

Designing an inquiry based learning environment in the school library

Kyoko Shioya*1, Tatsuya Horita*2, Kenichi Kubota*3

kyoko.shioya@nifty.ne.jp

Graduate School of Informatics Kansai University*1, Tamagawa University*2, Kansai University*3
Osaka, Japan

Abstract: The purpose of this study is to identify the points designing an inquiry based learning environment at school libraries from the viewpoint of its users or students. Since inquiry based learning was introduced to the school curriculum, users need skills of information collecting, reporting and presentation making. The authors interviewed the teacher-librarian at the high schools. These teacher-librarians help students write theses and essays, as well as observing their respective library. The interview results reveal the following three common findings:

1. School libraries need to be equipped with good ICT environment since the school libraries have been changing from a place of research to a place for presentation making and discussions.
2. Teacher-librarian need to play the role of managers. This is due to the users' acquisition of information skills. Thus the users' needs in the library are not only limited to reading, but also extended to discussion, presentation making, and group work activities.
3. Users have an interest in searching for a variety of information, such as books, newspapers and Internet searches. Hence an online database is necessary for users to search a variety of information.

The authors found three areas to upgrade the school libraries; "equipment/building", "teacher-librarian" and "media". This is because the school library has changed its primary function from a place of reading to place of inquiry based learning. Based on these findings, the authors appropriately designed the libraries of both the elementary and junior/senior high school of Kansai University. The authors are currently evaluating user's satisfaction for future possible revision.

Keywords: *ICT in education, Library education, Information skills, Inquiry based learning, Learning environment*

Background

In Japan, reading is encouraged and the school library has been for a long time merely "a place where a student reads books" The duty of the arrangement of a teacher-librarian was imposed upon schools of 12 or more classes by the School Libraries Law revision in 1997. "Hours of comprehensive learning" starts from the government-guidelines-for-teaching revision in 1998, and inquiry based learning has come to be thought as important. In inquiry based learning, a student needs to set up a subject by himself, to collect information, and to respect. These capabilities are required. The school library where it was only "a place where a student reads books" has become a place of collecting and offering necessary information. A teacher-librarian is now expected to a specialist in raising the capability to utilize School-A library and to perform inquiry based learning.

It is necessity for a teacher-librarian to redesign the learning environment of a school library to a place of learning from the place of reading. The library is designed based on the components of "equipment/building", "teacher-librarian", and "media." The school library is not an exception. Reading "equipment/building", the desks and chairs which are used for lessons came to be, instead of the ones used for reading. Regarding the "teacher-librarian", they were assigned the role is of maintaining books and magazines. Now they are the bridge between the library.

As for "media", not only books for reading but books for lessons were also purchased.

Ten years have passed since the learning environment improvement in the school library as a place for inquiry based learning was started. Now the school library in Japan is a place for inquiry based learning rather than merely a place for only reading(Kasai 2009).

However, from our studies there are two types of necessary skills for using information in inquiry based learning by students. One is the skill of gathering information and that can be mastered. But the second skill of reporting and speaking about investigation results is harder to master(Shioya 2012). Also, It is already mentioned Programme for International Student Assessment (MEXT 2009).

How to students study as "users of the school library" has changed since the introduction of inquiry based learning, and the opportunity of using the school library in lessons has increased. In order to utilize the school library in inquiry based learning, Horikawa described that components of the school library such as "equipment/building", "teacher-librarian" and "media" need to be arranged from the viewpoint of its "users" and listed requirements (Horikawa2012). After reading this report, we think that it is necessary to redesign the learning environment of a school library in which students who are the "users" can master the skills of not only collecting information, but reporting what has been investigated. In addition, usually we say the "user" of the school library is both the students and the teachers, but in this study we focus only on the students, since they are the main people in inquiry based learning.

Research Objective

The purpose of this study is to clearly make the requirements for the learning environment in the school library correspond to inquiry based learning from the viewpoint of the students who are the users. In addition, in this study the emphasis is put on the learning environment design in which the students, who are users, can master skills not only to gather information, but also to report what they have investigated in inquiry based learning.

Research Method

Surveyed schools

We selected three junior/senior high schools (School-A, B, C), where there are lessons for the students, or users, in their school library to not only investigate but also to put together an essay or paper after investigating. The reason why we considered we can pull the requirements of the learning environment from them is because in order to carry out such kind of lessons, it is necessary to have the components of "equipment/building", "teacher-librarian" and "media" in place.

The following are the features of these three schools.

School- A: a private and junior/senior high school in Tokyo. The school library is positioned as a place of new learning where information and media are utilized.

School-B: a private and junior/senior high school in Osaka. There is a teacher-librarian who can do paper instruction and it is performing paper instruction systematically.

School-C: a private and junior/senior high school in Tokyo. The high school has an independent building library and has arranged the sources of information to which it can respond to student's various paper themes.

Research Day and subjects

We visited three schools from June to August in 2009, and subjects were the teacher-librarians from each school.

Research method and Survey content

We carried out a structure interview about how to improve "equipment/building," "teacher-librarian," and "media" for users in inquiry based learning

The question to three teacher-librarians is as follows.

1. How to improve the lesson space for performing an inquiry based learning.
2. When a student carry on with an inquiry based learning tasks, what is the teacher-librarian doing?
3. How to improve the information and data based on the various themes of the students.

Method of Analysis

Based on the interview results, we used the following viewpoints to make our analysis.

1. There is a precedence research Horikawa 2012 which describes the importance which the element of "equipment/building", "teacher-librarian" and "media." makes a "user" utilize, and lists requirements. We confirmed whether the methods from the design of the learning environment in the three schools correspond and satisfies the inquiry based learning requirements by Horikawa.
2. Based on the results from the user's viewpoint given by the teacher-librarian from the three schools, we found common requirements in the school library learning environment.

Finding

Results

"Equipment/Building"

These are the following replies when asked "How can you improve the lesson space while performing inquiry based learning?"

School-A

1. They can accommodate a variety of lessons, and have enough space for three classes at the same time.
2. Each class space is designed for various lessons not only the examinations, but also for workshops, discussions, and presentations.
3. To meet the needs of various lessons, ICT environment such as laptops, large display, and a wireless LAN etc. is necessary.
4. To meet the needs of various lessons, desks and chairs need to be easily moved.

School-B

1. There is enough space for one class for a lesson.
2. Personal desks are designed larger for writing papers.
3. ICT environment such as laptops and wireless LAN etc. is necessary for writing paper.
4. Papers of students are attached an imprint and bar code, this anyone can search for them.

School-C

1. The library is an located in a separate two-story building. The second floor contains stacks, however students can freely enter freely for examination use.
2. Space for lesson is one center area, but there are tables and chairs all around the library so the students can gather information.
3. To gather information, ICT environment, such as laptops and wireless LAN etc. are necessary.

"Teacher-librarian"

When asked the question "When a student carry is performing inquiry based learning tasks, what is the teacher-librarian doing?" and answers are as follows:

School-A

1. The teacher-librarian is always within the school library as its their duty, and is available at any time.
2. The teacher-librarian supports the class while taking collaborating with the class teachers.
3. In order to be able to write papers in high school, throughout the third year of junior high school,

the teacher-librarian sets the basic skills training course for writing papers, and they have been teaching in collaboration.

4. The teacher-librarian creates their own text to assist in an inquiry based learning.

School-B

1. The teacher-librarian is always within the school library as it's their duty, and is available at any time.
2. The teacher-librarian works in collaboration with language teachers offering paper guidance.
3. The teacher-librarian is in charge of lessons in writing papers.
4. In order to prepare writing papers in high school, the teacher-librarian teaches the basics of writing papers.

School-C

1. The teacher-librarian is always within the school library as it's their duty, and is available at any time.
2. The teacher-librarian is working in collaboration with the class teachers when they use the school library.
3. The teacher-librarian is in charge of the guidance of using online database.

“Media”

The following question, “How to improve the information and data based on the various themes of the students” The answers are as follows.

School-A

1. We have 50,000 books to respond to various themes the students have.
2. We actively introduce online database so to be able to obtain new information.
3. We arrange many kinds of magazines in order to obtain new information.

Table-1

Area	Requirements by students as users	School-A	School-B	School-C
equipment	space for gathering information	X	X	X
	space for lessons utilizing information	XX	X	X
	space for stock and display lesson results	X	X	XX
	<i>tools for making thesis or report</i>	XX	XX	XX
	<i>presentation tools</i>	XX	XX	XX
	<i>ICT environment is available</i>	XX	XX	XX
teacher-librarian	searches the information students need	X	X	X
	search not only in their library but in others	X	X	X
	introduction is useable	X	X	X
	lesson of information literacy	XX	XX	XX
	<i>lesson with teacher collaboration</i>	XX	XX	XX
media	variety of choice	XX	XX	XX
	supplements to the lesson is available	X	X	X
	media is suitable for each student	X	XX	XX
	student take interest in display	X	X	X
	continuous improvement of lesson exists, for example knowledge from lessons is confirmed and supplemented in the library, then the lesson returns to the classroom	X	XX	X
	<i>always updated information is always available</i>	XX	XX	XX

* Italic type are not in the points mentioned by Horikawa

* "XX" show the requirements that each school is particularly focused on

School-B

1. We arrange the necessary books strategically based on the themes of the student.
2. We actively introduce online databases so to be able to obtain new information.
3. With a bar code to the student papers, anyone can easily search for them.
4. A bar code on the papers is also used for borrowing so anyone can read them.

School-C

1. We have 160,000 books to respond to various themes the students have.
2. We have abstracts that captures an overview from reference books.
3. We actively introduce online databases so to be able to obtain new information.

Analysis

Significance of utilization by the users

When we analyzed the interview results of three schools items with Horikawa's requirements, we found that all three schools don't meet all the requirements, and there are also requirements out of list (Table 1).

These are requirements that were adopted when designing the learning environment. The teacher-librarians of the three schools specially uses the following during their paper writing guidance.

We were able to find a new perspective regarding, "use for reporting, presentation, and discussion" and "use of ICT" under "equipment/building", and "able to obtain new information always" under "media". Not only the ratio of laptops to number of students and wireless LAN crucial ICT environment but equipment such as projectors and real projectors are important.

As for the "teacher-librarian", we were able to find the evidence Horikawa emphasizes as most significances for users in learning information literacy during lessons. (Referred to information retrieval skills in this paper)

From the interviews, we found that lessons involving the learning of information retrieval skills are taught to students an age before writing papers in high school.

In addition, we found that "it is possible to learn in the classroom with the cooperation of the faculty".

As for "media", we found that the belief of "can always obtain new information" is important because there is the mindset of "now" in the theme of the student's papers. Therefore, School-C actively arranges not only 160,000 books, but also online newspapers and online encyclopedia.

School-B has intentionally purchased books directly relating to papers.

In School-A, their school library is called the "multi-media resource center", and it is designed as a place where students as a user can handle a variety of information and resources.

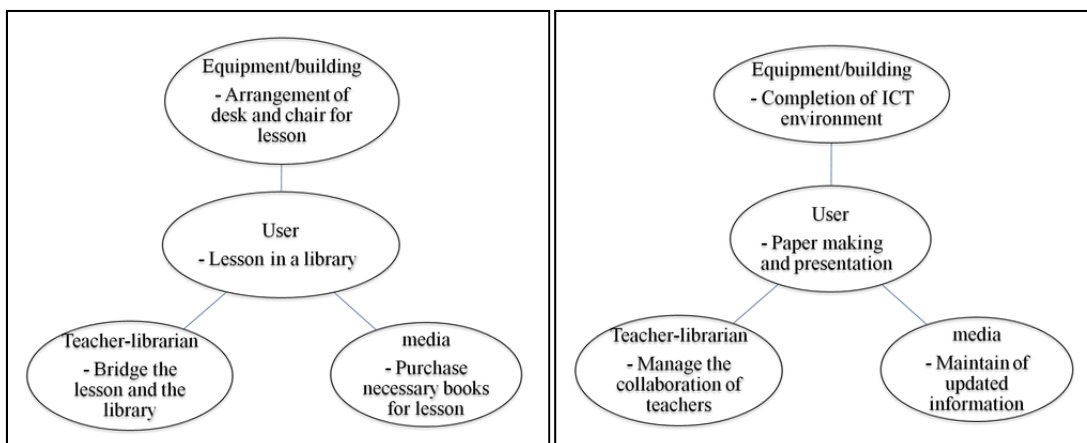


Figure-1

Figure-2

Common requirements of three schools

Based on the teacher-librarian interviews from a learning environment for the school library to inquiry based learning, three schools have requirements that are particularly common. The requirements made by the teacher-librarian effort particularly are shown in XX (Table-1).

The followings are common requirements that are made particularly by teacher-librarian.

1. "Equipment/Building": the school library was changed from a research place to a communication or discussion place, so ICT environment is crucial.
2. "Teacher-Librarian": the lesson involves students to master information literacy. Its and use in learning is increasing, so the presence of a teacher-librarian who manages collaboration with teachers is needed.
3. "Media": The themes that users want to research are diversified, so they are actively introducing the online newspaper and online databases that students can obtain new information.

Thus, the requirements of the learning environment of the school library that is focused on papers making among inquiry based learning had focused on what was found in new, not the perspective of Horikawa.

In addition, we found that the requirements are different whether the assumption is that students use the school library for lessons, or for writing papers and presentations. (Figure-1, Figure-2).

Discussion

In order to handle with not only book reading but also inquiry based learning, 10 years have already passed since school library need to redesign. During the 10 years, the components of the school library, "equipment/building", "teacher-librarian" and "media," have been redesigned. In other words, there are desks and chairs for one class, the teacher-librarian is assigned to bridge lessons and the library, and books are arranged for lessons. Thus, we can have lesson of inquiry based learning in the school library now. However, after 10 years, the current problem is that students as users could master information collecting skill, but can not master the skill of information reporting and presentation making.

For students to have the skills of information reporting and presentation making, we need to examine whether the learning environment in school library still keep current requirement or additional requirements are needed. At the moment of this examination, there is a precedence research by Horikawa. He considered the significance of the components of the school library. "equipment/building", "teacher-librarian" and "media", and listed their requirements.

In our study, we added the interview results of the teacher-librarian who already have lessons of writing papers in his/her precedence research. As a matter of course, the learning environment in these schools meets his/her requirements. From this perspective, we can say these libraries can handle inquiry based learning. However, our studies show there are new requirements not listed in his/her research.

From the study, we estimate the design of the lesson environment is different based on process of inquiry based learning, such as the information collecting process and the reporting/presentation making process.

The learning environments where students can discuss and report are needed for the users of school libraries in order to report after collecting information. "Equipment/building" should be designed not only as the place of lesson with desks and chairs, but also the place of communication to discuss and report. (If we include the situation of report, discussion and presentation, the size, shape and weight of desks and chairs are not equivalent to exclude it.) We could confirm how to arrange the ICT environment, depending if PC quantity is important or projector/real projector is also required.

We can say that the "teacher-librarian" and the "media" are also the same. Information literacy skill is required when students write papers. "Someone" who manages the lesson plans so that students can master the skill is required. At the schools we interviewed, teachers collaborate in lessons, so the role of the teacher-librarian who adjusts the collaboration of the lesson of paper writing is required. In order to handle different themes, the collection of "media" which supports different themes is needed. Especially the new information that is not available sometime. We found we need to arrange newspapers and magazines for students, and also online newspapers and online databases that are always updated.

We found the above requirements at the school libraries we research. These requirements are common at three schools, so it is clear that these are appropriate when we design the learning environment where students can master paper writing.

Conclusion

Thus after introducing inquiry based learning, how users learn was changed, so we found that the requirements of the components at the school library, “equipment/building”, “teacher-librarian” and “media”, were changed. Based on these requirements, we designed a new open school library at the elementary school and junior/senior high school in Kansai University. Currently the library is used after, and we have a plan to further investigate the update points from the view of both users and teachers.

References

- Horikawa ,Teruyo.(2012). Education in the School Library／Significance of learning. *Meiji University Library and Information Study Group Bulletin*, Vol.3. (Original only in Japanese)
- Kasai ,Yumiko. (2009). Learning Support Functions of School Library : School Library as Learning Space, Training of Information Literacy and Learning Skills. *Learning Resources and information*, Vol.211, pp.6-9. (Original only in Japanese)
- MEXT(Ministry of Education, Culture, Sports, Science and Technology in Japan) (2008). Course of Study for Elementary School, Course of Study for Junior High School.
http://www.mext.go.jp/a_menu/shotou/new-cs/youryou/syo/ (reference date 2013-06-05)
http://www.mext.go.jp/a_menu/shotou/new-cs/youryou/chu/ (reference date 2013-06-15)
- MEXT(Ministry of Education, Culture, Sports, Science and Technology in Japan) (2008). "Point of Learning about Integrated Study. " Course of Study for Junior High School, Integrated Study. pp. 96-104.
http://www.mext.go.jp/a_menu/shotou/new-cs/youryou/chukaisetsu/index.htm
(reference date 2013-06-15).
- MEXT(Ministry of Education, Culture, Sports, Science and Technology in Japan) (2009). Programme for International Student Assessment. pp.3-8. (reference date 2013-06-05)
- MEXT(Ministry of Education, Culture, Sports, Science and Technology in Japan) School Library Act, 1953-08-08 enactment, 1997-06-11 amendment.
http://www.mext.go.jp/a_menu/shotou/dokusho/link/080617/001.pdf (reference date 2013-06-15)
- Shioya, Kyoko.,& Horita, Tatsuya. (2009). Development and its Effect of the Guidebook to Learn Skills in Practice Use of Information for Elementary School Students. *Japan Society of Educational Information Research*, Vol.24, No.4, pp.15-26.
- Shioya, Kyoko.,& Horita, Tatsuya. (2012). A Study of the Relation between the Acquisition of Information Skills and the Effect of Guidance by Teacher Librarian. *Japanese journal of Educational Media Research*, Vol.1 No.2, pp.25-39.