy

The term IL was introduced by Paul G. Zurkowski as "techniques and skills for utilizing the wide range of information tools as well as primary sources in molding information solutions to their problems" (Zurkowski, 1974). In his report, Zurkowski suggested a national program to train citizens in the use of information tools in order to achieve information literacy within a decade. Zurkowski also used the phrase 'information literates' to indicate people "trained in the application of information resources to their work" (Zurkowski, 1974). In a simple sentence, an information literate refers to the person that possesses IL.

Kuhlthau (1987) gave a comprehensive description of IL, claiming: "It involves the ability to read and to use information essential for everyday life. It also involves recognizing an information need and seeking information to make informed decisions. Information literacy requires the abilities to manage complex masses of information generated by computers and mass media, and to learn throughout life as technical and social changes demand new skills and knowledge" (Kuhlthau, 1987). In that publication, Kuhlthau discussed the inclusion or integration of IL within the curricula at schools.

Doyle defined IL based on the results of her study, as "the ability to access, evaluate, and use information from a variety of sources" (Doyle, 1992). One of the purposes of her study was to create a comprehensive definition of IL and this final definition was based on the analysis of definitions given by a number of selected participants.

IL as a term has gone through several modification in order to ensure its definition and related concepts are relevant to the current information world. The evolution of information literacy has taken place mainly in the field of library science particularly because a library is a place that holds collections of information which can be accessed by the public. One well-known organization in the IL field, ALA had

formed a committee named ‘Presidential Committee on Information Literacy’ in 1987. One of the purposes of this committee is “to define information literacy . . . and its importance to student performance, lifelong learning, and active citizenship” (American Library Association, 1989). In that report, the ALA committee stated that “information-literate people are those who have learned how to learn. They know how to learn because they know how knowledge is organized, how to find information and how to use information in such a way that others can learn from them. They are people prepared for lifelong learning, because they can always find the information needed for any decision or task at hand.” (American Library Association, 1989). In that report also, IL is defined as an ability to find, evaluate, and use information effectively. This definition is broadly applicable for all situations and purposes, whether it be primary or secondary education, or whether it be in public or in private.

Besides the ALA, there are many other institutes, organizations and programs established to help promote IL such as the National Forum on Information Literacy (NFIL), the International Federation of Library Associations and Institutions (IFLA), the Information for All Programme (IFAP) by UNESCO, the Society of College, National and University Libraries (SCONUL), and the Chartered Institute of Library and Information Professionals (CILIP). Each one of these organizations also came up with a similar definition of IL as shown in Table 1.

Based on some of the popular definitions shown in Table 1, generally IL consists of the ability to know when there is a need to find information, the ability to identify relevant information, to locate, evaluate and, organize required information, and to effectively use and communicate the information to other members of information society. In addition to IL, there are other terms used to describe similar sets of skills and knowledge such as; ‘information skills, information competency, information fluency, research skills, information inquiry, information and communications technology skills, and information problem solving skills’ (Virkus, 2003).

Table 1. Definition of Information Literacy from several well-known organizations and institutions

Name of Organization	Definition
ALA	"IL is defined as an ability to find, evaluate, and use information effectively (American Library Association, 1989)"
NFIL	"the ability to know when there is a need for information, to be able to identify, locate, evaluate, and effectively use that information for the issue or problem at hand"("What is the NFIL?," n.d.)
UNESCO	" As derived from the Alexandria Proclamation of 2005, adopted by UNESCO's Information for All Programme (IFAP), Information Literacy is the capacity of people to recognize their information needs, locate and evaluate the quality of information, store and retrieve information, make effective and ethical use of information, and apply information to create and communicate knowledge." (Catts & Lau, 2008)
CILIP	"Information literacy is knowing when and why you need information, where to find it, and how to evaluate, use and communicate it in an ethical manner." (Armstrong, Boden, Town, Woolley, Webber, & Abell, 2005)
SCONUL	"Information Literacy is an umbrella term which encompasses concepts such as digital, visual and media literacies, academic literacy, information handling, information skills, data curation and data management"(Bent & Stubbings, 2011)

Kuhlthau (1987) also used the term 'information skills' when discussing the integration of IL within school curricula (Kuhlthau, 1987). This term refers to multiple skills needed in order for students to become information literate and can be viewed as one of the main components of IL (Carey, 1998). From the discussion of the definition of IL, it is clear that it is a broad concept comprised of many important skills, such as

thinking skills, library skills, technology skills, information skills, and so on. Details about skills included in information skills are discussed later in section 1.3.4.

It is understandable that different researchers and organizations defined IL in various ways due to the fact that the differing context of their respective discussions (Virkus, 2003). However, IL still inextricably related to information, literacy, skills, competencies, learning, and knowing. For the purposes of this study, the definition of IL by the ALA as "*an ability to find, evaluate, and use information effectively"* is used.

1.3 Models of Information Literacy

Since the 1980s many information specialists and scholars have developed models for use in teaching IL (Behrens, 1994). Many IL models were created to explain and practically implement the definition of IL mentioned in the previous section. Various models have been studied to understand the context, similarities and differences among these models, and its implementation in the educational setting. The order of the following models are determined according to the model with most comprehensive process and promotes more IL.

The following are among the famous IL models :

1. Kuhlthau's information search process (ISP) and Guided Inquiry Process
2. The SCONUL seven pillars of information literacy
3. The Big6 approach of Eisenberg and Berkowitz
4. James Herring's PLUS information skills model

Each model is explained briefly in the following subsections.

1.3.1 Kuhlthau's information search process (ISP) and Guided Inquiry Process

The ISP model was introduced by Kuhlthau in 1985 (Kuhlthau, 1991). Kuhlthau (1991) developed this model based on a series of studies investigating the common experience

of students in information seeking situations. Instead of what students should do while seeking information, this model shows what students actually do.

The model consists of three distinctive aspects: 1) feelings, 2) thoughts, and 3) actions. Feelings include uncertainty, confusion, frustration, satisfaction, and disappointment. Thoughts can be stated as vague, focused, increased in interest, or self-aware, while actions are the usual activities of seeking, exploring, or documenting information (Kuhlthau, 1991, 2004).

According to Kuhlthau, the reason why feelings and thoughts are taken into consideration is because, "The whole experience of users affects their information use, their feelings as well as their intellect, particularly in the exploring stage. By neglecting to address affective aspects, information specialists are overlooking one of the main elements driving information use" (Kuhlthau, 1991, p.370). A modified and latest version of ISP includes another stage after stage 6 called the 'Assessment' stage, which is shown in Figure 2.

The first stage in ISP is task initiation, which happens when students receive a project or are given an assignment. In this stage, students feel a strong sense of confusion and uncertainty because they lack of knowledge about the assignment and how to complete it. Next, students will move to the next stage which involves topic selection. As students start to identify the topic they should focus on, they feel optimistic about progressing to the next step. In the exploration stage, students begin to explore information relevant to their selected topic. However, as they find many information related to their topic, they start to question themselves and feel confused again. The next stage is the main phase in ISP where students begin to formulate their focus. They think, reflect, interpret, and extend their knowledge. As the students already have a strong focus, they gather information to support their focus and also to connect themselves with the information they have gathered. Once they have completed the collection stage, students need to explain their findings in an effective way. For the final stage of ISP, students will do self-evaluation where they will either feel a sense of accomplishment or disappointment based on the results obtained.

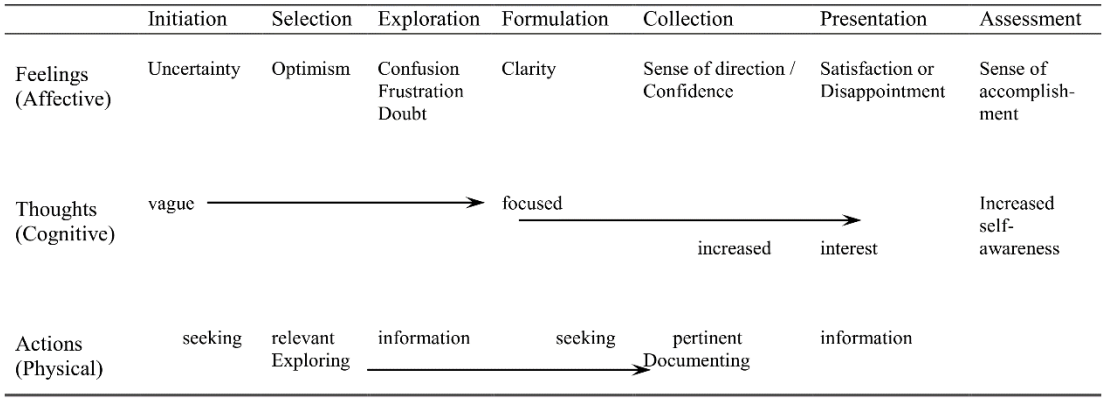

Figure 2. Model of Information Search Process (ISP) (Kuhlthau, 2004)

Table 2. Stages in ISP and phases of Guided Inquiry

What Students are doing in ISP	**STAGES of ISP**	**PHASES of GUIDED INQUIRY**
Initiating the research project	Initiation	Open
Selecting a Topic	Selection	Immerse
Exploring information	Exploration	Explore
Formulating a focus	Formulation	Identify
Collecting information on focus & seeking meaning	Collection	Gather
Preparing to present	Presentation	Create and Share
Assessing the process	Assessment	Evaluate

Note. From *Guided inquiry design: a framework for inquiry in your school*, p. 50, by Kuhlthau, Maniotes, & Caspari (2012), ABC-CLIO. Copyright 2012 by ABC-CLIO.

The ISP model describes the student experience in each stage with reference to their feelings and thoughts. Another model, the Guided Inquiry, was introduced by Kuhlthau to provide guidance for instructors' intervention to help students (Kuhlthau, Maniotes, & Caspari, 2012, 2015). This framework explains what the instructors or teachers should do in every stage to ensure students achieve the objective for that stage (Kuhlthau et al., 2015). The details of this framework are explained later in section 1.5.

1.3.2 The SCONUL Seven Pillars of Information Literacy

One of the organizations that actively promote IL, SCONUL introduced a model named the Seven Pillars of Information Literacy in 1999. This model has been implemented by many teachers and librarians in teaching information skills to students. As for current research, this model has been updated in 2011 and called a core model for higher education (Bent & Stubbings, 2011). This new model is designed in a circular shape so as to show that the 'pillars' are not part of linear process, and that one or more pillars can be developed at any one time.

These seven pillars represent the seven sets of information literacy abilities as follows (Bent & Stubbings, 2011):

1) Identify: be able to identify a personal need for information
2) Scope: can access current knowledge and identify gaps
3) Plan: can construct strategies for locating information and data
4) Gather: can locate and access the information and data they need
5) Evaluate: can review the research process and compare and evaluate information and data
6) Manage: can organize information professionally and ethically
7) Present: can apply knowledge by presenting the results of research or by synthesizing new and old information and data to create new knowledge

A brief study by SCONUL showed that this model is being implemented in higher education institutions where it provides the structure for student learning outcomes (Gallacher, 2009). In each pillar, there are two main components to be achieved by students. The 'understand' element includes attitude and behavior while the 'is able to' element is about ability. Both can be seen to emphasize learning. A detailed book entitled 'The Information Literacy User's Guide: An Open Online Textbook' was written to explain each pillar with the help of case studies and practical exercises (Bobish, Jacobson, Bernnard, Hecker, Holden, Hosier, Loney, & Bullis, 2014).

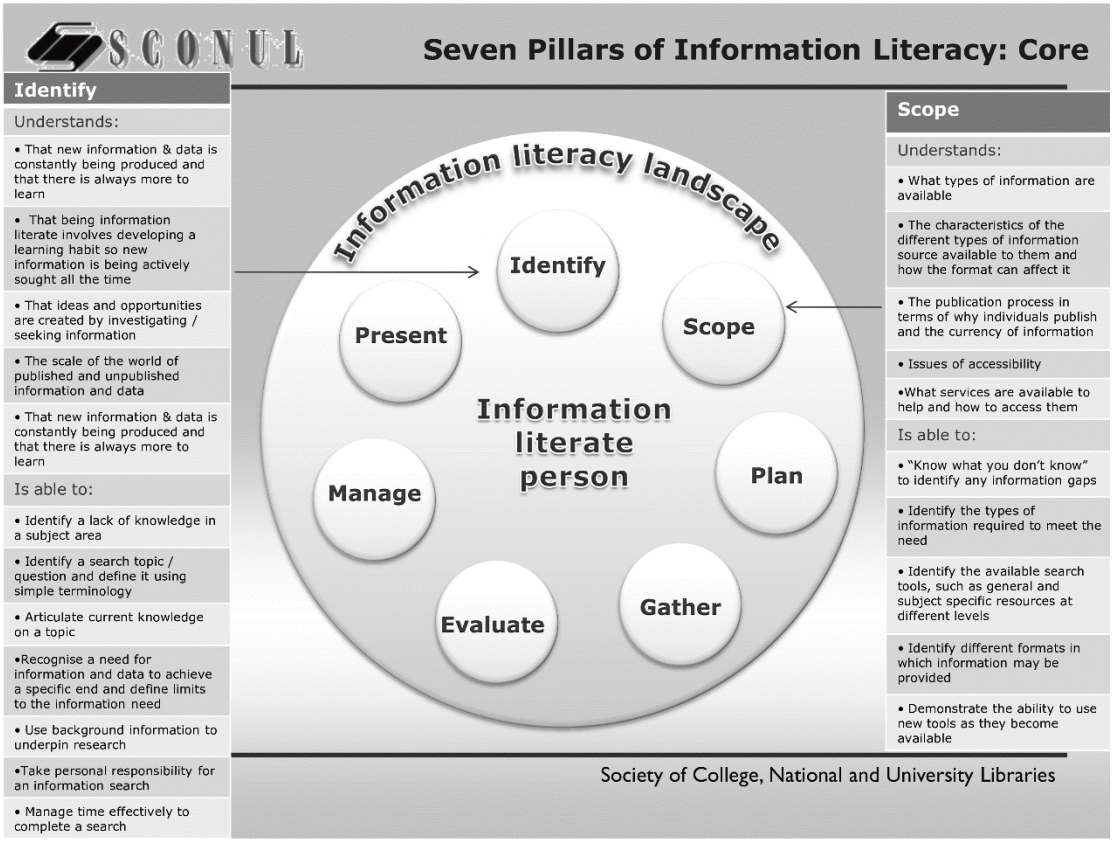

Figure 3. Example of components in Identify and Scope pillar (Bent & Stubbings, 2011)

1.3.3 The Big6 approach of Eisenberg and Berkowitz

Eisenberg, the well-known creator of Big6 defines IL as "the set of skills and knowledge that allow us to find, evaluate, and use the information we need, as well as to filter out the information we don't need" (Eisenberg, 2008, p. 39). Eisenberg and Berkowitz developed the Big6 model in 1990, which is an information problem solving approach consisting of six stages: 1) task definition, 2)information seeking strategies, 3) location and access, 4) information use, 5) synthesis, and 6) evaluation (Eisenberg & Berkowitz, 1990).

The Big6 model is a series of research processes which relate to each other so as to progress and produce a result (student work). The Big6 model starts with the task definition stage that involving recognizing when information is needed, defining the problem, and then recognizing which information is needed. In this stage students can

ask the question, “what needs to be done?” and in the end try to formulate the problem they need to answer or solve. The next stage is information seeking strategies, where students must consider all information sources and then develop a plan to find which sources are applicable to them. Students must ask “what resources can I use?” and try to explore various types of information resources. After students plan their information seeking strategies, they move on to the third stage where they locate needed information from various resources and then access interested information found within individual information resource. In this stage students repeatedly ask the question, “where can I find this resources?” and access multiple resources to gather more information. After finding useful information for their problem, students must engage in reading and viewing of the information to ensure that it is relevant and useful to them. If it is useful, they need to extract the information. In the synthesis stage, the fifth stage, based on the data and information they gathered, students organize and then communicate the results. The evaluation stage is the last stage in Big6, where students must evaluate their own work and processes they have gone through. Apart from that teachers also evaluate student work as part of this stage. Even so, students still need to evaluate their own work in order for them to realize “how will I know I did my job well?”. Because its simple and intuitive components, this model is popular and widely adopted by elementary and secondary schools globally. Table 3 summarizes the components of each stage (Eisenberg & Berkowitz, 2000).

Table 3. Stages in Big6 Model

Stage	Components
1. Task Definition	1. Define the information problem 2. Identify the information needed
2. Information Seeking Strategies	1. Determine all possible sources 2. Select the best sources
3. Location & Access	1. locate sources 2. find information within sources
4. Information Use	1. Engage in reading and viewing 2. Extract relevant information
5. Synthesis	1. Organize from multiple sources 2. Present the information
6. Evaluation	1. Judge the product (effectiveness) 2. Judge the process (efficiency)

Note. From *Teaching Information & Technology Skills: The Big6 [TM] in Secondary Schools*, Eisenberg & Berkowitz (2000). Copyright 2000 by ERIC.

1.3.4 James Herring's PLUS information skills model

The PLUS model was developed by Herring and focuses on information skills divided into four steps: 1) purpose, 2) location, 3) use, and 4) self-evaluation (Herring, 1996). Four steps in the PLUS model, summarized as in Table 4, are considered interrelated skills. Each step addresses different information skills that need to be learned by students such as reading skills, thinking skills, selecting skills, synthesizing skills, presenting skills, evaluation skills, and so on.

Table 4. Interrelated skills in PLUS model

Step	Skills
Purpose	• **cognitive skills** in identifying existing knowledge • **thinking skills** such as brainstorming or concept • **skills in identifying information resources**
Location	• **locational skills** - ability to find information in library catalogues, books, CD-ROMs and online information resources • **selection skills** - assessing the relevance of information resources • **IT skills** - using electronic sources such as the Internet
Use	• **reading skills** - ability to skim and scan information resources to find relevant information or ideas • **interactive skills** - the ability to understand what is being read, viewed or listened to and the ability to relate this to existing knowledge • **selective skills** - the ability to select the appropriate information and reject information in the context of the purpose identified for using a particular information resource • **evaluation skills** - the ability to evaluate information and ideas in relation to aspects such as the currency of the information or ideas, the author and any possible bias in the text • **recording skills** - the ability to take notes in a systematic way which relates to understanding and purpose • **synthesizing skills** - the ability to bring together related ideas, facts and information about a topic and relating this to existing knowledge • **writing or presentation skills** - the ability to write an essay or report or project in a well-structured, logically ordered manner which uses the information and ideas found to good effect
Self-evaluation	• **self-evaluation skills** - the ability to reflect on the processes involved in assignment-related work and to identify areas of improvement in the effective use of information resources in the future

Note. The data in column 'Skills' are from *Outline of the PLUS Model*, by Herring. Retrieved January 1, 2016, from http://farrer.csu.edu.au/PLUS/outline.html

1.3.5 Summary of previous information literacy models

Based on the brief descriptions of several prominent IL models in the previous subsections, the relationship between models is shown in Table 5.

As explained earlier, the PLUS model focuses on information skills that should be addressed while students complete an assignment or conduct research. Information skills consisting of specific skills needed when handling information are shown in Table 4. IL is a broad concept and consists of information skills as one of its component.

1.4 Information literacy Education at high school in Japan

In its early stages of IL development, IL was often associated with libraries and library skills. In the global educational setting, IL instruction has been taught widely in higher education, specifically at academic libraries and also at public libraries. Special university courses for new students which heavily focus on all the required skills present in IL the definition. The content of IL education is different depending on the level of education of the learner. Students at higher education are expected to have stronger and more sophisticated skills and knowledge than students in high school, for example.

Table 5. Comparison between models of IL

Kuhlthau's Guided Inquiry	Seven Pillars	Big6	PLUS model
Open	Identify	Task definition	Purpose
Immerse	Scope	Information seeking strategies	
Explore	Plan		
Identify	Identify	Location & access	Location
Gather	Gather	Use of information	Use
Create	Manage	Synthesis	
Share	Present		
Evaluate	Evaluate	Evaluation	Self-evaluation

At the high school level, IL education is integrated into the curriculum and into the content of the subjects. Because of this, how IL is taught and practiced at high schools is different according to different curricula. Besides the integration of IL in required subjects, some schools offers specific subjects to promote IL for students, while other schools organize IL-specific programs for students.

In Japan two types of schools, international schools and public schools, promote IL differently. This is because different definitions of IL are adopted by the respective school types. Most international schools have adopted the ALA definition, whereas public schools following the national curriculum treat IL in terms of 'skill to use information effectively,' a definition from Japan Ministry of Education, Science, Sports and Culture (MEXT). Figure 4 shows the relationship between these concepts. The information skills defined in Figure 4 were explained by Herring (1996) and summarized in section 1.3.4. The next sections will discuss IL practices at international schools and public schools.

1.4.1 Information Literacy Education for International High Schools in Japan

In the beginning of IL development, IL or information skills were generally associated with librarians and school libraries (Hopkins, Bell, & Edwards, 1987). However, a report by Heeks stated that since 1980s the burden of responsibility for teaching IL started to shift to teachers, and indication that IL education had long been integrated in curriculum for school (Heeks, 1989).

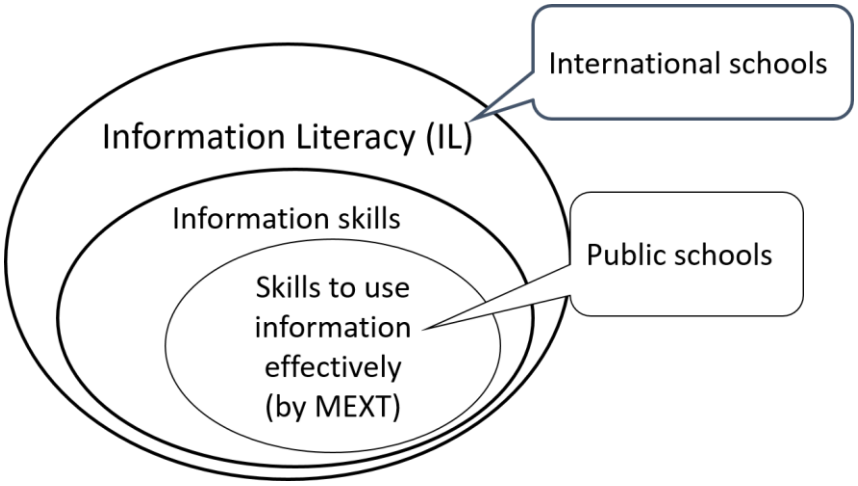

Figure 4. Information literacy, information skills, and skill to use information effectively concepts

For international schools in Japan, most of the schools apply their own country's national curriculum. Other international schools offer the combination of their own curriculum with a more generic international curricula, such as the International Baccalaureate (IB) or Advanced Placement (AP) programs. These two approaches to curricula expose students to a wide range of IL skills.

IB program for high school students are divided into two groups, the Middle Year Program (MYP) and the Diploma Program (DP) (International Baccalaureate Organization, 2005). Part of the MYP covers grades 9 and 10 while DP covers grades 11 and 12. Among the subjects offered by the MYP, Personal Project integrates IL-related content as one of the skillsets students should learn. In the DP, two core subjects contain most of the IL skills: Extended Essay and Theory of Knowledge (International Baccalaureate Organization, 2015).

The AP program's Capstone Program also integrates and promotes IL skills in its subjects as it was developed to prepare students with the required skills and ability to succeed in higher education. The AP Seminar and AP Research subjects are the two main subjects integrating IL concepts. The AP program follows Association of College & Research Libraries (ACRL) Standard of Information Literacy to ensure it successfully introduces required skills to students. In addition to the standards prepared

by the ACRL, international schools also address American Association of School Librarians (AASL) standards for IL education in their students learning outcomes.

In some schools, IL also has been promoted via group work assignments in required subjects such as Geography, Literature, and History (Sormunen & Lehtio, 2011; Sormunen, Tanni, Alamettälä, & Heinström, 2014; Togia, Korobili, Malliari, & Nitsos, 2014). In most cases, students are given a task by their teachers and asked to produce a piece of writing.

1.4.1.1 Standards of information literacy for international high schools

The AASL has been actively involved in providing guidelines regarding the integration of information literacy in school curricula. In 1998, the AASL published Information Power Building Partnerships for Learning(American Association of School Librarians & Association for Educational Communications, 1998) to specify IL standards for school. There are nine IL standards addressed, including independent learning and social responsibility elements as shown in Table 6 (American Association of School Librarians & Association for Educational Communications, 1998).

Table 6. Nine standards for information literate student

Information Literacy	
Standard 1:	The student who is information literate accesses information efficiently and effectively.
Standard 2:	The student who is information literate evaluates information critically and competently.
Standard 3:	The student who is information literate uses information accurately and creatively.
Independent Learning	
Standard 4:	The student who is an independent learner is information literate and pursues information related to personal interests.
Standard 5:	The student who is an independent learner is information literate and appreciates literature and other creative expressions of information.
Standard 6:	The student who is an independent learner is information literate and strives for excellence in information seeking and knowledge generation.
Social Responsibility	
Standard 7:	The student who contributes positively to the learning community and to society is information literate and recognizes the importance of information to a democratic society.
Standard 8:	The student who contributes positively to the learning community and to society is information literate and practices ethical behavior in regard to information and information technology.
Standard 9:	The student who contributes positively to the learning community and to society is information literate and participates effectively in groups to pursue and generate information.

Note. From *Information power: Building partnerships for learning*, by American Association of School Librarians, & Association for Educational Communications. (1998). Copyright 1998 by American Library Association.

Based on the AASL's Standards for the 21st-Century Learner (American Library Association, 2007) there are four main standards set for students:

1. Inquire, think critically, and gain knowledge. Draw conclusions, make informed decisions, apply knowledge to new situations, and create new knowledge.

2. Draw conclusions, make informed decisions, apply knowledge to new situations, and create new knowledge.
3. Share knowledge and participate ethically and productively as members of our democratic society.
4. Pursue personal and aesthetic growth.

The above standards are meant to ensure that all IL programs will successfully achieve their goals. Besides specific standards, Eisenberg mentions that library information and technology professionals discovered that information skills are integrated effectively when the skills: "1) directly relate to the content of area curriculum and to classroom assignments, and 2) are tied together in a logical and systematic information process model" (Eisenberg, Johnson, & Berkowitz, 2010).

1.4.2 Information Literacy Education at Public High Schools in Japan

The definition of IL in Japan is different than other general definitions of IL mentioned in section 1.2.

In 1998, MEXT defined information literacy as the skill to use information effectively, consisting of three sub-skills; 1) the practical capability to utilize information, 2) the scientific understanding of information, and 3) an attitude of willing participation in the information society (Ministry of Education, Culture, Sports, Science and Technology, 2011; Suzuki, 2008). Table 7 describes these three sub-skills.

Table 7. Sub-skills of the 'skill to use information effectively'

Skill	Description
The practical capability to utilize information	The ability to independently collect, judge, process, arrange, create, and express necessary information, and to transmit and convey it in accordance with the circumstances of the recipients, which also includes the ability to properly utilize information sources depending on problems and purposes.
The scientific understanding of information	Understanding of the characteristics of information sources that will be the basis of the utilization and understanding of basic theory and methods to properly handle information and assess and improve one's own ways of utilization.
An attitude of willing participation in the information society	Attitude to understand roles and influences of information and information technology in social life, consider the necessity of information morals and one's own responsibilities for information, and willingly participate in the creation of a desirable information society.

Note. From "The Vision for ICT in Education – Toward the Creation of a Learning System and Schools Suitable for the 21st Century –", Ministry of Education, Culture, Sports, Science and Technology, 2011, p. 9.

Yasuyo (2007) found that in previous decades, focus had been on computer literacy, but the present focus had shifted to information literacy. By way of illustrating this phenomenon, more classes related to information literacy are offered at the secondary level in schools.

The Japan School Library Association developed a curriculum for teaching students to be information literate in 1992, which they revised in 2003. Information courses were introduced starting in 2003 for all high school students. As of 2007, the

skills that are expected to be acquired by secondary school are listed below (School Library Association, 2004):

1. Learning and information/media
2. How to use media for learning
3. How to use information
4. How to organize and present what you retrieved

Because these Information courses served as a syllabus for teaching and learning about information at schools, there is lack of promotion for student inquiry or question formulation. Further details about the content of Information courses are explained in the next section.

1.4.2.1 Standards of information literacy at public high schools

As mentioned previously, high schools in Japan include Information courses in their curricula to address information education. The latest Information course has two required subjects, which are 'Information Study for Participating Community' and 'Information Study by Scientific Approach' (Ministry of Education, Culture, Sports, Science and Technology, 2010).

The objectives of the 'Information Study for Participating Community' subject can be divided into five parts: 1) to understand the effects of information and computerization on society, 2) the utilization of information devices and information communication networks to gather information, 3) the processing of information, 4) to develop an ability to communicate effectively the expression of information, and 5) to cultivate a positive attitude toward participation in the information society.

The objectives of the 'Information Study by Scientific Approach' subject can be divided into three parts: 1) to support the information society by understanding the role and effect of information technology, 2) to learn the scientific way of thinking in order to utilize information and information technology to discover and solve problems, and 3) to cultivate the ability and attitude to positively contribute to the development of the information society.

Both subjects were designed to cover four main contexts: information industry and society, expression and management of information, information and problem solving, and information technology. Figure 5 shows the relation between these four contexts within the two subjects.

Besides Information course, public schools in Japan also promote exploratory activities and problem-solving through the 'Period for Integrated Studies' course established in 1999 (Ministry of Education, Culture, Sports, Science and Technology, 2009). The main objective of this course is to enable students to think in their own way through inquiry study. The 'Period for Integrated Studies' course is customized for different schools, meaning that each school has different topics or subjects included within it.

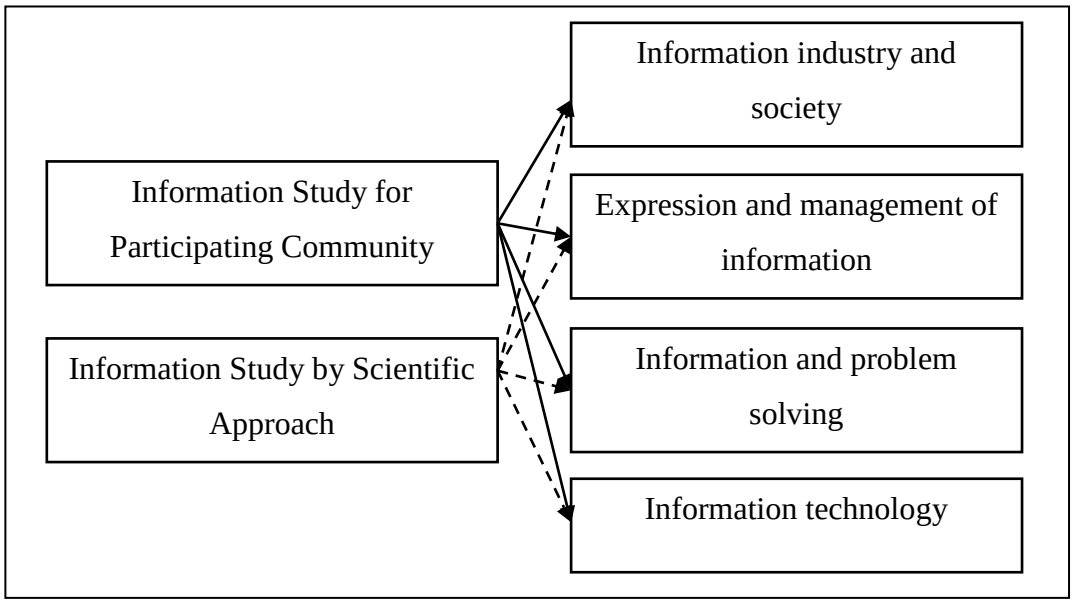

Figure 5. Contents of Information course (Ministry of Education, Culture, Sports, Science and Technology, 2010)

1.5 Framework of Analysis for Information Literacy Practices in Japan

1.5.1 Guided Inquiry Design as Framework of Analysis for Information Literacy Practices at International High Schools

Guided Inquiry is chosen as the framework of analysis for analyzing data as it consists of elaborated stages of combined perspectives for instructors and students. The stages in Guided Inquiry are divided clearly and the purposes for each stage are clearly stated. Each stage involves activities to find, select, evaluate, and use information effectively. This model covers the same IL definition adopted at most international schools discussed earlier.

Generally students at international high schools are involved in a lot of independent research and projects that incorporate IL in its content. Therefore, this model is suitable for an analysis of the practices at international high schools because it shows the whole process of students doing information search from the beginning of the formulation of their own inquiry through to the presentation of their work.

In this study, Guided Inquiry is considered an ideal process to acquire IL skills. The stages in this process are clearly divided based on each skill stated in the ALA IL definition. Thus, effective IL programs are expected to implement a model similar to the Guided Inquiry. Guided Inquiry is suitable as our framework because it reveals the teachers' perspective of the activities involved. There are eight processes or stages in Guided Inquiry that encompass all four standards. From Stage 1 until Stage 8, the processes involved address all four standards effectively and in systematic order. Figure 6 shows the eight stages in Guided Inquiry.

For easier understanding, the name of each stage was renamed to give a brief and descriptive explanation: 1) open inquiry, 2) build background knowledge, 3) exploring ideas, 4) identify inquiry question, 5) gather useful presentation, 6) create to communicate, 7) share with others, and 8) evaluate and reflect. The description for each stage is shown in Table 8.

Gathered data about IL programs from selected schools were analyzed using Guided Inquiry. The ideal IL program consists of all stages addressed in Guided Inquiry,

but in some cases, good programs also only include or address some stages. Depending on their purposes, some programs are conducted to focus on several stages and not all stages (Lundh, Francke, & Sundin, 2015). Such programs also can be considered good programs if their goals or objectives are successfully achieved.

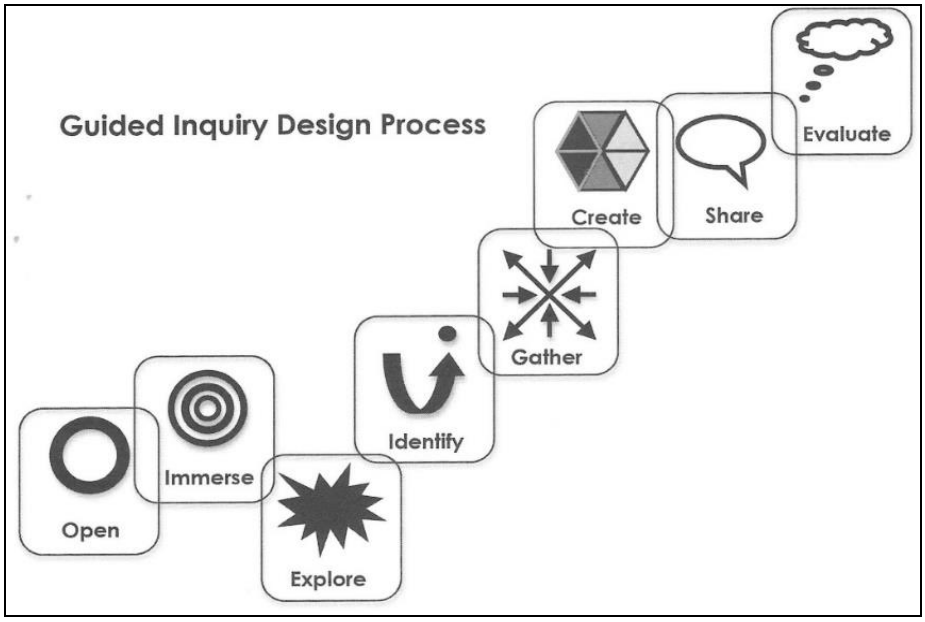

Figure 6. Guided Inquiry Design Framework(Kuhlthau et al., 2012)

Table 8. Description for each stage in Guided Inquiry Process

Renamed Stage	Description
1. **Open inquiry**	Students converse, discuss in large group, small group or individually about ideas, questions and problems, and important concepts related to subject. This subject either initiated by their own interest or prepared by the instructor.
2. **Build background knowledge**	Students build background knowledge about subject they decided to pursue. Examples of activities: watch a video, read a work of fiction or non-fiction, or visit a museum exhibition.
3. **Exploring ideas**	Students browse and scan a variety of sources, read when they find something interesting, and think about questions that begin to shape their inquiry based on the background knowledge. Examples of sources: magazines/print and online materials, print and online encyclopaedia, databases, etc.
4. **Identify inquiry question**	Students construct an inquiry question from interesting ideas, significant problems, and emerging themes they have explored in various sources of information. Examples of inquiry question: 'Is recycled water safe to drink?', 'Can humans live in space?', 'Why is Pluto no longer classified as a planet?', etc.
5. **Gather useful information**	Students select a range of sources from various sources they found during exploration that are useful for understanding inquiry question. Then students choose the most useful sources to read closely.
6. **Create to communicate**	Students review what they have learned individually and decide what they think important to share with others. Students create a meaningful and well-documented presentation.
7. **Share with others**	Students share the products they have learned throughout one or more stages listed above. Product is usually a written report, visual or oral presentation or both.
8. **Evaluate and reflect**	Instructors evaluate students' achievement throughout the stages. Students also do self-assessment and self-reflect by reviewing back on what they accomplished and the activities they have done in all the previous stages.

1.5.1.1 Previous practices using Guided Inquiry

FitzGerald reported about 12 independent schools in Sydney, Australia that carried out Guided Inquiry research (FitzGerald, 2011). Students in Years 7 and 10 involved in that projects and students did research for History, English, Geography, and Science subjects. In all of the subjects, students completed independent research projects and tasks by developing their own inquiry and answering it.

Students followed the ISP stages as their activities framework, while teachers and librarians guided the students based on the Guided Inquiry framework. FitzGerald also mentioned that schools reported difficulty locating right information relevant to the stages of the research process, which can be seen as strong support for different methods of searching stated by Kuhlthau (FitzGerald, 2011, p. 29). In addition, FitzGerald also presented a case study of the Loreto Kirribilli school involving students in Year 11 doing modern historical investigation (FitzGerald, 2011, p. 30). Students were required to choose their own interest area about historical debate, do research to develop their own inquiry question, and present the content for their inquiry by writing a scholarly essay.

1.5.2 PLUS Model as Framework of Analysis for Information Literacy Practices at Public High Schools in Japan

At public high schools, the national curriculum prepared by MEXT defines IL as the skill to use information effectively. Because of the different formulations of IL used by international schools and public schools, the framework adopted to analyze them cannot be the same. The skill to use information effectively is included in concept of information skills used by Herring (Figure 4, p.16). Hence, Herring's PLUS model was selected to be framework of analysis for IL practices at public schools.

As explained in section 1.3.4, the PLUS model consists of four interrelated steps: Purpose, Location, Use, and Self-evaluation. The first stage of Guided Inquiry is not applicable for Information subjects in Japan. Generally, teachers or instructors will provide the topic or issue to be investigated, which means that students are seldom

required to choose their own topic. The first step, which is Purpose, is divided into two stages to supplement PLUS model and facilitate an examination of special case such as teachers providing the opportunity for students to make their own inquiry. The stages in the PLUS framework of analysis are shown in Table 9.

Both of the frameworks of analysis explained earlier represent ideal practices to promote IL. For international high schools ideal practices consist of all eight stages of Guided Inquiry, while for public high schools the ideal practice consists of all four steps in the PLUS model. Nevertheless, good practices of promoting IL could be focused only on selected stages depending on the objective.

1.5.2.1 Previous practices using PLUS model

There are many schools, particularly in the United Kingdom, Australia, and New Zealand that promote the PLUS model to their students (Herring, 2006). PLUS model's developer, Herring had conducted research at secondary schools involving year 8 students. He examined the results of using the PLUS model when students did their assignment (Herring, 2006). In his research, students were given a PLUS model booklet before starting a physics project. Students were instructed to follow the guidance and elements of the PLUS model in the booklet when completing their assignment.

Table 9. PLUS model for Framework of Analysis

Stage for Framework	PLUS Model
1. Students choose their own topic 2. Identify the purpose of the assignment clearly	Purpose
3. Find adequate information resources	Location
4. Select required information, read, record and present the finding	Use
5. Self-evaluation of own ability and skills	Self-evaluation

The results from the research showed that the PLUS model was beneficial for the students because it helped guide them while planning, searching for information and ideas, and note taking (Herring, 2006, p. 27). The activities that students did are as follows:

- individual brainstorming and concept mapping
- group brainstorming
- preliminary reading and making a list of keywords
- perform initial reading strategies such as skimming and scanning
- identification of information resources
- note taking

1.5.3 Relationship between Kuhlthau's Guided Inquiry and Herring's PLUS model

Both frameworks of analysis have been discussed in previous sections. In this section relationship between Guided Inquiry and PLUS model is explained, to get the general idea about what stages are similar to each other or different from each other. Figure 7 shows the relationship between Guided Inquiry and PLUS model.

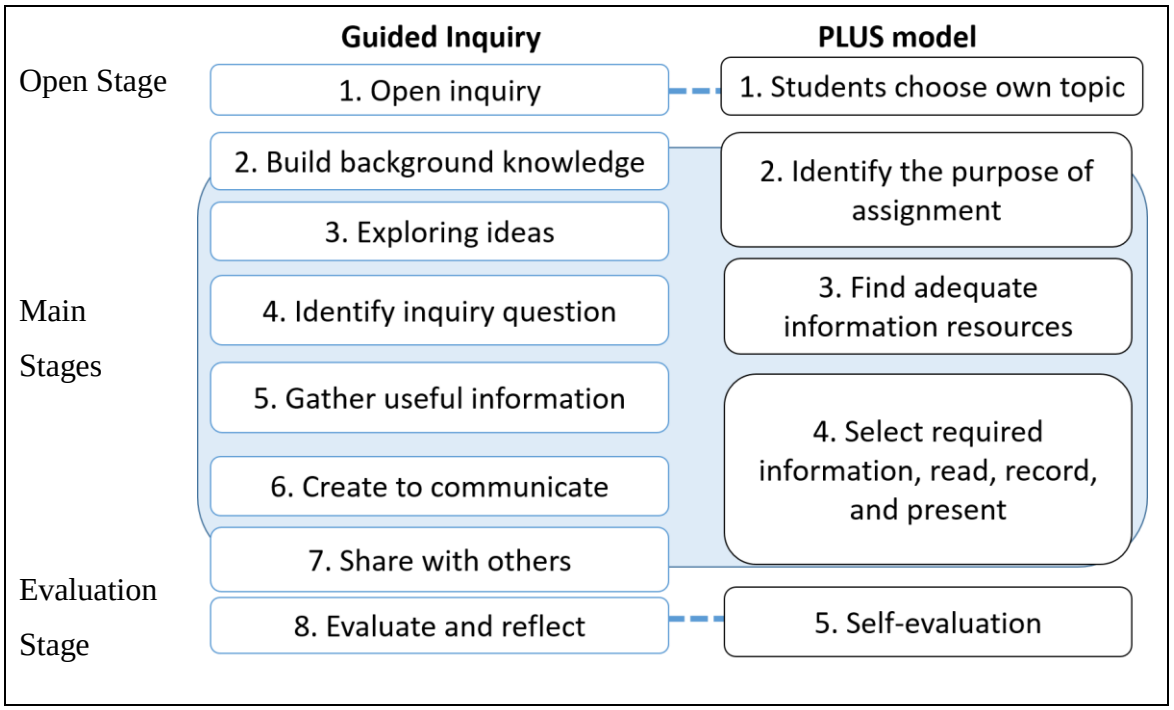

Figure 7. Relationship between Guided Inquiry and PLUS model

The first stage of each model consists of similar activities such as brainstorming and keyword mapping, the activities that students usually do at the beginning of determining task. This stage is referred as ‘open stage’.

In each of the following stages of Guided Inquiry, consists of all the activities of Stage 2 to Stage 4 in PLUS model. For example, in stage ‘build background knowledge’, students do the activities of identifying the purpose for finding information for that stage, explore information resources, and select, read, and record information. The activities are same for stage ‘exploring ideas’, only the context of selecting, reading, and recording information is different from other stages. All of these stages are combined together and referred to as ‘main stages’.

The last stage for each model consists of the same activities where students did self-evaluation and reflection of the learning process they have gone through. This stage is referred as ‘evaluation stage’.

1.6 Purpose of the Study

The purpose of this study is to examine the present characteristics and issues of IL practices for high school students at international schools and public schools in Japan. This study was divided into two studies to examine IL practices at international high schools and public high schools referred to as Study 1 and Study 2, respectively. Two types of school were examined because of the differences in the concepts of IL adopted in the educational setting. The following research questions are addressed in order to achieve the main purpose:

1. What are the characteristics and issues of information literacy practices at international high schools in Japan?
2. What are the characteristics and issues of information literacy practices at public high schools in Japan?
3. What are the issues and suggestions to plan effective information literacy practices in the future?

1.7 Research methods and thesis structure

Qualitative research methods have been selected to examine the research questions in this study. A web survey and a questionnaire survey were conducted to collect data about IL programs at international schools for Study 1. For Study 2, a questionnaire survey and face-to-face interview methods were selected to collect data about IL practices at public schools.

A web survey was done at the beginning of Study 1 to examine IL programs based on information published on schools' website and social media. This method was selected because data about IL programs can be collected from online resources. On the other hand, sometimes such web-accessible information is very limited. Because of this limitation, additional data was collected through a questionnaire survey.

The questionnaire method was chosen because it is the most convenient and inexpensive method to collect data (Robson, 2002). It was also easy to analyze the participant responses within the framework of analysis prepared in this study. Some of the questions in the questionnaire survey were designed as open-ended questions where participants must write long answers. Because of the time involved, participants were given another option to have an interview session with the researcher in this study.

In the semi-structured face to face interview method, participants could clearly explain their answers in case there was any confusion. According to Marvasti (2004), in such setting interviewees are able to elaborate on their statements and connect them with other matters of relevance. This type of method also encourages two-way communication where the researcher can ask any questions regarding the answer provided by interviewees and the interviewees can ask for clarification in case they did not understand the questions.

This thesis consists of five chapters. Chapter 2 explains in detail about Study 1 which includes case studies of IL practices at international high school. Study 2 examining IL practices at public high schools in Japan is explained in Chapter 3. Chapter 4 presents a general discussion of the findings of Study 1 and Study 2. Chapter 5 presents the conclusion of this study and several recommendations for further research.

CHAPTER 2 STUDY 1: Case Study of International High Schools

2.1 Overview of Study 1

The purpose of this study is to examine present characteristics and issues of IL practices for Grade 9 to 12 at international high schools. Contents from schools' website were analyzed and in addition to that, questionnaire survey was conducted to collect additional details of the practices. Teachers and school librarians participated in this survey. At international school, IL is promoted through self-directed learning incorporated in independent research and inquiry-based subjects. Because of this, Kuhlthau's Guided Inquiry was selected as the analysis framework to analyze case studies in Study 1.

2.2 Method

2.2.1 Participants

Cases from 15 international schools' websites and social media acounts in the Kanto area were collected in February 2015. A list of international schools was taken from the Japan Council of International Schools (JCIS) website (JCIS, n.d.), as was a list of IB schools in Japan (International Baccalaureate Organization, 2016). Only two schools had enough information about IL practices published on their websites and social media accounts. To get additional data about IL practices at these schools, they were asked to participate in a questionnaire survey. One school agreed to participate in the questionnaire survey and from that school, a teacher-librarian was asked to answer the survey.

2.2.2 Web Survey Criteria

The contents of international schools' websites and social media material such as blogs were analyzed to find evidence of any IL practices. To find the information, the keywords 'information literacy', 'library program', 'school library', 'grade 9', 'grade 10', 'grade 11', and 'grade 12' were used. From the results retrieved based on these

keywords, the contents were examined in terms of student' grades, the subject's name and class duration, students' activities, materials, and contents of practice.

The IL practices must be conducted specifically for Grades 9 through 12 only. Important information such as the subject's name was checked so as to search for its details in the school's curriculum. The main criteria of the website that was checked was content of the practices. A full explanation or story from the beginning of the practice until the end must be reported. In the content, adequate details about students' activities and materials used were examined thoroughly.

2.2.3 Items of the Questionnaire

Items in the questionnaire included students' activities, teacher's assistance, teaching materials (materials used by student for reference and also materials used by teachers for teaching), and also information literacy skills. The questionnaires were divided for three different group of participants;

1. Teacher/teacher-librarian
2. School librarian
3. Club advisor.

The questionnaire for each group only differed in term of purposes, which were stated in each questionnaire as shown in Table 10. All items in the questionnaire were exactly the same for all sets of questionnaire.

Table 10. Respective purpose for each set of questionnaire

Questionnaire	Participant	Purpose
Set 1	Teacher/teacher-librarian	To ask if school has any specific courses or classes that promote information literacy.
Set 2	School librarian	To ask if library has any program that promotes information literacy.
Set 3	Club advisor	To ask if school has any extracurricular activities that promote information literacy.

2.2.3.1 Contents of IL programs

Important data about IL programs were asked in the questionnaire including objective of program, instructor, subject, students' activities, instructors' assistance, teaching materials, evaluation criteria, and utilization of the library as shown in Table 11.

Table 11. Questions for survey

Questions	Description
Current IL program	*For teacher/teacher-librarian* Specific courses or classes that promote information 2014 – 2015 School Year *For school librarian* Program that promote information literacy for 2014 – 2015 School Year? *For club advisor* Extracurricular activities that promote information literacy for 2014 – 2015 School Year?
Program planner and organizer	Person involved in planning and organizing: Teacher/Teacher-librarian/School librarian/Student/Other (multiple choice question)
Content of program	Name of program Objective of program Main Instructor(s):Teacher/Librarian/Teacher-Librarian/Other Content of program o Students' activities o Instructors' assistance o Teaching materials o Evaluation criteria Utilization of library
Information literacy skills	Information literacy skills based on school curriculum Important information literacy skills based on participant's opinion

Objective of Program

Participants were required to write the objective of the program in the questionnaire as shown in Table 11. This was done to confirm the program promotes IL skills to students.

Instructor

A instructor for an IL program could be a teacher, a teacher-librarian, or a school librarian. If applicable, participants could choose more than one answer as shown in Table 11.

Students' activities

This item was asked as an open-ended question in table format and participants could freely write the answer for this item (see Appendix A).

Instructors' assistance

This item was asked as open-ended question in a table format and participants can freely write the answer for this item (see Appendix A).

Teaching materials

Participant could write freely their answer for this item as it was an open-ended question in table format (see Appendix A).

Evaluation criteria

Participants were asked to write freely about the student evaluation criteria in the table as shown in Appendix A.

2.2.4 Procedure

2.2.4.1 Procedure of Web Survey

Web surveys were conducted in February 2015. Data from international schools' website and schools' social media such as blog were collected and analyzed to find any IL programs. Keywords used to search the information included information literacy', 'library program', 'school library', 'grade 9', 'grade 10', 'grade 11', and 'grade 12'.

2.2.4.2 Procedure of Questionnaire Survey

Approval was received from the Research Ethics Board from Faculty of Library, Information and Media Studies, University of Tsukuba. School principals were asked if they agreed to receive the survey document. Consent was asked via phone and email from 3 August 2015 until 14 August 2015. After receiving the consent, survey documents were mailed to 15 international schools. The survey documents consisted of cover letter, reply sheet, consent form, and three sets of questionnaire (*see* Appendix A). A cover letter was attached together to explain the purpose of this research and its significance, and to ask for their cooperation to participate in this research.

This survey was sent on 31 August 2015 and the deadline given to participants was until 14 September 2015. Two weeks were allotted to each participant to answer the questionnaire. Participants were asked to return the questionnaire, reply sheet, and consent form by enclosed envelope, by fax or by email.

2.3 Web Survey Results

Case A and Case B were results from web survey and Case C includes result from the web survey supported by the questionnaire. Case A and Case B were from the same school and Case A was a project in English, a required subject and for Grade 9 students. Case B was an elective subject offered to Grade 11 students. Because Case B was an elective subject, some students might not enroll in it depending on their preference.

2.3.1 Case A

2.3.1.1 Basic Information

The I-Search Project was taught in English class targeted for Grade 9 students and conducted for nearly one semester. Students were instructed to choose any topic they were interested to explore. English teachers collaborated with library staff as a team for this project to teach about accessing information including advanced search engine strategies and databases, and defining and practicing the authentication of information

resources. Case A was taken from a report published on a school's social media pages and contained 693 words excluding excerpts from students report.

2.3.1.2 Content of the Class

I-Search Project

The I-Search project was intended to teach students about something valuable they can gain from a topic and offered an opportunity for students to pursue areas of personal interest while developing their research skills. In the beginning of class, the teacher explained about this project and gave them some instruction. Students were instructed to choose an inquiry that is significant and importantly based on their passion and curiosity. Students were instructed to write up their findings in a paper including their reflection on I-Search Project process.

English teachers worked collaboratively with library staff as a team. To start the project, the team began by teaching students about accessing information through a variety of media to expand and refine students search skills. The team also taught advanced search strategies and exposed students to various databases. Students learned about how to define and practice authentication of quality resources. Additionally, one-on-one support was provided to coach students about analyzing resources, cross referencing and validating facts, and appropriately citing sources.

After learning about important skills, students independently researched their interested topics. Students thought about their interest, their passion to know something, and their curiosity. They explored various information resources such as library collections, online database, and electronic book to find information related to their interest. Students were recommended to interview outside experts to collect reliable information related to their topic. At the end of this process, based on the information they had collected, they posed an inquiry question to guide their next process. Examples of questions posed by students include 'intelligence: what it really is' and 'can we renew our energy?'. Based on their inquiry questions, students then developed their own plan and identified the resources they would use to gather the required information.

In the next process, while writing and adding more information, students revised their search plan in order to see their progress. They then organized and integrated the collected information from various sources for the purpose of analysis. After analyzing their data, students wrote their final product which was a report. In their report, they included the story of their search, what they had learned from the project, and their reflection on the search they did.

2.3.1.3 Analysis of Case A using Kuhlthau's Guided Inquiry

Data from Case A was analyzed using Kuhlthau's Guided Inquiry, explained in Chapter 1. Stages involved in the program were divided into eight stages.

1. Open inquiry
2. Build background knowledge
3. Exploring ideas
4. Identify inquiry question
5. Gather useful information
6. Create to communicate
7. Share with others
8. Evaluate and reflect

Table 12 shows the summarization of activities involved in Case A compared to Guided Inquiry.

Table 12. Activities involved in Case A

Guided Inquiry Process	Students' activities
1. Open inquiry	"Students thought about their interest, about their passion to know something, and their curiosity"
2. Build background knowledge	"…. teaching students about accessing information through a variety of media to expand and refine students search skills."
	"After finish learning about important skills, students search independently about their interested topics."
3. Exploring ideas	"They explored various information resources such as library collections, online database, and electronic book to find information related to their interest"
	"The team also teach advanced search strategies and exposed the students to various databases."
4. Identify inquiry question	"At the end of this process, they posed an inquiry question to guide their next process."
5. Gather useful information	"students then developed their own plan and identify the resources they will use to gather the required information. In the next process, while writing and adding more information, students revised their search plan in order to see their progress. They then organized and integrated the collected information from various sources for analysis purpose."
	"Students were recommended to interview outside experts to collect reliable information related to their topic"
6. Create to communicate 7. Share with others	", students write their final product which was a report. In the report they included the story of their search, what they have learned from the project, and their reflection on the search they did."
8. Evaluate and reflect	"…what they have learned from the project, and their reflection on the search they did. "

Stage 1: 'Open inquiry'

Students were given an opportunity to think about their interest, passion, and curiosity about something. No concrete activities were reported for this stage. Students were assumed to have conversations with teachers and librarians about their own interest and

to further engage themselves. According to teacher's instruction, students were expected to think about something they were curious to know or express their passion.

Stage 2: 'Build background knowledge'& Stage 3: Exploring ideas

In this case, both stage 2 and stage 3 were combined. Teachers and librarians showed various media and library collections to students to help them acquire more information about their interest. Students also learned about search skills from the teaching team. Students used all the information resources taught by teachers and librarian to explore more ideas and information related to their interest. There was no clear activities on which to divide both stages based on the Guided Inquiry.

Stage 4: Identify inquiry question

Based on all the information they found in previous stages, they posed an inquiry question to guide the next process. It is understood from the results that students formed inquiries on their own according to the collected information and with help of their teachers. There were no guidelines or activities done to decide questions such as reviewing ideas, reconsider questions, or visualization.

Stage 5: Gather useful information

Students followed their search plan and gathered data related to their inquiry from a list of information resources. They organized and integrated the information for the purpose of analysis. According to Guided Inquiry, how data was collected and gathered during this stage and stage 2 and stage 3 should be different. However, in this case, the general term 'gather data' was used for these stages and it was not clear how the students actually conducted their data gathering.

Stage 6: Create to communicate & Stage 7: Share with others

Students wrote an essay on their findings, the story of their search, what they learned from the project, and their reflection on the search they did. In this case, students shared about their project in report format. Guided Inquiry clearly separates these two stages, however, students did the interpretation of the information on their own for stage 6 and at the same time writing the report for stage 7.

Stage 8: Evaluate and reflect

From the final written report, students could evaluate and reflect on the research process they had completed. Because the report was written in story style and included a reflection part, students had the opportunity to reflect on content and process.

2.3.2 Case B

2.3.2.1 Basic Information

Case B described Independent Inquiry subject. It is one of the elective subjects for students in Grade 11. This subject was conducted for one semester only. Case B was taken from one of the student's report published on the school's website. There were only three reports from different students published, but only one report provides enough information. *(Total number of words from original report: 508 words)*

2.3.2.2 Content of the Class

Independent Inquiry – Application Design

Students were offered to take the Independent Inquiry subject if they wanted to pursue study in a field not offered in the school's curriculum such as architecture, 3D modelling and graffiti, and application development. Students independently did their own research for this subject, and one of them, Student B from Grade 11 voluntarily share about her Independent Inquiry.

In the beginning of the semester, Student B consulted with her supervisor to discuss about a proposed title, ideas, content, and specific study plan including the format of final presentation for her Independent Inquiry. She came up with an idea for her research after keenly seeking accessible remedial information for her dyslexia, which is a learning difference.

She did extensive research about dyslexia in order to properly understand about the condition. She explored online resources to get more information about the topic. After exploring related information to her idea, she decided to create an iOS mobile

application which aimed to improve user's fluency. Her idea was influenced by her intention to help other who have the same condition like her. She then began her research by taking online courses in mobile application development. At the same time, she also did research about remediation of dyslexia to gain more knowledge about dyslexia.

After decided that she had adequate knowledge about mobile application and dyslexia, she moved from online classes to apply her knowledge in building the content for her application. Often on weekends she sat down and went through the process of writing out her ideas for content, design and target age group for the application. She repeated this process until felt satisfied with it. She did brainstorming to see more ideas and then she moved to the building process where she came up with structured lesson plans for potential users based on the latest research about teaching dyslexic and non-dyslexic students that she had found.

To understand about real world mobile application, she searched and planned a meeting with a former software designer who is currently a consultant. She discussed with him everything that she had planned and researched in order to get valuable feedback. The consultant taught her about the professional software design while reviewing her approach. He gave recommendation to her to try a method that would follow the professional model to build software. Because of the time constraint, she decided to do a presentation about the process and content of her research rather than continue to develop the application.

She then proceeded to create slides for presentation as a final product for Independent Inquiry. Besides that, she wrote a reflection report about her experience in doing the research for other students to read and acquire useful information.

2.3.2.3 Analysis of Case B using Kuhlthau's Guided Inquiry

Data from Case B was analyzed using Kuhlthau's Guided Inquiry which is explained in Chapter 1. Stages involved in the program were divided into eight stages.

1. Open inquiry
2. Build background knowledge
3. Exploring ideas
4. Identify inquiry question
5. Gather useful information
6. Create to communicate
7. Share with others
8. Evaluate and reflect

Table 13 shows the summarization of activities involved in Case B compared to Guided Inquiry.

Table 13. Activities involved in Case B

Guided Inquiry Process	Student's activities
1. Open inquiry	"She came up with the idea about her research based on her independent study after keenly seeking accessible remedial for her dyslexia, which is a learning difference."
2. Build background knowledge	"She did extensive research about dyslexia in order to properly understand about the condition."
3. Exploring ideas	"She explored online resources to get more information about the topic. After exploring related information to her…"
4. Identify inquiry question	"…she decided to create a mobile application which aimed to improve user's fluency."
5. Gather useful information	"She then began her research by taking online courses in mobile application development. At the same time, she also did research about remediation of dyslexia to gain more knowledge about dyslexia. " ".., planned a meeting with a former software designer who is currently a consultant. She discussed with him everything that she had planned and researched in order to get valuable feedback."
6. Create to communicate	"She then proceeded to create slides to present to other students and as a final product for Independent Inquiry"
7. Share with others	"… she decided to present her process and content of her research rather than continue to develop the application. "
8. Evaluate and reflect	"… she wrote a reflection essay on her experience in doing the research for other students to read and acquire useful information."

Stage 1: 'Open inquiry'

Based on the student experience and previous independent study, she choose the topic to be explored. The student started to open inquiry by thinking about something closely related to her.

Stage 2: ‘Build background knowledge’ & Stage 3: Exploring ideas

Stage 2 and stage 3 were combined in this case. The student conducted detailed research in order to properly understand the topic she was interested in while at the same time exploring related content. The students also browsed through online resources to get more ideas in order to refine and focus on the narrower topic. According to Guided Inquiry, the student was supposed to clearly separate between these two stages, but without close guidance from a teacher it was usual for student to combine these stages.

Stage 4: Identify inquiry question

Based on her reading and research, the student decided on the refined inquiry about her topic which is about creating an iOS mobile application which aimed to improve user’s fluency. No concrete activities such as pairing questions and interests or keywords mapping for topic selection was mentioned.

Stage 5: Gather useful information

The student took online classes to get more knowledge about the application she wanted to develop and at the same time continued to research about her inquiry question. The student also gathered valuable information by meeting with a consultant to learn more about application development. As the project was only for one semester, on her own initiative the student thought about collecting information new to her and within a limited time by taking classes and asking experts.

Stage 6: Create to communicate

She prepared slides to be presented to other students. The student also wrote up a report during this project. After finishing interviewing the consultant, instead of analyzing data and developing a mobile application student B decided to present about the content of her research project. In this case student B independently decided on the format of the final product and assumed the agreement of her supervisor. According to Guided Inquiry, students supposed to interpret gathered data to make meaning to communicate to others, and this goal was demonstrated by student B as she managed to adjust and revise her final product based on the collected information and various constraints.

Stage 7: Share with others

After finishing her project, she presented her slides about her research in front of other students to share about her findings at the end of the semester.

Stage 8: Evaluate and reflect

The student did self-evaluation by writing a reflection essay to about her experience doing the project.

2.4 Questionnaire Results

2.4.1 Case C

2.4.1.1 Basic Information

Extended Essay is a required subject for students in Grade 11 or 12 who took IB Diploma Program. This subject was conducted for two semesters or almost one year.

2.4.1.2 Content of the Class

Extended Essay Subject

In the beginning of first semester, students decided on the subject they want to research for Extended Essay such as History, English, Japanese, Biology, Economics, Visual Arts, and so on. They also need to find a teacher to be their mentor or supervisor for the research. Students were instructed to read and understand the guidelines for Extended Essay to ensure they clearly know what it is all about. Then students met for first time with assigned supervisor to discuss the process from the guidelines. Once they have met their supervisors, they have to choose the interested topic for subject they have chosen earlier (History, English, Japanese, Biology, Economics, Visual Arts, and so on). Interested topic were chosen based on what they have found from prior reading and research. Then they will discuss suitable areas of research with their supervisor.

To help students complete their Extended Essay project, school librarians were in charge of teaching about research process. Librarians explained overall process

included seven steps; define, plan, locate, use, synthesize, evaluate, and communicate. First, students have to define the subject, then their research topic, and clearly understand the assessment criteria of the Extended Essay. Second, students have to plan the resources to be used and determine how to evaluate sources. Next, students proceed by locating a variety of resources. After that, students should do note-taking and learn how to do referencing properly. During synthesize phase, students should start writing their essay based on collected information. In evaluation phase, students mark their paper against the criteria set by the school. And lastly, students should communicate the significance of their study and learning process they have done.

After choosing a topic, students were required to develop a well-focus research question by exploring a variety of sources. During this task, students refined their area of study to confirm their final topic. Supervisors gave their confirmation regarding subject area and topic selected by students. In the case where the topic or subject are still unclear to the students, supervisor helped students by giving ideas and suggestions. Students also recommended to read through some example of previous year project by other students.

Once the students have clearly decide on the topic, they proceed to plan their investigation and writing process. They need to identify how and where they will gather data and information related to the topic. In addition, they were required to decide on the academic referencing system they wanted to use which must be appropriate to the subject area they chose. Students were recommended to talk to the school librarians about findings information resources and referencing style. Students also were advised to set deadlines for each of the process to meet the school's requirement.

Students were given approximately one month to complete preliminary research or start their experiments and investigation (for example experiment for Science project). Students investigated a variety of information resources such as online database, electronic resources, and library collections and collect useful and relevant information to their topic. While carrying out the investigation, in order to have a sense of direction students planned the structure of their essay or the outline of important heading at the same time. The structure or the heading was expected to be changed throughout

investigation process. Important details they need to discuss in the essay were about their aim, hypothesis, sources of information they have collected, experiment details (if they conduct experiment), and areas of concern. By the end of first semester, students already completed the first draft of their Extended Essay which is a report explaining about their project written up to 4000 words.

When second semester started, students referred again their first draft and refined the arguments they have written. Then after they finished written second draft of their essay, students were ready to write on the abstract of essay. Students then marked their essay draft against the criteria prepared by school to see if they need improvement. The general criteria included about research questions, introduction of the essay, knowledge and understanding of the topic studied and reasoned argument. Once they satisfied with their draft, they submitted it to their supervisors for reviewing purpose. Supervisors read their students essay to provide comment and feedback.

After getting feedback from supervisors, students continued to edit and revise their draft for about one month. They were expected to submit the final draft after finish with the editing. Before submitting the final product, their Extended Essay were verified by supervisors. The final meeting with the supervisors included oral presentation and their presentation was recorded. Then students proceeded to submit two copies of their essay and one electronic copy to the program coordinator. Students were evaluated based on the criteria provided by school according to their progress at each stage, the content of essay, and also oral presentation. School also organized an exhibition for students that completed their Extended Essay to share to other students.

2.4.1.3 Analysis of Case C using Kuhlthau's Guided Inquiry

Data from Case C were analyzed using Kuhlthau's Guided Inquiry which is explained in Chapter 1. Stages involved in the program were divided into eight stages.

1. Open inquiry
2. Build background knowledge
3. Exploring ideas

4. Identify inquiry question
5. Gather useful information
6. Create to communicate
7. Share with others
8. Evaluate and reflect

Table 14 shows the summarization of activities involved in Case C compared to Guided Inquiry.

Table 14. Activities involved in Case C

Guided Inquiry Process	Students' activities
1. Open inquiry	"Interested topic were chosen based on what they have found from prior reading and research."
2. Build background knowledge 3. Exploring ideas	"After choosing a topic, students were required to develop a well-focus research question by exploring a variety of sources." "Students also recommended to read through some example of previous year project by other students."
4. Identify inquiry question	"students refined their area of study to confirm their final topic."
5. Gather useful information	"Students were recommended to talk to the school librarians about findings information resources…" "Students investigated a variety of information resources such as online database, electronic resources, and library collections and collect useful and relevant information to their topic."
6. Create to communicate	"When second semester started, students referred again their first draft and refined the arguments they have written. Then after they finished written second draft of their essay, students were ready to write on the abstract of essay"
7. Share with others	"The final meeting with the supervisors included oral presentation and their presentation was recorded"
8. Evaluate and reflect	"Students then marked their essay draft against the criteria prepared by school"

Stage 1: ‘Open inquiry’

Students were instructed to choose their own topic for the essay based on their prior reading and interest. They consulted with their supervisor about areas on subject and decide together if the selected topic is appropriate or not. For Extended Essay, from a list of subjects such as History, English, Japanese, Biology and so on, students need to choose their interested subject first. Then only they started to think about ideas and interested topic they want to pursue related to the chosen topic. Conversation with supervisor helped students to think about new ideas and knowledge they can pursue.

Stage 2: ‘Build background knowledge’ & Stage 3: Exploring ideas

Students viewed previous papers to understand about final product and what they can actually do for their own project. Students demonstrated real world research activity by building background knowledge from previous works of other students which has been evaluated by teachers. In Guided Inquiry, these two stages were separated, but in this case, students built background knowledge and exploring at the same time. There is no clear division of these stages in this case.

Stage 4: Identify inquiry question

Based on what they have collected from exploring stages, students refined their area of study and confirm their final topic. Students formulated own inquiry and no concrete activities were reported. Besides that, students gained approval for their inquiry from their supervisor.

Stage 5: Gather useful information

Students learned about findings information from the school librarians. Then students investigated a variety of information resources to collect relevant information. In this case, school librarians were responsible to teach about research process to students and they followed a series of process (define, plan, locate, use, synthesize, evaluate, and communicate) to properly gather relevant information. While gathering data, students started writing outline of their essay at the same time, so they can record and write gathered information appropriately.

Stage 6: Create to communicate

Students wrote an essay which was created from first draft until final draft to show report of important information related to their topic.

Stage 7: Share with others

Students presented their findings and essay to their supervisor during oral presentation. To share students' Extended Essay research with other students, the school organized an exhibition which gave opportunity to students to present their findings to larger audiences besides their supervisor.

Stage 8: Evaluate and reflect

Each students were given a list of criteria included about research questions, introduction of the essay, knowledge and understanding of the topic studied and reasoned argument for their essay that they need to follow. They marked their draft against the criteria to evaluate their essay for further improvement.

2.5 Discussion

2.5.1 Characteristics of Case A

2.5.1.1 Good point of Case A

In this section, the good point in Case A is discussed based on the Guided Inquiry model. Only Stage 5 the 'gather useful information' stage showed a good point though other stages showed typical practices similar to other practices to promote IL (FitzGerald, 2011).

In Stage 5 the 'gather useful information', to teach students about various types of information resources, students were recommended to interview outside experts. Students can collect and gather relevant and useful information related to what they wanted to know by interviewing experts. They could directly ask and receive answers immediately and also compare information they gathered from the interview with information they retrieved from online resources. Apart from that, students could learn

about how the reliability of information from the experts differs from unknown or ambiguous information on the internet.

2.5.1.2 Issue in Case A

An issue found from analysis of Case A is discussed in this section. One significant issue concerns the structure of stages involved when students are conducting their assignment.

Students in Case A combined stage 2 and stage 3 together. According to Guided Inquiry, stage 2 ‘build background knowledge’ and stage 3 ‘exploring ideas’ were separated. This is because it is very important for the student to clearly understand the fundamental information or the broad view about their particular topic before going further to explore other information related to the topic. Moreover, as a more effective method for promoting information literacy, these two stages should be divided clearly (Kuhlthau et al., 2012).

2.5.2 Characteristics of Case B

2.5.2.1 Good points in Case B

The good points in Case B are discussed in this section. Student demonstrated good data collection method in Stage 2 ‘build background knowledge’ and in Stage 5 ‘gather useful information’. Other stages showed typical activities as in other previous IL practices (FitzGerald, 2011).

Good point in Case B was shown by how the student collected information for her research. The student has strong initiative by taking online courses about mobile application on her own. This initiative showed that the student have the skills of knowing the efficient method to collect and gather data. Instead of reading a lot of information, which is time-consuming, as a beginner she took a class. Besides that, she planned a meeting with professional consultant to discuss about her project. To contribute to others, she has to relate with the real word, thus she knew she had to ask

experienced expert about her project. Outside expert is not one of the popular information resources introduced to students. Often students refer to or browse through internet and online resources to collect and gather data.

After meeting with the consultant, student B realized she need to change the outcome of her project. Her next action was to evaluate new information she received from the consultant and then organize back her plan to follow current knowledge. She kept track of her project schedule with the latest information she had and properly manage and organize it. This show that students need to integrate new information with prior information once they obtained it. This situation also shows that the stage of gathering useful information involved important activities of research process such as identify information resources, select relevant information, organize, and analyze collected information.

It also can be seen that student B differentiated how she collected data in stage 2 and stage 5. She used internet and information resources which were easily accessible to understand background knowledge and discover ideas. But for stage 5, in order to collect reliable data and information within limited time, she moved from internet to online class and professional. Her method of using different information resources depending on the stages of collecting data should be recommended to be introduced for future practices. Kuhlthau mentioned about different types of information searches which are preliminary, exploratory, comprehensive, and summary (Kuhlthau, 2004). The student demonstrated different types of information searches by using different information resources to suit her research need.

2.5.2.2 Issue in Case B

Based on Guided Inquiry model, issue in Case B about the structure of stages involved in the students' activities is discussed in this section.

Main issue in Case B was similar to Case A where the student combined stage 2 and stage 3 together, she did research and read a lot of various resources to understand about the topic she had chosen and at the same time exploring about what she wanted to

focus on. As explained previously, these two stages should be separated and teachers should explain clearly about the difference of these stages. Student in Case B should be instructed by teachers or librarians to divide these two stages.

2.5.3 Characteristics of Case C

2.5.3.1 Good point in Case C

Good point about Stage 8 ‘evaluate and reflect’ found in Case C is discussed in this section. Other activities done in this case is typical as seen in other previous practices where students went through a series of research process and produce scholarly writing (The College Board, 2016).

In Stage 8 ‘evaluate and reflect’ usually students evaluate or reflect about their work after finishing their project. But in Case C before presenting to supervisor or before going through Stage 7 ‘share with others’, students were required to mark their essay draft against several criteria set by school. They were instructed to properly evaluate by themselves about their work. Evaluation before and after presenting to supervisor can actually be beneficial to students as they can realize if they have made improvement or not.

2.5.3.2 Issue in Case C

Issue found in Case C which is about the structure of the stages involved is discussed in this section.

Similar issue as in Case A and Case B, Stage 2 ‘build background knowledge’ and stage 3 ‘exploring ideas’ were combined together as there is no clear activity done by students to show the division of these two stages. In this stage, to help students get a big picture on what they can do, they were given examples from previous year essays. Students explored topic and at the same time researching about what they wanted to focus on. There is no separate instructions were being given to students about the differences between Stage 2 and Stage 3.

2.5.4 Applications for future IL practices at international high schools in Japan

2.5.4.1 Good points from IL practices at international schools

Good point from Case A, Case B, and Case C are discussed in this section. Stage 5 ‘gather useful information’ showed significant finding for good point. Other stages were not discussed as activities done were typical and similar with previous practices done at other schools (FitzGerald, 2011).

Discussions about case studies show that, students were recommended to consult or collect data from outside experts as shown in Case A and Case B during gathering stage. This practice is recommended for future practices as students can actually relate with real world (Patton, 2012, p. 44). Besides that, collecting information from experts can save time for students who have lesser IL skills. They can communicate and directly ask questions to expert. Students can improve their skills of finding and analyzing information as different information resources (outside experts, online resources) require different techniques and methods to interpret and organize its information. Moreover, if information from experts can be collected in different stages for different purposes. For example, to obtain clues or hints, students could interview experts during stage 2 and to obtain concrete information or specific answer, students could interview experts during stage 5. Kuhlthau also suggested that outside experts are underutilized resources in schools and should be improved on its utilization (Kuhlthau et al., 2015).

2.5.4.2 Common issue in IL practices at international schools

Common issue found from all three cases; Case A, Case B, and Case C is discussed in this section. The issue is about the structure of the stages involved when students completing their projects and research.

All cases showed that students did stage 2 ‘build background knowledge’ and stag e3’exploring ideas’ at the same time, which is typical conduct for previous inquiry practices where stage 1, stage 2, and stage 3 were usually combined together (Pedaste, Mäeots, Siiman, de Jong, van Riesen, Kamp, Manoli, Zacharia, & Tsourlidaki, 2015). It

is suggested for future practices to clearly separate these two stages according to Kuhlthau's Guided Inquiry (Kuhlthau et al., 2012). Firstly, students need to engage in understanding the fundamental knowledge about particular topic. They should see broad view and understand about it before going for further exploration inside that topic. Once the students have strong sense of connection with the topic, they can easily proceed with exploring for more specific ideas to focus on. Teachers of instructors should instruct the students and explain about the differences of these two stages.

CHAPTER 3 STUDY 2: Case Study of Public High Schools

3.1 Overview of Study 2

Case Study 2 was done in order to examine present characteristics and issues of IL practices at public senior high schools. As explained in Chapter 1, Ministry of Education, Culture, Sports, Science and Technology (MEXT) in Japan made required subjects 'Information Study for Participating Society' and 'Information Study by Scientific Approach' for all high school students. Questionnaire and face to face interview were conducted to collect data regarding IL practices for those subjects. PLUS model was used as a framework to analyze case studies in Study 2.

3.2 Method

3.2.1 Participants

Three teachers from different public high schools (senior high school) in Chiba prefecture participated in this case study. Two of them answered the questionnaire survey and the other was interviewed at the school. Two teachers in charge of teaching 'Information Study for Participating Community' and one teacher in charge of teaching both subjects.

3.2.2 Items

Same questions were used in both questionnaire and interview. Open-ended, yes/no, and multiple choice questions were asked in the questionnaire. There were 6 different sheets included in the questionnaire; Questionnaire, Sheet A, Sheet C, Sheet B-1, Sheet B-2, Sheet D-1, and Sheet D-2 (see Appendix B until Appendix H). Sheet A and Sheet C contains description of a list of students' activities. Sheet B-1, Sheet B-2, Sheet D-1, and Sheet D-2 were the accompanying answer sheets for the questionnaire. Questions were divided into two main categories.

1. Participants' information
2. Content of class for 'Information' course.

3.2.2.1 Participants' information

Basic information about participants was collected from the questionnaires; gender, age range, years of working experience, subject taught at school, and students' grade being taught.

Teacher A and Teacher B taught Information Study for Participating Community subject while Teacher C taught both Information Study for Participating and Information Study by Scientific Approach subjects. Other teachers' details were summarized in Table 15.

3.2.2.2 Content of class for 'Information' course

Important details about content of Information course were asked in the questionnaire including subject name, students' activities, teacher's assistance, teaching materials, and evaluation criteria. These items were asked in four separated sheets; Sheet B-1, Sheet B-2, Sheet D-1, and Sheet D-2 (see from Appendix E to Appendix H). Sheet B-1 and B-2 asked about content of class that included activities listed in Sheet A and Sheet D-1 and D-2 asked about the content of class that included only activities listed in Sheet C. Table 16 summarized the details of each sheet.

Table 15. Participants' background information

Alias	Age Group	Years of Working Experience	Information subject	Grade Taught
Teacher A	50's	28 years	Information Study for Participating Community	Grade 1
Teacher B	20's	4 years	Information Study for Participating Community	Grade 1, Grade 3
Teacher C	50's	28 years	Information Study for Participating Community, Information Study by Scientific Approach	Grade 3

Table 16. Purpose for each answer sheets

Sheet	Purpose	Accompanying Sheet
Sheet B-1	To ask about content of class that included activities in Sheet A	Sheet A
Sheet B-2	To ask about content of class that utilized library space, its collections and included activities in Sheet A	
Sheet D-1	To ask about content of class that included activities in Sheet C	Sheet C
Sheet D-2	To ask about content of class that utilized library space, its collections and included activities in Sheet C	

Subject Name

Participants were asked to choose multiple choice answer for this item. Two answers were provided for selection; Information Study for Participating Community and Information Study by Scientific Approach.

Students' activities

Participants were asked to select all students' activities that have been conducted in the class. To answer this item, participants were instructed to refer to two sheets; Sheet A and Sheet C for the information about activities done in the class. Questions were asked to identify which stages from PLUS model are included in the subject. The five main stages from the model are as follows (Herring, 1996);

1. Students choose their own topic
2. Identify the purpose of the assignment clearly
3. Find adequate information resources
4. Select required information, read, record and present the finding
5. Self-evaluation of own ability and skills

Complete list of activities for each of the above main stage is described in Table 17. Participants referred to Sheet A or Sheet C accordingly and write number of activity they have conducted in the class in the answer sheet with simple description.

Table 17. List of activities (Herring, 1996)

Stage	Activities
1. Students choose their own topic.	1. Clearly define own interested topic 2. Identify key words in relation to chosen topic 3. Keywords mapping 4. Define topic based on keywords 5. Reviewing chosen topic 6. Planning
2. Identify the purpose of the assignment clearly	7. Identify students existing knowledge of a topic 8. Think about the topic from many perspective, define relationship between keywords. 9. Identify information resources
3. Find adequate information resources	10. Locate relevant information resources 11. Decide if information resource is adequate or not 12. Using information technology (such as internet)
4. Select required information, read, record, and present finding	13. Clearly define the purpose of reading the information 14. Gain overall impression of the text (skimming) 15. Locate specific piece of information (scanning) 16. Understand meaning of the text 17. Connect meaning of the text with existing knowledge 18. Record relevant information from reading 19. Select and reject information 20. Evaluate information and author's thought 21. Oral presentation 22. Report writing
5. Self-evaluation of own ability and skills	23. Reflect on the process of completing assignment 24. Self-evaluation of assignment 25. Evaluate further improvement for assignment 26. Self-evaluation of the presentation 27. Evaluate further improvement for the presentation.

Note. From *Teaching information skills in schools,* by Herring (1996), London: Library Association Publishing. Copyright 1996 by Library Association Publishing.

Teacher's assistance

Participants were asked to write freely about this item in 'Teacher's assistance' column in the table (see Appendix E). Guidance from teachers is important in order to engage

students their assignment or work. How and when the guidance is given is important to observe because the stage when students feel difficult to proceed with their learning can be understood and teachers can help students proceed with their assignment or work.

Teaching materials

Participants were asked to write freely about teaching materials they used in the class in 'Teaching Materials' column in the table (see Appendix E).

Evaluation criteria

Participants were asked to write freely about evaluation criteria for assessing students in 'Evaluation Criteria' column in the table (see Appendix E). Evaluation criteria give structure to observations when assessing student achievement.

3.2.3 Procedure

Approval was received from the Research Ethics Board from Faculty of Library, Information and Media Science, University of Tsukuba. Consent from each school to receive survey document was asked on the phone and email. After receiving the consent, survey documents were emailed to three Japanese high school. A cover letter is attached together to explain the purpose of this research and its significance, and to ask for their cooperation to participate in this research. Participants could choose the type of cooperation either by answering questionnaire or having interview session.

3.2.3.1 Questionnaire

Questionnaire was conducted in May 2016. One week duration were given to each participant to answer the questionnaire from May 16 until the deadline May 23. Follow up questions were asked to participants for additional information.

3.2.3.2 Interview

Several communications was made with the interviewee to set the date and time for the interviews. Interview was conducted at the school after normal teaching hour on 23th May 2016 with Participant A. On the day of the interview, because of language barrier between researcher and participant, two members from the same laboratory accompanied and communicated with the participant. Interview was fully conducted in Japanese for one hour and half.

3.3 Results

Three case were discussed in this study; 'Media and Its Characteristics', 'What I Want to Introduce', and 'Expression and Communication' class.

3.3.1 Case D

3.3.1.1 Basic Information

The subject for class in Case D was Information Study for Participating Community. Students in Grade 1 involved in this class. Total duration for this one-day class in 50 minutes and divided into three main parts. Five minutes were allocated in the beginning for introduction part, 40 minutes for main part of the content of the class, and five minutes at the end of the class for summary session. This case study demonstrated used of information skills as a means rather than as a purpose.

3.3.1.2 Content of the Class

'Media and Its Characteristics' Class

Teacher D began the class by handing out worksheet for today class. Today's topic and keywords related to the topic were written in the worksheet. Teacher D then introduced briefly about "media and its characteristics" topic for about five minutes. After finish giving explanation, teachers mentioned about a number of keywords related to the topic to students such as 'media' and 'media literacy', which were written on the worksheet. Keywords and questions about today's topic were written in the worksheet.

Students were asked to find information on the internet based on keywords given by teacher. Teachers then gave some times to students to browse through internet to find information related to keywords. Students went through several websites on their own to find the keywords and examine the information found. In the searching process, students asked questions to Teacher D if they did not understand about information they found on the internet. Teacher D gave suggestions such as “this way is better” and “this is better than doing that” to the students in order for them to proceed with the work when they were in difficulties. Then, when the students feel that the information found was relevant to the keywords, they wrote down the selected information in the worksheet. Students discuss with other members of the class sitting near to them about information they collected on the internet based on keywords in the worksheet. After several minutes, Teacher D asked the students to discuss together and share about their answer to see the similarities and additional information. Further explanation about keywords and advices related to students’ discussion were given to the students.

To engage the students in the topic, Teacher D used a video about a ‘flying penguin’ event to explain about media literacy. This video showed that a group of penguins flying high in the sky like normal birds. Students were surprised when watching the video. Students then were asked about their perception and what they think about the video. Later Teacher D explained about that video and the reason behind it being a ‘fake’ video. The video was published on April Fools’ day and generated with CG effect to make it realistic. Teacher D explained that this kind of media should always be looked into and students should not directly believe in it. Students now understood that they have to confirm the authenticity and credibility of any kinds of media available.

Continuing the topic, Teacher D used several different images of public signage such as ‘exit sign, ‘wet floor sign’, and ‘no littering sign’ to teach about the characteristics of each image. Apart from keywords, teacher mentioned about question related to the images to evaluate students’ understanding, such as ‘what is the meaning for image in red?’. Students shared the answer they found about the question. Teacher D explained about the correct answer or meaning of the images to students.

At the end of the class, Teacher D talked briefly for about 5 minutes about overall content of today's class and students revised their worksheet at the same time to see if they have missed out any important information. The class ended and students submitted their worksheet to Teacher D. Because of limited time, Teacher D could not give feedback about evaluation of students' worksheet on the same day.

3.3.1.3 Analysis of Case D using PLUS model

Data from the case study was analyzed using PLUS model which is explained in Chapter 1. Activities involved in the class were analyzed and compared with stages in PLUS model.

1. Students choose their own topic
2. Identify the purpose of the assignment clearly
3. Find adequate information resources
4. Select required information, read, record and present the finding
5. Self-evaluation of own ability and skills

Each of the above stage consists of several activities (see Appendix C). Case D did not involve stage 1 which is 'students choose their own topic' because the content for that class was scheduled to be about 'media and it's characteristics'.

Table 18 summarized the analysis of Case D regarding the activities that have been conducted in the class.

Table 18. Activities for each stage for Case D

Stage	Activities	Activities in Case D
2. Identify the purpose of the assignment clearly	7: Examine students existing knowledge of a topic	-"Students went through several websites on their own to find the keywords."
	8: Think about a topic from many perspective, define relationship between chosen keyword	-"Teacher D asked the students to discuss together and share about their answer to see the similarities and additional information." - "Students then were asked about their perception and what they think about the video"
3. Find adequate information resources	12: Using information technology or electronic resources (internet)	-"Teachers then gave some times to students to browse through internet" - "Students went through several websites"
4. Select required information, read, record and present the finding	13: understand the topic, clearly define the purpose of reading the information	- "Students went through several websites on their own to find the keywords and examine the information found."
	18. Record relevant information from reading	- "Then, when the students feel that the information found was relevant to the keywords, they wrote down the selected information in the worksheet."
	21. Oral presentation.	- "asked the students to discuss together and share about their answer"
5. Self-evaluation of own ability and skill	23. Reflect on the work process.	- "Teacher D talked briefly for about 5 minutes about overall content of today's class and students revised their worksheet"
	25. Evaluate further improvement for the assignment	- "students submitted their worksheet to Teacher D."
	26. Self-evaluation of the presentation.	- "students revised their worksheet to see if they have missed out any important information."

Stage 2: 'Identify the purpose of the assignment clearly'

Teacher explained to students what they are going to learn in the class. There were a number of activities in this stage, but in Case D only two activities were done which are examine students existing knowledge of a topic and think about a topic from many

perspective. At first before explaining content of the topic, Teacher D asked students to find and understand keywords (‘media’ and ‘media literacy’) on their own. The activity “students went through several websites on their own to find the keywords” showed that students understand about the keywords on their own, and after having prior knowledge only then teacher explained about the topic to them. After some time, Teacher D asked the students what they have known about those keywords and then only explained the correct meaning for the keywords. Activity done in “students to discuss together and share about their answer to see the similarities and additional information” showed that students have the opportunity to learn from many perspectives about same keywords.

Stage 3: ‘Find adequate information resources’

“Teachers then gave some times to students to browse through internet” and “Students went through several websites” statements showed that students only use internet and online resources to find information about keywords given by teacher. Students browsed through many websites and online resources to compare information from different resources.

Stage 4: ‘Select required information, read, record, and present the finding’

Students did only three activities from 10 activities in this stage;1) understand the topic, clearly define the purpose of reading the information, 2) understand the meaning of the text, and 3) oral presentation. Statement “students went through several websites on their own to find the keywords and examine the information found” showed that students knew the purpose of the searching was to get information about those keywords. Statement “when the students felt that the information found was relevant to the keywords, they wrote down the selected information in the worksheet” showed that students wrote the meaning they found on the worksheet and then later on they present and share with class about their findings.

Stage 5: ‘Self-evaluation of own ability and skill’

The activities done in this stage were; 1) reflect the work process (“Teacher D talked briefly for about 5 minutes about overall content of today’s class and students revised their worksheet”), 2) evaluate further improvement for the assignment (“students

submitted their worksheet to Teacher D."), and 3) self-evaluation of the presentation ("students revised their worksheet to see if they have missed out any important information."). In the summary part of the class students listened again about the content of the class and revised their worksheet at the same time. They submitted the worksheet at the end of the class to be evaluated by teacher and to receive feedback and comment about their work. Students did not do self-evaluation of assignment (worksheet) but they did went through the worksheet again at the end of the class. Because of time constraint students did not get direct feedback from Teacher D on the same day.

3.3.2 Case E

3.3.2.1 Basic Information

The subject for class in Case E was Information Study for Participating Community. Students involved in this class were Grade 1 students. This class was conducted for multiple days and the duration was eight hours in total. Four hours were allocated for preparation and another four hours were allocated for presentation session.

3.3.2.2 Content of the class

"What I Want to Introduce" Class

Teacher E explained about the theme for the presentation in the first class. The broad theme set by Teacher E was about "what I want to introduce". Teacher E explained about the presentation project and then asked the students to find the topic they wanted to present by themselves. Teacher E instructed students to use slides to do the presentation. Students were given total of four hours to prepare the presentation. To help students find the topic they were interested in, Teacher E gave example related to favorite things one wants to introduce to others such as about anime, game, book, or artist.

For the project, Teacher E instructed them to not only search about things students know but also to understand what they know and also to clearly define things

they want to know. Teacher E distributed the handout for students to write about details of their project. Students were required to record about the topic they choose and what they have known and want to know in the handout. Teacher E asked students to find information for the content of their presentation on the internet. Later Teacher E explained about how to do search and gave details about keyword searching. Teacher E reminded students about the results they retrieved might be different than what they expected to retrieve.

Students then did the searching and collecting of the data. As for the recording of the data, students were required to record about the relevant information in the handout they received earlier. Everything students have written is the source for the content of their presentation. After finished with gathering data and information, students used all the information in the handout to make slides for presentation. From time to time (hourly) Teacher E monitored the progress of students' work by checking the handout. Teacher E gave advices if the students find any difficulties and problem while preparing slides. In the case where the performance of the students were not enough as understood from the handout, Teacher E gave guidance to them. After students finished preparing the slides, they proceeded with writing report for the assignment. Report was written based on the content of the slides that the students have prepared. Students were also responsible to assess their own work in order to produce good presentation. Students were instructed to read their handout and make changes to the work for improvement after every process. Students did self-evaluate mostly after finishing each process; after preparing slides, after writing report.

On the day of the presentation, each student's presentation was recorded. Teacher E evaluated each student based on the content of presentation if it was easy to see and read. Students who prepared interesting and proper slides have higher chance to receive high marks. Teacher E also looked at how the slides were presented and with proper voice level. If the content of the slides was easy to understand while listening to the presentation, that student was given high marks. Students did self-assessment by evaluating themselves based on their presentation video. After watching the video, students wrote about their evaluation in the handout, for the part they need to improve.

3.3.2.3 Analysis of Case E using PLUS model

Data from the case study was analyzed using PLUS model which is explained in Chapter 1. Activities involved in the class were analyzed and compared with stages in PLUS model.

1. Students choose their own topic
2. Identify the purpose of the assignment clearly
3. Find adequate information resources
4. Select required information, read, record and present the finding
5. Self-evaluation of own ability and skills

Each of the above stage consists of a list of activities (see Appendix C). Table 19 shows the summarization of analysis for Case E regarding the activities that have been conducted in the class.

Table 19. Activities for each stage for Case E

Stage	Activities	Activities in Case E
1. Students choose their own topic	1. Clearly define own interested topic	-" Teacher E explained about the presentation project and then asked the students to find the topic they wanted to present by themselves"
	2. Identify keywords in relation to chosen topic	-"Teacher E explained about how to do search and gave details about keyword searching."
	5. Reviewing chosen topic	-"Students were instructed to read their handout and make changes to the work for improvement."
	6.Planning	-"Teacher E distributed handout for students to write about details of their project. Students were required to record about the topic they choose and what they have known and want to know in the handout."
2. Identify the purpose of the assignment clearly	7: Examine students existing knowledge of a topic	-"Students were required to record about the topic they choose and what they have known and want to know in the handout."
3. Find adequate information resources	12: Using information technology (internet)	-"Teacher E asked students to find information for the content of their presentation on the internet."
4. Select required information, read, record and present the finding	18. Record relevant information from reading	-" …recording of the data, students were required to record about the relevant information in the handout they received earlier"
	19: Select and reject information	
	21: Oral presentation	-"Teacher E explained about the presentation project"
	22: Report writing	-"Report is written based on the content of the slides that the students have prepared."
5. Self-evaluation of own ability and skills	23: Reflect the work process.	-"Students did self-evaluate mostly after finishing each process; after preparing slides, after writing report."
	26: Self-evaluation of the presentation.	-"Students do self-assessment by evaluating themselves based on their presentation video."
	27:Evaluate further improvement for the presentation	-"students write about their evaluation in the handout…for improvement"

Stage 1: ‘Students choose their own topic’

For this stage students only did four activities out of six activities;1) clearly define own interested topic, 2) identify keywords in relation to chosen topic, 3) reviewing chosen topic, and 4) planning. At the beginning of the class, teacher asked students to choose their own topic to be presented which was shown in statement “students to find the topic they wanted to present by themselves”. Based on the topic they have chosen, they need to find keywords in order to do information searching and were taught by Teacher E about keyword searching as in statement “Teacher E explained about how to do search and gave details about keyword searching”. At the same time, all the progress and information were written in the handout distributed. Statement “Students were instructed to read their handout and make changes to the work for improvement.” showed that the students reviewed their chosen topic based on what they have written in the handout to make improvement. After deciding on the final topic, students planned on what they wanted to know or do in the handout which was shown in statement “Teacher E distributed handout for students to write about details of their project. Students were required to record about the topic they choose and what they have known and want to know in the handout”.

Stage 2: ‘Identify the purpose of the assignment clearly’

Regarding Stage 2, the students only did one activity which examine students existing knowledge of a topic which seen in statement “Students were required to record about the topic they choose and what they have known and want to know in the handout”. They wrote about what they knew on the handout and also what they wanted to know. Based on that handout they can recognize what prior information they knew. Students did not do the other two activities; think about topic from many perspective and identify information resources. It is assumed that students did identifying information resources on their own.

Stage 3: ‘Find adequate information resources to complete the assignment’

Statement “Teacher E asked students to find information for the content of their presentation on the internet” showed that students used internet and online resources

only to find the information to complete their presentation project. Because the class was done in computer room students had the opportunity to use internet to find relevant information.

Stage 4: 'Select required information, read, record and present the finding'

In this stage, students did three activities; 1) selecting the required information from recorded notes and deleting useless information ("recording of the data, students were required to record about the relevant information in the handout they received earlier"), 2) oral presentation ("Teacher E explained about the presentation project"), and 3) report writing ("Report is written based on the content of the slides that the students have prepared."). Students recorded relevant information they found on the internet in the handout. They can review and make changes the recorded information. At the end of the class students were required to do oral presentation in front of the class.

Stage 5: 'Self-evaluation of own ability and skill'

Students did three activities when doing self-evaluation which are reflect on the work process, self-evaluation of their presentation, and evaluate further improvement for the presentation. Based on this statement "Students did self-evaluate mostly after finishing each process; after preparing slides, after writing report", students referred to their handout to reflect on what they have done. For self-evaluation they watched the video recording of their own presentation which shown in statement "Students do self-assessment by evaluating themselves based on their presentation video". This statement "students write about their evaluation in the handout…for improvement" shows that students did evaluate further improvement for their presentation.

3.3.3 Case F

3.3.3.1 Basic Information

Subject for class in case F was Information Study for Participating Community. Students involved in this class were in Grade 3. Total duration of this class was 11

hours and class was conducted on multiple days. Six hours were allocated for preparation and another five hours were allocated for presentation session.

3.3.3.2 Content of the class

"Expression and Communication" class

In the first session Teacher F explained the purpose of the class content to students. This class was about how the students express own ideas and thinking and how to effectively communicate the ideas to others. The final product for this class was presentation from all students. Teacher F explained about the presentation timing which is limited to three minutes per student and contains around 6 -7 slides.

Teacher F then instructed students to choose their own interested topic to be presented in the final class. Previous year themes and other students' themes are shown to students to give some ideas for them to choose their own topic. Example of topics are 'food allergy', 'Doraemon', 'about South Korea', '' etc. Students proceed with their assignment by searching and finding information on the internet using keywords from their interested topic and other previous students' theme. Each students were provided one computer in the computer room for them to do their assignment. After finalizing the information which is based on their own interest and other related topic, students chose the final topic they want to focus on.

In the second session Teacher F explained and taught about PowerPoint application. Students learned how to use this application as they will present their work using PowerPoint. Students that still have not decided yet on their topic will proceed to decide in the second class. Other students started to prepare their slides based on what they have learned. Students used internet to locate some online information resources. They search and collect information they needed from various resources on the internet and organize the collected information. Students then proceed to do the analysis of the collected information to select only relevant information. After that, students write the relevant information in their slides. Teacher F allocated two session of this class for students to collect information and write in their slides. By the end of this class, students submitted their topic to Teacher F.

Next, in forth session, Teacher F explained about animation effect for presentation. Students discovered many types of animation effect in PowerPoint application. Students proceed to continue their work by completing their slides. Teacher F instructed students to make their presentation slides appealing to others. While students doing their work, Teacher F monitored the class and answered questions from students those who have problem or difficulties.

In the fifth session, Teacher F explained about how to do presentation. Students did rehearsal for the presentation and made improvement on their work if they need. Students proceed to complete their slides by adding new information or modifying current information. After finish working on their slides, students continue to write a detailed report about their presentation.

Before presentation session, students were required to submit their presentation slides and the report. Teacher F announced the students' number of order for presentation session. On the day of presentation, Teacher F checked the content of students' slides and other criteria for evaluation such as appropriate voice level, design of the slides, timing, and overall appearance of slides. Students evaluated together other students' presentation. Each student properly evaluated their friends' presentation as the marks will be collected by Teacher F. Students also need to evaluate their own presentation based on the criteria provided by teacher. The division of mark for each criterion is 4-(Outstanding), 3-(Excellent), 2-(Good), and lastly 1-(Not good). After finish evaluation, students were able to identify which part that need to be improved.

3.3.3.3 Analysis of Case F using PLUS model

Data from the Case F were analyzed using PLUS model which is explained in Chapter 1. Activities involved in the class were analyzed and compared with stages in PLUS model.

1. Students choose their own topic
2. Identify the purpose of the assignment clearly
3. Find adequate information resources
4. Select required information, read, record and present the finding

5. Self-evaluation of own ability and skills

Each of the above stage consists of several activities in order to achieve the objective of the stage (see Appendix C). Table 20 shows the summarization of analysis for Case F regarding the activities that have been conducted in the class.

Table 20. Activities for each stage for Case F

Stage	Activities	Activities in Case F
1. Students choose their own topic	1: Clearly define own interest	-"Teacher F instructed students to choose their own interested topic" -"After finalizing the information which is based on their own interest and other related topic…"
	2: Find keywords based on interest 4: Define topic based on keywords found	- "Students proceed with their assignment by searching and finding information on the internet using keywords …."
2. Identify the purpose of the assignment clearly	9. Identify information resources	-"They also search and collect information from various resources from internet .."
3. Find adequate information resources	10: Locate relevant information resources 12: Using information technology or electronic resources (internet)	-"Students used internet to locate some online information resources." -"Each students were provided one computer in the computer room .." -"They search and collect information they needed from various resources on the internet.."
4. Select required information, read, record and present the finding	13: understand the topic, clearly define the purpose of reading the information 19. Select and reject information 21. Oral presentation.	-"Students then proceed to do the analysis of the collected information to select only relevant information." -"After that, students write the relevant information in their slides." -"The final product for this class was presentation from all students."
5. Self-evaluation of own ability and skills	24: self-evaluation of assignment 25: evaluate further improvement for the assignment	-"Students did rehearsal for the presentation and made improvement" -" Teacher F checked the content of students' slides and other criteria for evaluation such as appropriate voice level, design of the slides, timing, and overall appearance of slides."
	26: self-evaluation of the presentation	-"Students also need to evaluate their own presentation based on the criteria provided by teacher."
	27: evaluate further improvement for the presentation	-"The division of mark for each criterion is 4-(Outstanding), 3-(Excellent), 2-(Good), and lastly 1-(Not good). After finish evaluation, students were able to identify which criteria that need to be improved."

Stage 1: ‘Students choose their own topic’

From all activities included in Stage 1, students did only three activities out of six activities which were clearly define own interest, find keywords based on interest, and define topic based on keywords found. Teacher instructed students to choose a topic based on their own interest which clearly shown in statement “Teacher F instructed students to choose their own interested topic”. Students read about topics done by previous students to get some idea. They also tried to find keywords based on their interest as shown in statement “Students proceed with their assignment by searching and finding information on the internet using keywords...”. After finalizing information collected from the keywords, students choose final topic to be presented.

Stage 2: ‘Identify the purpose of the assignment clearly’

In Stage 2, students only did one activity out of three activities which is identify information resources. They have decided on own topic in previous stage and proceed with identifying various online information resources on the internet that appropriate for their topic as shown in statement “They also search and collect information from various resources from internet ..”.

Stage 3: ‘Find adequate information resources’

Based on statement “Students used internet to locate some online information resources”, it can be understood that students locate relevant information resources and used internet to search and collect the required information from various online resources. In this stage there is no activities for deciding if information resources are adequate or not.

Stage 4: ‘Select required information, read, record and present the finding’

Three activities out of 10 activities were involved in this stage;1) understand the topic, clearly define the purpose of reading information, 2) selecting and reject information, and 3) oral presentation. Students did select and reject information activity as shown in statement “Students then proceed to do the analysis of the collected information to select only relevant information.”. After that they wrote the collected information in

their slides and presented their findings in front of the class. Students did not do other important activities such as skimming, scanning, understand meaning of text and connet with existing knowledge.

Stage 5: 'Self-evaluation of own ability and skill'

Students did four activities for this stage which are self-evaluation of the assignment, evaluate further improvement for the assignment, self-evaluation of own presentation, and evaluate further improvement for the presentation. For self-evaluation of the assignment students rehearsed their presentation with teacher and made improvement before presentation day as shown in statement "Students did rehearsal for the presentation and made improvement". Teacher checked their presentation on the day based on criteria such as voice level, design of the slides, timing, and overall appearance of the slides. Students also need to evaluate their own presentation based on same criteria. Based on the marks from each criterion, students able to identify further improvement for their presentation. Besides self-evaluation, each student also properly evaluated their friends' presentation as the marks will be collected by teacher.

3.4 Discussion

3.4.1 Characteristics of Case D

Class in Case D did not involve stage 1 from the PLUS model, 'students choose their own topic'. Because it was content-based class, topic and content were based on the syllabus of 'Information Study for Participating Community' subject. No good point is found in Case D that could promote IL directly because this case demonstrated the use of information skills as a means rather than as a purpose.

3.4.1.1 Issue in Case D

Based on PLUS model, issues in Case D are discussed in this section. Stage 2 and Stage 4 were discussed about their issues as there is lack of activities reported for these two stages.

In stage 2, students in this class did not do activity ‘identify information resources’ but proceed to find information on the internet with given keywords. Teacher did not provide list of online information resources, so it was assumed that students used familiar search engine to find information related to keywords. It is argued that students at some point faced difficulties such as overloaded with results from search engine and misjudged relevance information.

Stage 4 involved 10 activities, yet students in Case D only did three activities. They were given keywords, so they know they were searching information related to the keywords. This referred to activities ‘understand the topic, clearly define the purpose of reading the information’ and ‘record relevant information from reading’ and they were instructed to present briefly about their findings. While collecting information about given keywords, students discussed with other students about what they have found. They have chance to see what others think about the same keywords and deepen their understanding from many perspectives. The other activities were very important and should be done in this class, especially skimming, scanning, and select and reject information.

Case D demonstrated a class where students used information skills as a means rather than promoting information skills. Because this class was a one day class and its content was about media literacy, it is understood that students learned about information education in this class.

3.4.2 Characteristics of Case E

3.4.2.1 Good point in Case E

Good points in Case E are discussed based on PLUS model. Stage 2 showed a good instruction from teacher. Besides that Stage 5 is discussed about the good point of evaluation method which is not typical at international schools.

In stage 2, teacher instructed students to write about what they know and wanted to know more about in the handout. Teacher was able examined students existing knowledge based on the handout. Besides that, the benefit of writing in the handout

about their planning is students can see clearly about what they have known or their existing knowledge and connect it with new knowledge or what they want to know. By connecting these two knowledge, students learn better and understand better when collecting information. Yet, students did not do any activity to think about the topic from many perspective because they already given a broad topic for them to focus. Reason why they did not do any activities for identifying information resources is because they can search and browse the internet freely. However, because internet hold vast amount of information, identifying information resources should be done in the class to guide students and teach them about various information resources other than online resources.

In order to promote self-evaluation, students were instructed to monitor their own progress based on their handouts. However, as mentioned in the case, teacher's assistance is required to monitor if students made progress for their work. In addition, students were required to self-evaluate their own presentation by watching own presentation video. This practice is considered good as students clearly see themselves from the audience perspective and able to properly self-evaluate and reflect on what they have done. At the same time they also need to properly evaluate their friends which actually help them to determine what method or technique is appropriate to present to audience as they can watch many presentations.

3.4.2.2 Issues in Case E

Issues found in Case E is discussed in this section. Stage 1 and Stage 4 are discussed as there is lack of activities in these two stages. Apart from that, issue about internet as the only main information resource also discussed.

Unlike Case D, Case E involved stage 1 where students have the opportunity to choose their own topic within broad topic ('what I want to introduce'). Students did not do activity for keyword mapping and defining topic based on keywords. Based on the case reported, teacher basically explained about how to do keyword searching, which was done after students chose their topic and for the purpose of collecting data. As

students did not do these two steps teacher gave hint to choose things they like to help students choose topic. A short activity should be conducted to do keyword mapping and define topic based on keywords to help students develop strong skill of defining appropriate topic even though they are expected to do these activities on their own.

From 10 activities in stage 4, only four activities were done in this class; select and reject information, record relevant information from reading, oral presentation, and report writing. The situation is similar to Case D as students generally collected information on their own. There is a need for teacher to add other activities especially skimming, scanning, and understand meaning of text. For oral presentation students experienced activities of organizing and selecting essential information for the content of slides. Besides that, students also need to submit report writing after finishing their presentation.

Students used only internet to find information they needed, and because of the problem that might occurred such as information overloaded and unreliable information, Teacher E taught about keyword searching. However, this does not help solve problem about unreliable information. Because this class was done on multiple-day basis it was unclear whether students used library collections or other printed materials outside of class hour. As the class was conducted in the computer room, students searched and gathered information from online resources only. There is no activities done to decide if information resources are adequate or not, and students probably decide based on their understanding or within time frame. It is recommended to conduct this activity as students should be exposed from time to time about various resources and how to determine it is enough for them to stop searching.

3.4.3 Characteristics of Case F

3.4.3.1 Good point in Case F

Good point of evaluation method as shown at Stage 5 in Case F is discussed based on PLUS model.

Students in Case F did self-evaluation based on the criteria provided by teacher. This is typical as in other previous practices, but the criteria given by teacher served as an important material as students knew what were expected from their presentation. In order to make improvement it is better for students to clearly understand what criteria they should improve. Important finding, which is similar to Case E, students were instructed to do evaluation for other students. This practice is not typical for other school such as international schools. Evaluation method by classmates is very important as it ensures that students stay focus during other students' presentation. They could learn many new things by listening and understand about others' work.

3.4.3.2 Issues in Case F

Issues found in Case F are discussed based on stages PLUS model in this section. Stages with issue of lack of activities are discussed, but the other stages were conducted in a typical method (Hongisto & Sormunen, 2010, p. 104) and not discuss here.s

In this case students have the opportunity to choose independent topic which can be about anything. Because initiating appropriate own topic requires strong research skills, teacher gave hint and showed previous students' topics to give ideas to students about what they can proposed for their topic. There is no activity reported for keyword mapping, reviewing chosen topic, and planning. Although students were given opportunity to choose own topic, for each session of the class teacher taught about other topic such as about PowerPoint and animation effect. As a results, other activities in stage 1 were expected to be done on students' own time. However, there still should be a short session to conduct important activities mentioned earlier, identification of keywords and keywords mapping for practice purpose.

Students only did one activity in Stage 2 only which is to identify information resources. This is however not enough for the students to properly understand the purpose of their work. Activity 8, 'think about the topic from many perspective, and define relationship between keywords' from the complete list of activities should be done in order for students to identify required information resources.

Case F was similar with previous two cases, students only focus on using internet to find the information, there is no activity done to decide if the information resource is adequate or not.

Most of the time students spent in the class selecting, required information and record the relevant information. Basically they select information which they have already know and new information which appeared interesting to them. No activity was done for skimming, scanning, and understand meaning of text which is actually important as mentioned previously. This is the same issue found in Case D and Case E.

3.4.4 Applications for future practice in Information subjects at high school in Japan

3.4.4.1 Good points from IL practices at public schools

Based on the discussions in previous sections, good points found from three case studies at public schools is summarized in this section. Good points are shown by activity done in Stage 2 and evaluation method done in Stage 5.

In Stage 2 in Case E, teacher was able examined students existing knowledge based on the students' handout. Teacher instructed students to write what they have known and wanted to know more is a good suggestion for future practices. Examining students existing knowledge is important to ensure students can relate what they already knew with new knowledge they found later (Lipson, 1982).

The method of evaluation by classmates in Case E and Case F at public schools is not typical at international schools. This evaluation method is considered good because it encourages students to learn from other students. It is compulsory for each student to evaluate other students, thus they concentrated on listening to others' presentation. They can learn many new things and even see the same thing from many perspective by listening to others' presentation.

3.4.4.2 Common issues in IL practices at public schools

Based on the discussions of issues in all case studies, common issues found are summarized in this section. Limited type of information resources, mostly internet were used in the case studies. Besides that, there is lack of activities to promote reading skills in Stage 4.

Classes mentioned in case studies only use internet as the main information resource. Because of time-constraint in one-day class, using internet to search for information is actually efficient. However for multiple-day class, students should be able to locate various type of information resources such as library collections and outside experts (Kuhlthau et al., 2015). Students should be able to differentiate types of information resources between primary, secondary or tertiary resources. Besides that, when searching on the internet students usually experience overload of information which may or may not be relevant to them (Lorenzen, 2001). To solve this problem, as the students still developing their search skills, it is recommended for teachers to provide a list of credible and reliable online resources to students or by referring to online databases subscribed by school library. Teachers should be able to explain to students how to identify reliable online resources in order for students to learn independently. It is noted that, in Information subjects, this topic is taught to students at some point.

The significant finding can be seen for activities to promote effective reading, selecting and rejecting information. All cases did not have activities for skimming, scanning information, and understand meaning of text. Students should practice doing these activities; skimming and scanning to enhance their reading skills (Diaz & Laguado, 2013). However, this activity is very important to be taught so that the students can do speed-reading or effectively read and recognize relevant information within a time frame (Branch, 2002). It helps students to decide efficiently whether to select or reject information they found. Hence, it is recommended to include this activity in the class even a short session for practice purpose if there is a limitation with regard to time.

CHAPTER 4 GENERAL DISCUSSION

4.1 General Discussion

This chapter discusses about the findings from both Study 1 and Study 2. The concept of IL adopted by international schools and public schools is different, thus IL practices at these two types of schools were examined. Good points of IL practices at international schools could contribute to the future IL practices at public schools and vice versa.

4.1.1 General Discussion of Study 1 and Study 2

The main purpose of this research was to examine present characteristics and issues of IL practices at high schools in Japan. The following research questions were addressed in this study:

1. What are the characteristics and issues of information literacy practices at international high schools in Japan?
2. What are the characteristics and issues of information literacy practices at public high schools in Japan?
3. What are the issues and suggestions to plan effective information literacy practices in the future?

In Japan, public schools follow national curriculum. In the curriculum, the concept of IL was introduced as ‘the skill to use information effectively’ by MEXT. Students at public schools learn about skills to use information effectively through Information course which includes two subjects: Information Study by Participating Community and Information Study by Scientific Approach. However, in most international schools in Japan, they follow international curriculum concept of IL defined by the ALA as “an ability to find, evaluate, and use information effectively”. At international schools, students acquire IL through inquiry-based subjects or independent inquiry projects. Because the concepts of IL are different, two types of high school were selected to be examined which are international schools and public schools.

Results from case studies in Study 1 which addressed the first research question were analyzed and discussed using Kuhlthau's Guided Inquiry. Results from case studies in Study 2 which addressed the second research question were analyzed and discussed using Herring's PLUS model. The following section discussed characteristics for practices at international schools and public schools based on the standard stages formed in Figure 7 (Section 1.5.3, p. 28).

4.1.2 Characteristics: Good points from international schools and public school

Main Stages

Main stages consists of Stage 2 to Stage 7 of Guided Inquiry and Stage 2 to Stage 4 of PLUS model as shown in Figure 7 (Section 1.5.3, p. 28). Stages from Guided Inquiry are 'build background knowledge', 'exploring ideas', 'identify inquiry question', 'gather useful information', 'create to communicate', and 'share with others'. Stages from PLUS model are 'identify the purpose of assignment', 'find adequate information resources', and 'select required information, read, record, and present'.

At public schools, students in Case E did a very important activity which examined students existing knowledge. Teacher in Case E instructed students to clearly define a topic they already knew and want to research on and share with other students. This is a good practice which can be applied for international schools in Stage 2 'build background knowledge', so Stage 2 and Stage 3 could be divided properly by following the instruction. This activity of examining students' existing knowledge is important as it affects how the students perceive new information. By understand existing knowledge, it helps students to connect and relate with new information (Lipson, 1982).

At the gathering stage, students at international schools utilized outside experts at main information resources which is a good practice. Kuhlthau mentioned in her book that outside expert is actually underutilized at schools and should be recommended to students (Kuhlthau et al., 2015). It is an important practice that more schools should start to utilize outside experts together with other multiple resources such as library collections, newspaper, and magazines to promote IL more effectively.

Outside experts can give different types of valuable information to students. Before students formulate an inquiry, they can ask about ideas and suggestions from experts. Students also can obtain specific and detailed information from experts after they decide on their inquiry.

Evaluation Stage

Stage 8 ‘evaluate and reflect’ from Guided Inquiry and Stage 5 ‘self-evaluation’ from PLUS model are included in this stage as shown in Figure 7 (Section 1.5.3, p. 28).

In all the case studies at the public schools, evaluation task was either done by teachers, classmates or self-evaluation. Evaluation done by classmates is not a typical method at international schools. Classmates evaluate together what other students have done for the assignment. This practice of evaluating other students’ presentation ensure students to stay focused during the presentation session and they could learn more from other students. Apart from that, they have the opportunity to see many perspectives from others for that particular assignment. It is recommended for international schools to practice evaluation by fellow classmates especially for independent projects.

4.1.3 Issues and suggestions for international schools and public schools

Main Stages

Main stages consists of Stage 2 to Stage 7 of Guided Inquiry and Stage 2 to Stage 4 of PLUS model as shown in Figure 7 (Section 1.5.3, p. 28).

According to Guided Inquiry stages (Figure 6, p. 24), which are seen as ideal processes in promoting IL, stage ‘build background knowledge’ and stage ‘exploring ideas’ are two different stages. However, based on the analysis of the case studies, there is no clear instruction from teachers to students regarding this matter. Students did both stages at the same time without clearly knowing the difference between these two stages. Stage ‘build background knowledge’ is for students to understand fundamental information related to topic of interest that they have chosen. It is important for them to clearly understand the broad view of the topic before exploring ideas related to it. By

understanding the broad view, students can smoothly explore many ideas and obtain meaningful thoughts before forming final inquiry question later on. Thus, it is necessary and recommended for future practices to clearly divide these two stages. Besides that, as mentioned in the previous section, activity from public schools which is 'examining students existing knowledge' should be instructed by teacher during 'build background knowledge'. Students can clearly differentiate between these two stages by following the concrete instruction.

From the discussions of case studies at public schools, one common issue is the use of internet as main information resource. No other information resources such as library collections, magazines, newspapers, and encyclopedia are being used in the classes. Using internet is effective with class that has limited amount of time especially one-day type of class as shown in Case D. However, for multiple day classes, it is suggested for teachers to introduce other type of information resources to students. It will be more effective to instruct students to choose different types of information resource when completing their task. This is because students need to know there are other more reliable resources besides internet which they can refer to such as newspapers and encyclopedia. In addition, students need to learn about different types of information resources for them to be able to distinguish specific techniques or methods that should be used to acquire information from different types of resources. Method of collecting data from outside experts or professional as discussed in international schools cases previously is also recommended to be implemented in future practices at public schools.

In all three case studies at public schools, important activities to promote reading skills which is skimming, scanning, and understanding meaning of text were not included in the classes. These activities need to be included as students need high level of reading skills to navigate through enormous amount of information available nowadays. This reading skill is very important as students need it to acquire relevant information within a range of time and it can also help save a lot of time when reading extensive text (Diaz & Laguado, 2013). Apart from that, students need to learn more about understanding meaning of text as it shows that the same text has different

meanings when interpreted from different context. Therefore it is recommended for future practices to include these important activities: skimming, scanning, and understanding meaning of text to promote IL effectively.

4.1.4 Limitations

Only few cases were reported in this study. Extensive research should be done to collect more data from both teachers and students. This study examined the students' activities mainly because there was not so much information regarding teachers' instruction on the web, and in the answers of the questionnaires and the interview.

Both Study 1 and Study 2 were based on the structured questionnaire and interview. There is lack of data and information about teachers' assistance and instruction. This data is needed so to understand more concretely about IL practices that have been done. In future studies, it may be suitable to use other methods to collect data such as class observation or interviewing both teachers and students.

This study only examined 'Information' course but not 'Period for Integrated Studies' course. In Japan, at public high schools, the contents of 'Period for Integrated Studies' course are expected to promote IL. Therefore, it is necessary to examine this course in the future research.

CHAPTER 5 CONCLUSION

Effective information literacy practices is very important in order to successfully promote information literacy to students. This study analyzed six case studies of IL practices at both international high schools and public high schools by using two models (Guided Inquiry and PLUS model).

Most of international schools adopted IL concept defined by ALA while public schools followed 'skill to use information effectively' concept defined by MEXT. Herring concept of information skills includes 'skill to use information effectively' as shown in Figure 4 (p. 16). Both concepts are different because IL concept is considered broader than information skills. This study clearly showed the relationship between these concepts.

The main purpose of this study is to examine present characteristics and issues of IL practices for high school students at international schools and public schools in Japan. Research questions addressed in this study are as follows:

1. What are the characteristics and issues of information literacy practices at international high schools in Japan?
2. What are the characteristics and issues of information literacy practices at public high schools in Japan?
3. What are the issues and suggestions to plan effective information literacy practices in the future?

This study showed some good points and issues from each type of schools and some suggestions. The following are the characteristics and issues of IL practices at international high schools in Japan. A good point from IL practices at international schools is students there utilized outside expert as one of the main information resources. Instead of browsing internet which has enormous amount of information, it is beneficial for students with less experience in searching and collecting information to meet with professionals and collect data from multiple resources.

Issue of the structure of stages involved during students' activities is found in IL practices at international schools. It is recommended for future practices to clearly separate between stage 'build background knowledge' and stage 'exploring ideas'. IL could be promoted more effectively by having separate stages as in Guided Inquiry.

The following are the characteristics and issues of IL practices at public high schools in Japan. Good point in IL practices at public high schools is the teacher instruction about 'examine students existing knowledge' activity in stage 'identify the purpose of assignment'. Teacher gave a clear instruction to students to identify their prior knowledge and articulate what they want to research.

Two issues were found in IL practices at public schools. First, there is lack of activities for skimming, scanning, and understand meaning of text which are crucial for students to polish their information skills. Second, results showed that students mainly use internet as their main information resources.

The following are the suggestions for future IL practices at international high schools and continued by suggestions for future IL practices at public high schools. The instruction from teacher as shown at public schools regarding 'examining existing knowledge' should be added in stage 'build background knowledge' so students know how to clearly divide between the stage 'build background knowledge' and the stage 'exploring ideas'.

Besides that, evaluation by fellow classmates that has been done at public high schools was an example of good point that can be implemented at international schools. This is because this evaluation method is not common at international schools. Students can learn from different perspectives by monitoring other students' work and learn different methods and techniques used by other students when they were conducting research or completing assignment.

At international schools, it is a typical practice for students to initiate their own inquiry or theme. However, this is not a usual case at public schools. It is suggested for public schools, to include this activity of initiating own theme in the future IL practices. It is also suggested for public high schools to utilize outside experts and expose the

students to various types of information resources such as library collections, magazines, newspapers, and encyclopedia in the future practices.

The limitation of this study is inadequate information and data about instructor's assistance for each stage and activity. More data should be collected for both students' activities and instructor's assistance to understand IL practices in-depth. However, findings from this study are expected to help improve future IL practices.

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Appendices

Appendix A

Study 1 Questionnaire

For Teacher/Teacher-Librarian S___

Pre-survey About Information Literacy Program

(Information literacy is a set of skills to select, evaluate, and use information appropriately and effectively- AASL)

The purpose of this survey is to ask if your school has any specific courses or classes that promote information literacy to 9th to 12th grade students.

Instruction: Please circle the answer.

1. Did your school have any specific courses or classes that promote information literacy to 9th to 12th grade students *for* 2014-2015 School Year? *Please circle the appropriate one*.
   a. Yes **b.** No (*Please answer only Question 5*)
2. Who is involved in planning and developing the content of information literacy course/class in Question 1? *Please circle all that apply.*
   a. Teacher **b**. Teacher-librarian **c**. Librarian **d**. Student
   e. Other (_____) **f**. Not applicable **g**. Don't know
3. Please choose *the best course/class that promotes information literacy* to 9th to 12th grade students for 2014-2015 School Year. If your school has many courses/classes for information literacy, the main criteria are teaching materials *including library collection and others* and *utilisation of library.* Additional essential criteria are *achievement of the class/course, positive feedback, or increase in student achievement*. If your school has no specific course/class for information literacy, please write the best course/class that helps promote information literacy. The criteria for the best course/class are similar as mentioned before. Please write important information below.

Name of course/class : _____ Grade : _____

Specific objective:_____

Main Instructor (*Please circle all that apply*) : Teacher / Librarian / Teacher-librarian / Other : _____

Subject (*Please circle one*) : Mathematic / Science / English / Social Studies / Other :_____

Total hours and days of course/class :_____

Duration: From _____/_____/____ (dd/mm/yy) To ____/_____/_____(dd/mm/yy)

Content of course/class along a timeline (*Please choose only one main day if course/class was conducted over several days.*):

Procedures	Students' activities	Instructors' assistance	Evaluation criteria	Teaching materials
Introduction				
Main body of program				
Summary				

Utilisation of library (space, equipment, library staff, etc) : ☐ Yes ☐ No (*Please explain your answer below*)

_____

_____

Please continue on next page

For Teacher/Teacher-Librarian S___

4. Based on your school curriculum, please list out important information literacy skills for high school students.

_____

_____

_____

5. In your opinion, please list out important information literacy skills for high school students.

_____

_____

_____

Name of person completing survey: _____

Position:_____

Name of school : _____

Date: ____/____/_____ (dd/mm/yy)

**Thank you for your valuable input. We will distribute another questionnaire if you decide to participate in our study.

Appendix B

Study 2 Questionnaire

Q1. Participant's information.

Q1-1. Please select your gender. Please circle only one answer.

a. Male b. Female

Q1-2. Please select your age range. Please circle only one answer.

a. 20's b. 30's c. 40's d. 50's e. 60's

Q1-3. Please write years of working experience.

( ) years

Q1-4. Do you in charge of teaching 「Information」 subjects? Please circle only one answer.

a. Yes b. No (Subject you are teaching:)(Please answer Q6)

Q1-5. Please choose subject you are in charge for 「Information」 subjects for 2013~2015.

a. Information Study for Participating Community b. Information Study by Scientific Approach

Q1-6. Please choose students' grade for 「Information」 subjects you are in charge of for 2013~2015.

a. grade 1 b. grade 2 c. grade 3

Q2-1. The content of 「Information」 subjects you taught for 2013~2015, is included about students choosing their own topic, collecting data about that topic, and solving it?

a. Yes (Please continue with Q2-2)
b. No (Please continue with Q4-1)

Q2-2. Please select the activity that is included in class Q.2-1. Please refer to Sheet A for the list of activities. Circle all the activities that are included the whole content of the class (class was conducted more than one time).

1.	2.	3.	4.	5.	6.	7.	8.	9.	10.	11.	12.	13.	14.
15.	16.	17.	18.	19.	20.	21.	22.	23.	24.	25.	26.	27.	28. (About:)

Q3. The most activities that were done in the class (from 1 until 28 in Sheet A).

Q3-1. Regarding the content of the class, please circle the answer below based on Sheet A.

1.	2.	3.	4.	5.	6.	7.	8.	9.	10.	11.	12.	13.	14.
15.	16.	17.	18.	19.	20.	21.	22.	23.	24.	25.	26.	27.	28. (About:)

Q3-2. Please choose the students' grade for this class.

a. grade 1 b. grade 2 c. grade 3

Q3-3. Please write total number of hours for this class.

Total number of hours : _____ (Choose the duration : 1-day / Multiple-day)

Q3-4. Please write the details of content of this class in Sheet B-1. If the classes are done for multiple time, please write the content for each class in one Sheet B-1. (If the classes are done for three times, please write the details in 3 copies of Sheet B-1)

Q3-5. About the class in Q3-4, is the planning done in collaboration with school librarian or teacher-librarian? Please circle one answer

a. Yes b. No

Q3-6. About the class in Q3-4, did you use the library space and also its collections? (Including computers and internet in library)

a. Yes (Please answer Q4) b. No (Please answer Q3-7)

Q3-7. In addition to the class in Q3.6, did you use library space and its collections when doing activities for students to choose their own topic, collecting data about that topic, and solving it? Please circle only one answer.

a. Yes (Please answer Q3.8) b. No (Please answer Q4)

Q3-8. About the content that is included in class in Q3-7, circle all the activities done as listed in Sheet A. Please circle any applicable activities.

1. 2. 3. 4. 5. 6. 7. 8. 9. 10. 11. 12. 13. 14.
15. 16. 17. 18. 19. 20. 21. 22. 23. 24. 25. 26. 27. 28. (About:)

Q3-9. Please write details of content of this class in Sheet B-2. If the classes are done for multiple time, please write the content for each class in one Sheet B-2. (If the classes are done for three times, please write the details in 3 copies of Sheet B-2)

Q4-1. The content of「Informatics」subject you taught for 2013~2015, is included about teachers give a common issue, collecting data about that issue, and solving it?

a. Yes (Please answer Q4.2) b. No (Please answer Q6)

Q4-2. Please select the activity that is included in class Q.4-1. Please refer to Sheet C for the list of activities. Circle all the activities that are included the whole content of the class (if class was conducted more than one time).

1. 2. 3. 4. 5. 6. 7. 8. 9. 10. 11. 12. 13. 14.
15. 16. 17. 18. 19. 20. 21. 22. 23. 24. 25. 26. 27. 28. (About:)

Q5.The most activities that were done in the class (from 7 until 28 in Sheet C).

Q5-1. Regarding the content of the class, please circle the answer below based on Sheet C.

7. 8. 9. 10. 11. 12. 13. 14.
15. 16. 17. 18. 19. 20. 21. 22. 23. 24. 25. 26. 27. 28. (About:)

Q5-2. Please choose the students' grade for this class.

a. grade 1 b. grade 2 c. grade 3

Q5-3. Please write total number of hours for this class.

Total number of hours : _____ (Choose the duration : 1-day / Multiple-day)

Q5-4. Please write details of content of this class in Sheet D-1. If the classes are done for multiple time, please write the content for each class in one Sheet D-1. (If the classes are done for three times, please write the details in 3 copies of Sheet D-1)

Q5-5. About the class in Q5-4, is the planning done in collaboration with school librarian or teacher-librarian? Please circle one answer

a. Yes b. No

Q5-6. About the class in Q5-4, did you use the library space and also its collections? (Including computers and internet in library)

a. Yes (Please answer Q6) b. No (Please answer Q5-7)

Q5-7. In addition to the class in Q5.4, did you use library space and its collections when doing activities for teachers gave a common issue, collecting data about that issue, and solving it? Please circle only one answer.

a. Yes (Please answer Q5.8) b. No (Please answer Q6)

Q5-8. About the content that is included in class in Q5-7, circle all the activities done as listed in Sheet C. Please circle any applicable activities.

1. 2. 3. 4. 5. 6. 7. 8. 9. 10. 11. 12. 13. 14.
15. 16. 17. 18. 19. 20. 21. 22. 23. 24. 25. 26. 27. 28. (About:)

Q5-9. Please write details of content of this class in Sheet D-2. If the classes are done for multiple time, please write the content for each class in one Sheet D-2. (If the classes are done for three times, please write the details in 3 copies of Sheet D-2)

Q6. Please write freely about what you would like to teach in the class (besides all the activities mentioned in previous questions) in order to promote information literacy to students.

Appendix C

Sheet A

A Students choose their own topic.

1. Clearly define own interested topic
2. Identify key words in relation to chosen topic
3. Keywords mapping
4. Define topic based on keywords
5. Reviewing chosen topic
6. Planning

B Identify the purpose of the assignment clearly

7. Identify students existing knowledge of a topic
8. Think about the topic from many perspective, define relationship between keywords.
9. Identify information resources

C Find adequate information resources

10. Locate relevant information resources
11. Decide if information resource is adequate or not
12. Using information technology (such as internet)

D Select required information, read, record, and present finding

13. Understand the topic, clearly define the purpose of reading the information
14. Gain overall impression of the text (skimming)
15. Locate specific piece of information (scanning)
16. Understand meaning of the text
17. Connect meaning of the text with existing knowledge
18. Record relevant information from reading
19. Selecting required information from recorded notes and deleting useless information
20. Evaluate information and author's thought
21. Oral presentation
22. Report writing

E Self-evaluation of own ability and skills

23. Reflect on the process of completing assignment
24. Self-evaluation of assignment
25. Evaluate further improvement for assignment
26. Self-evaluation of the presentation
27. Evaluate further improvement for the presentation.

Appendix D

B Identify the purpose of the assignment clearly

7. Identify students existing knowledge of a topic

8. Think about the topic from many perspective, define relationship between keywords.

9. Identify information resources

C Find adequate information resources

10. Locate relevant information resources

11. Decide if information resource is adequate or not

12. Using information technology (such as internet)

D Select required information, read, record, and present finding

13. Understand the topic, clearly define the purpose of reading the information

14. Gain overall impression of the text (skimming)

15. Locate specific piece of information (scanning)

16. Understand meaning of the text

17. Connect meaning of the text with existing knowledge

18. Record relevant information from reading

19. Selecting required information from recorded notes and deleting useless information

20. Evaluate information and author's thought

21. Oral presentation

22. Report writing

E Self-evaluation of own ability and skills

23. Reflect on the process of completing assignment

24. Self-evaluation of assignment

25. Evaluate further improvement for assignment

26. Self-evaluation of the presentation

27. Evaluate further improvement for the presentation.

Appendix E

Sheet B-1

Procedure	Expected Ability and Skill (① If the activity is listed in Sheet A, please choose the number and write basic content of that activity) (② If the activity is not listed in Sheet A, please write title and basic content of that activity)	Students' Activities	Teaching Materials (multimedia, library utilization including space and collections, usual materials' name used)	Teacher's Assistance	Evaluation Method and Evaluation Criteria
Introduction ( ) minutes					
Content of class ( ) minutes					
Summary ( ) minutes					

Appendix F

Sheet B-2

Procedure	Expected Ability and Skill (③ If the activity is listed in Sheet A, please choose the number and write basic content of that activity) (④ If the activity is not listed in Sheet A, please write title and basic content of that activity)	Students' Activities	Teaching Materials (multimedia, library utilization including space and collections, usual materials' name used)	Teacher's Assistance	Evaluation Method and Evaluation Criteria
Introduction ( ) minutes					
Content of class ( ) minutes					
Summary ( ) minutes					

Appendix G

Sheet D-1

Procedure	Expected Ability and Skill (⑤ If the activity is listed in Sheet C, please choose the number and write basic content of that activity) (⑥ If the activity is not listed in Sheet C, please write title and basic content of that activity)	Students' Activities	Teaching Materials (multimedia, library utilization including space and collections, usual materials' name used)	Teacher's Assistance	Evaluation Method and Evaluation Criteria
Introduction ( ) minutes					
Content of class ( ) minutes					
Summary ( ) minutes					

Appendix H

Sheet D-2

Procedure	Expected Ability and Skill (⑦ If the activity is listed in Sheet C, please choose the number and write basic content of that activity) (⑧ If the activity is not listed in Sheet C, please write title and basic content of that activity)	Students' Activities	Teaching Materials (multimedia, library utilization including space and collections, usual materials' name used)	Teacher's Assistance	Evaluation Method and Evaluation Criteria
Introduction ( ) minutes					
Content of class ( ) minutes					
Summary ( ) minutes					