Information Needs and Information Seeking Behaviors of Elementary School Students in Taiwan-interviewed with Xin Sheng & Wan Fang elementary schools

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In this article, we mainly want to investigate the transition of the subjects of children's information needs and we discuss the context behind those needs. Moreover, in order to more understand the education of information literacy in Taiwan, we deliberately set our two sample groups from two different schools. One school is Taipei Xin Sheng elementary which is not a information seed school, and another is Taipei Wan Fang elementary school, an information seed school. We respectively interviewed with the students of two schools.

Then we analyzed the common of the two schools and so did the differences. The findings of our study are presented in five parts: stimulus, source, channels, ways and the result. Finally, the main purpose and recommend of our study emphasize the importance to improve education of information literacy on children in Taiwan.

Introduction

The primary goal of this article is to understand the information needs of elementary school students in Taiwan, particularly under the rapid development through the various conduits of information carriers. Secondly, the purpose of this report is to emphasize the information needs of these elementary school students in order to understand their lack of knowledge in this realm. Originally, our hypothesis was that elementary school students have few information needs due to their partial development on both the physiological and psychological fronts; however, this did not prove to be true. Entering a new age of information explosion it can be easily seen from recent studies that children's needs are quite different from previously thought. They have become more active in the context of engaging with their learn material from the school. Hence, our objective was to understand the daily information needs of these children.

Moreover, this study intends to cultivate a better understanding in Taiwan's elementary school system. We always say "the children are the foundation of the country," so to better articulate their information-usage behaviors is absolutely essential for the development of our education system. In our study, there are two sample groups of students that were utilized. The first group selected is from Xin Sheng elementary school, which advocates multi-learning in an open environment. The other sample school is Wan Fang elementary school, an information seed school (see at Note). Thus this report intends to understand if there are any explicit differences between the two schools regarding information seeking behaviors.

Literature Review

Previous research on children's information behaviors has become quite prevalent in the past few years. Summarizing the literature s both internally and from abroad, the focus of this report is mainly on the stimulus of information needs, the subject of information needs, the motivating factor for retrieving information, information channels, and the situations of searching the information online etc.

In terms of the stimulus of the information, Shenton and Dixon(2005) pointed out that children would seek subject information if they feel the information needs were necessary. Moreover, the high specificity of these needs is often out of the range of school assignment, and the lower specificity of the needs is mostly because of a personal interest in a subject on the contrary.

According to Huang and Chen's study, the subjects of information needs can to sorted into different categories including: school work, pop culture, nature, social subjects of debate, interpersonal relationships, accomplishments, surroundings, knowledge of the body, and self-fulfillment.

Similarly, Shenton and Dixon(2004) mentioned the factors of deciding where to get the subjects of the information and the manner in which information were secure. These factors include personal interests, availability of information, awareness of facility of the subject, remnant memories, and advice from others. To further illustrate these examples focus from the subjects of information to the context of information needs along with consulting on study by Shenton and Dixon(2005). In their study, they advance five elements of contexts of children's information needs, and we quoted the five elements on the questionary of our study.

Recently with the rapid development of technology nowadays, the network resources have become one of the most important resources of information, so studies of searching resources online have become more widespread.

To refer to the channels of information resources, Weng pointed out that the main channel in which children obtain information is the Internet, and the second is from the parents. Tseng's study of children's information seeking behavior also focused on the condition in which children used all kinds of resource in the library. She recommended individuals studying in the domain of Library & Information Science should take note of the development in the training of information literacy on children more.

In Weng's article on Internet information behavior of elementary school students in their senior years, she found that the most popular search engine for the students was Yahoo. Besides, entering the questions directly into the search box when looking for information on entertainment, the subjects would use the key words to retrieve information when the information needs were out of school. Likewise, elementary school students would often browse websites that they had previously visited in order to capitalize on words that were used already because they were often short of searching skills and knowledge. When it comes to the ability to judge

information, most children rely too much on the bias of authority. Children often fail in searching for their required information because they have weak researching skills, often due to spelling mistakes or the non-flexibility of the system. In Chang's study, he concluded that children would use the Net because they thought it is very convenient to use the Net, while they thought the biggest disadvantage to use the Net is failure in finding information they want. Research from abroad by Dania(2006) indicated that children expected the search engines to provide service like searching by key words and natural language. Besides retrieval words, they also expected the systems to correct the spelling and to provide definite using instruction, and to build hierarchical catalogs.

Aims, the sample, and the method employed

We respectively interviewed seven 5th-grade students from Xin Sheng elementary school and eight 4th-grade students from Wan Fang elementary school, while employing strategy which was originally devised by Dervin-'the context orientation.' Both schools are located in Taipei City, Xin Sheng elementary school is the school that emphasizes bilingual education while Wan Fang is an information seed school.

We prepared some questions for the interview, the questions can be classified into five categories which were mentioned in Shenton and Dixon(2005)'s article" Information Needs Learning More about What Kids want, Need, and Expect from Research,"(2005) These categories are:

- the stimulus that has given rise to the need
- the manner in which the need develops and to its timescale
- the nature of the information
- the user's situation
- the end product

Our group was very open to the various interpretations to these questions to obtain and understand the 'real' information needs of these children, rather than the needs they took as obligations. For instance, we would ask them to talk about their daily life instead of directly asking them what information needs they really require.

After the interview, we group the results into the ten subjects mentioned in Huang(2002)'s article "Information Needs for Elementary School Students" and then we compiled statistics of those subjects. Eventually, we divided the whole outcome into two parts, school life and daily life. The consideration of the Internet was also one of the focuses in this analysis.

After conducting this extensive research, the group narrowed the projects focus into three distinct but related questions:

1.Are there any specialties in information needs compare with the earlier ones of the elementary school students under the E-generation. If so, does the utilization of the Internet become the main cause of the transition?

2.With the main stream of information psychology, we are putting more focus on an user oriented, along with the information need context of children. This is also a domain on which we are short in Taiwan

3.The utmost concern in regards to information searches, are there any differences between information seed school students and those in the non-information seed school?

Discussion of findings

Understanding subjects and traits of both the information needs of Xin Sheng and Wan Fang elementary school students.

Xin Shang elementary school. In total there were seven 5th-grade students who were all boys.   After conducting the interview, the subjects were sorted into two categories based on the answers they provided, 1.the school life and 2.the diary life. Under these two major headings, they were then respectively divided them into smaller subcategories and discussed in detail.

With respect to school life, most of the subjects from of Xin Sheng did not have personal information needs outside of those requested by their teachers. Besides, assignments usually derived from school subjects, subjects such as "Math, Society, Nature, Science Exhibitions, and English". Although the information needs from science exhibitions were part of their daily learning, these students would have more information needs on the areas they were interested in. As to English, they would often volunteer to learn more in order to improve their English abilities.

To obtain extracurricular accomplishments or skills, for instance, as the of "go" illustrates or to play the piano, it is wrong to suggest that students who did not attend cram school would not have similar information needs. A person who has admirable skills or outstanding accomplishments in a group would often inspire those around them to learn the skill; information needs were come into existence.

In addition to school life, daily life also plays an important role in their lives. Daily life was separated into four subjects-"leisure activities," "interpersonal

relationships," "pop culture," and "others." As to leisure activities, if the student had interests in one sport, she or he would volunteer to search for information for games of that sport including both domestic and international ones that interest them. Moreover, most students were found to be amused by listening to music, as such many students had information needs about music. When it came to pop culture, our results were largely in accordance with Chen(2001)'s study. The students from Xin Sheng spent a greater amount of their own time searching information on cartoons and comic books, and they did it out of their own interests. Students from Xin Sheng also watched a lot of TV in order to relax ; hence they would have more information needs for TV such as reading the TV guide in the newspaper. With regard to video games, a few informants had more information needs, but for the rest this need was not indispensable. Speaking of the international relationships, the older students kind would start to have information needs in this specific area to know more about a girl the student likes. Finally, books are another category of great interest to these students. Those from Xin Sheng capitalized more on books instead of the Internet in order to satisfy their information needs, included in this category are history and science comic books. Another area within information needs that was becoming more prevalent that the group categorized as 'others' is about raising a pet.

Wan Fang elementary school. There were four boys and four girls in the group's interview with Wan Fang elementary's subjects, and all of them were in the 4th grade.   Again the group classified their responses into two categories, school life and daily life. Similarly, these categories were divided into two smaller subcategories as was done to Xin Sheng.

An important finding worth mentioning in the school life category was that Xin Sheng students were more conscious of their information needs from school life were due to their own interests. While students from Wan Fang had more information needs from Nature, Science Exhibitions, and English classes than other subjects. Overall, the information needs from the classes of Wan Fang were not just out of the requests from the teachers; the subjects were inspired from class work. For example, one student of Wan Fang got her idea for her upcoming Science Exhibition.   Nature class and another wanted to read more books about nature science because he was inspired by the nature class. Therefore, students from Wan Fang were more active in searching for information to the school works.

Another aspect of school life was that of school clubs. If students joined clubs on their own initiative, they would retain these habit and the information needs for a longer period of time. In other words, the internal information needs were key to

motivating contiguous information search. This phenomenon can also be described as fitting those in extracurricular accomplishments or skills. Students, however, would be influenced by the external factors more in this aspect. For example, they would consider whether they had enough time to attend cram school in the evening or if they would allow them to join clubs in the first place.

An interesting note about Wan Fang was that the participation of Taiwan School Cyberfair, and the informants in our study were all girls. The subject of the Cyberfair was, however, decided by the teacher, and the students were set free to search for related information to prepare for the competition.

In the case of daily life, participant answers were into "leisure activities", "pop culture" and "the others" according to the content. In leisure activities, listening to music was the main source of information needs. When it came to pop culture, students of Wan Fang had fewer demands compared with Xin Sheng with respect to cartoons and comic books.

Discussing "the others" of Wan Fang independently, most students of Wan Fang like to engage in picture or comic books in which pictures were the main part. The result was again similar with what Chen(2001) did in her study. However, we found one student started to read river novels such as Romance of the Three Kingdoms.

The information searching behaviors of Xin Sheng compared to Wan Fang elementary school students

Stimulus. As discussed previously, class work was not the only stimulus of the information needs for elementary students, as friends and classmates also play an important role. The interpersonal network is one of the most important sources for our informants, as they usually affect their personal admiration towards an icon. For instance, children of Xin Sheng would be inspired to learn and play the game of "go" because of an individual who was skilled at the game. And one of the children of Wan Fang told us she wanted to learn to play piano because her good friend also plays the piano.

Source. Parents and other family members are pretty important sources of guidance for students of both schools. For students of Xin Sheng, once they recognized they had information needs, they would turn to their parents first for guidance. Most of them would not question the validity of information derived from their parents. In the case of Xin Shang, students would forgo information searching if

the did not obtain the necessary first from their family members. Moreover, informal channels are often the firsthand channels of the elementary school students, our group also that this might be the principle of least effort. Moreover, children usually lack complete knowledge compared to that of adults; hence this might be he reason why children often turn to the intimate people who are wiser than themselves as the first source to filter their questions and problems. If there are no explicit problems, they would begin to do the further search.

Although family members are one of the most important information sources for elementary school students, they are not always the firsthand channels. Once these students have learned to use the Internet, they may rely on it more than the former, many of the participants would search the Internet first to find the information required.

Tools, channels, and carriers. Children from Xin Sheng usually obtain information from various sources such as TVs, computers, and books. Similarly, intermediate-grade students at Wan Fang often use the Internet to obtain information. Likewise searching engines boy enjoy using Yahoo and Google for finding relevant information. Another interesting finding is that students in both schools have their own blogs. Students of Xin Sheng seldom used blogs to record things, while on the other hand girls at Wan Fang use blogs to collect pictures they like. They would the blogs of others during their leisure time.

The ways. Another important issue of how children search for information is the way they use the Internet. The inputs children choose to search for information were very interesting. Older students at Xin Sheng usually type an entire sentence, phrase or total question directly to obtain the information. For instance, one student at Xin Sheng wanted to know where he could get hydrogen for his science exhibition, and then he put the sentence "how to buy hydrogen?" into the search engine to find an answer. These approaches had been mentioned in Chang(2002)'s study in 2000. At Wan Fang, students would use key words to search for information on the Internet. A surprising finding is that students at Wan Fang could explain the precise definition provided in 'Net terminology' like "I'm feeling lucky" of Google, "subject catalog," and "key word." Furthermore, the boys at Wan Fang would use the advanced function, "Google Earth."

The end products. Speaking of the results of the searches, students from Wan Fang would skip the results provided in English when they browsed the outputs of the search engines. Besides, students of both schools usually checked the first page of the results only.

People should not assume children judge issue on two extremes, that is, either right or wrong. There are some border line issues to consider. To cite an example, the boys at Wan Fang who consult different sources and data in various mediums to judge if the provided was correct. They also doubted the truthfulness of advertisement and DMs. This conscious ability to judge probably caused by the earlier contact with multi-media and a variety of information. As a result of exposure to all kind of media and information, the children could judge what types of information was acceptable and what was not.

The table to compare the information behaviors between Xin Sheng and Wan Fang

Topics \ Events		Higher-grade students of Xin Shang	Intermediate-grade students of Wan Fang
The source of information	Parents	Primary	Not always the firsthand channel
	The Internet	Low frequency	Use first
	Others	Go to the libraries for books	Go to the libraries for books
Habits of searching the Internet	Search engines	All uses Yahoo	All uses Yahoo (The boys also uses Google)
	The use of key word	Vernaculars	Use key words
The outcomes of searching	The outcomes of search engines	Only browse the first page of the outcome and just pick those they can understand	Only browse the first page of the outcome and just pick those they can understand
	Doubts about the correctness of the information	Accept most of the information and won't do further search even if they doubt the correctness of the information	Doubt the information and would compare the information with other data
	Failure to obtain the desired information	Forgo the search that time ↓	Have the attitude to keep searching till find out the

		Search again or give up	information they want

Summary. To wrap up the results in both schools, our group found some famous models and theories in the domain of information science which fit not only with the adults' behaviors but also with those of children. For example, one student at Wan Fang conducted research on dust because he enjoys watching dust ordinarily. After he decided to conduct his science exhibition on "dust," he searched and found related information on the Internet and did the experiments himself. The whole process simulated the four stages of information needs that Taylor(1968)advanced. Another example was a Wan Fang elementary school student who wanted to learn more about English because he thought his English was not good enough. This situation can be a response to the Sense-making Model of Dervin(1976). Children have a natural instinct to browse leisure websites when they are online which correlates to the Play Theory and Entertainment Theory of Stephenson(1967). The last consideration is the Anomalous state of knowledge by Belkin(1980). While faced with the dilemma of choosing a theme for their science exhibition, students could not figure out what they were really interested in or how to approach the subject. The accordance mentioned-above proves that children's basic information behaviors are not far from adults.

In addition to their correlation with adults, we found the information behaviors of elementary school students these days varied greatly from the earlier ones in three ways. First, each assignment contrasted with one another greatly, as there were increasing assignments which required abilities to analyze and integrate the information and knowledge. For example, students of both schools had to the "Science Exhibitions"

Secondly, the external forms of information carriers are no more the same, too. Students in our interview all had their own blogs and they used the blogs as their dairies or scrapbooks.

Finally, there are fewer limits while children are using the Internet. Just like what Jacobson(1996) has pointed out, he thought children would have many barriers and restraints during the process to obtain information from the Internet, for example, age, lack of training and even the hostilities toward the Internet. Nevertheless, we can see overtly in our interview with Wan Fang elementary school that the Internet was the main information channel of the trained students. These students had the ability to use the Internet to search for information, similar to that of adults or even better.

Therefore, what we want to emphasize most here is the importance of education on information literacy including both operation and conceptualization.

Conclusions

To conclude this investigation, our group has shown through various examples that the themes of the children's information needs are quite different from the earlier ones and these themes have become diversified. Not only has these themes changed but they have also ensured new ways of seeking for and using information. Through this investigation, we found it to be a worthy cause to cultivate the child's ability to group the concept of information literacy. By comparing the two elementary school students, we can tell the relatively younger students of Wan Fang showed better proficiency of using computers, especially the Internet, where their higher frequency of using computers and advanced searching skills can be clearly seen. Hence their ability of gathering information can be on an equal plain to that of adults after training. For example, the students of Wan Fang elementary school can even use the function "Google Earth" which may be considered a 'grownups' tool for searches.

It's a step-by-step concept that once children can be familiar with various ways to search information, they can be more learned and erudite. On a globalized, computerized and knowledge-based economic society, a child's education on information literacy should be taken more seriously. Finally, our group hopes that study will further research process on children's information behaviors in Taiwan, and we also hope that any successors who can delve into this domain could provide more samples with better detailed description and investigation as well.

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· Author Note

The information seed school. This plan started in 2002 and was announced by the Ministry of Education of Taiwan. The plan's main purpose is to impel information to the diary education, and the information here specially means the ability to use computer. This plan hopes to train the teachers to apply information technology in classes, say, CRTs and PCs in every classroom. The authorities wanted to achieve 20% of the application in total class time. In this plan, the information ethics are also taken seriously, say, to tell children to respect the copyright. Till the year 2004, there had been 586 information seed schools in Taiwan, and the number was very close to the target(600)they set originally.