

School Library Support of Health Education in China: A Preliminary Study

Geoffrey Z. Liu, PhD¹; Wuhong Zhang, MS²

Author¹ is affiliated with the School of Library and Information Science at San Jose State University. Author² is affiliated with the Changzhou China Education Software Company. **Contact author:** Geoffrey Z. Liu, San Jose State University, School of Library and Information Science, Clark Hall 418L, One Washington Square, San Jose, CA, 95192-0029; Phone: 408 924 2467; Fax: 408 924 2476; Email: gliu@slis.sjsu.edu

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Abstract

This preliminary study investigates the current situation of school library support of K-12 health education in China. A survey of 42 school librarians and 115 K-12 teachers from selected schools was conducted to find out their views about school library's role in school health education and their current practice of library use in health teaching. Collection and circulation statistics were gathered from 29 schools where the Hua Xia 2000 school library automation system has been in operation. Research findings indicate that Chinese school libraries' involvement in and support of health education has been rather limited, both in student/teacher services and in collection development.

Key words: *School libraries; School health education; People's Republic of China.*

Introduction

Health education of K-12 students has been a key part of China's recent reform of standard K-12 curriculum. It has been repeatedly stipulated as a focal point of national campaign in the Chinese government's annual resolution briefs¹. As students learn about health-related topics in classroom as part of the standard curriculum, initiatives started by the Chinese government² and health promoting programs by international agencies through local authorities³⁻⁶ brought China's school health education to a higher level.

With all these happening, it is interesting to find out what role school libraries in China have been playing in student health education. However, an exhaustive literature search found no systematic study of school library's involvement in and contribution to school-based health education programs in China or elsewhere. Nevertheless, there are some general works on health-related collection development⁷, curricular support of physical and health education, male and female adolescents' different preferences of media forms of health education materials⁸, and controversy on school libraries' handling of sex- and HIV/AIDS-related materials.⁹

This article reports a preliminary study of teacher and school librarian survey and analysis of collation/circulation data. Its content is organized as follows. First, we give an overview of school library development and school health education in China. Then, we describe data gathering and data analysis procedures and address related methodological issues. Research findings are presented with acknowledgement of limitations of this study. Finally, the article concludes with discussion of implications and future research directions.

Background

This section provides a background for the study by highlighting school library development in China and school health education in the larger context of the country's national campaign of health education and health promotion.

School Library Development

Development of school libraries in China has been a rather recent phenomenon, and it picked up paces only after 1993¹⁰. In 1991, the Ministry of Education

put into effect a policy document *Regulation on Libraries/Reading Rooms of School Libraries*. In 1995, China's provincial governments started implementing a school certification program as part of their campaign to reach the national goal of mandatory K-9 education. To be certified, schools need to have a library or a reading room, with a specified size of collection, in addition to other required teaching facilities and equipments.

The government's official statistics showed that by the end of 2000, 90% of counties met the certification standards¹¹ and that 64.3% of high school libraries nationwide met the certification requirement in collection size. The ratio was much lower in less developed regions.¹² The reported figures may be highly inflated due to local governments' fabrication of data and school administration's fraudulence during certification visits, mostly in rural China.^{11, 13-15}

It is difficult to get an accurate picture about school library development in China. Nevertheless, it is reasonable to say that China has made steady progress in school library development during the past ten years, especially in urban areas and county capital towns, although teachers and students' use of library resources has not reached a desirable level.

School Health Education

The development of health education in China started in 1980.¹⁶ Since then, China has demonstrated serious commitment to health education and health promotion. The government has implemented a number of initiatives in different parts of the country, targeting different sections of the population¹⁷⁻²², in spite of limitations such as inadequate research and lack of evaluation mechanism.¹⁶ An important part of China's all-out, society-wide campaign of health education is K-12 teaching of health-related curriculum and school-based health education programs.

Student health education has been a matter of urgency in China, especially in its large rural regions. There is considerable evidence indicating that girls in rural schools often suffer from undiagnosed and untreated reproductive health problems. A 1990 study in Yunnan's Yuxi Prefecture found that 56% of girls aged 13-18 had a reproductive health problem of some kind, 27% had problems with menstruation, and 11% were suffering from untreated reproductive tract infection often caused or aggravated by unhygienic practices.⁸

Health education of K-12 students in China is often bundled with physical education and other social and personal education courses. As in many other countries, health education in school has been incorporated under the wider “umbrella” of personal, social and health education (PSHE) in which students are not only taught health facts, but also are encouraged to develop personal skills that will help them to discern, choose, and practice healthy lifestyles for themselves.²³

In 2003, the Chinese government put into effect a guideline of standard curricular content of physical education for grades K-6 and health education for grades 7-12, officially combining physical education and health education into one course.²⁴ The course content includes sports skills as well as general topics on physical and mental health.²⁵ An additional course that is part of China’s recent standard K-12 curriculum, called “Physiology and Personal Hygiene”, has been taught regularly nationwide.^{26, 27} These courses teach children some basic knowledge about physical development of human body and disease prevention.

Besides curricular teaching of health in school, China has also made great effort in implementing the concept of “health-promoting schools” advocated by the World Health Organization.²⁸ Since 1995, the Ministry of Health and the Ministry of Education have been collaborating with other domestic agencies and the World Health Organization to establish health-promoting schools in major cities such as Beijing²⁹ and Shanghai. Four schools in Shanghai participated in a pilot program during 1995 and 1996.²⁵ Eleven cities in Zhejiang Province participated in the Health Promoting School (HPS) project. An evaluation team recently found “many positive changes” in areas including skills-based health education.²⁷ Other schools participating in similar programs were reported to have achieved success in tobacco prevention and intestinal helminthes reduction.³¹⁻³³

In addition to health-promoting school projects, other school-based health education programs have been in operation since early 1990s in many locations in China.³⁴ These programs range from general health development and nutrition^{35, 36} to prevention of specific diseases such as TB and HIV/AIDS/STD^{8, 37, 38} as well as oral health education.³

Sex/HIV/STD Education in School

Until recently, sex and reproductive health education in school had been severely limited in China. For

quite some time, middle school students were taught an “adolescent health” component as part of “physiology and personal hygiene” classes, which gave quasi-scientific information about changes taking place in young bodies. Traditionally, students were told to read at home the “reproduction” section of biology textbooks, with no further information or discussion.³⁸ Emotional issues were not addressed, nor were topics such as sexually transmitted diseases, reproductive tract infections, or contraception. Sex education materials were geared toward young adults, and there were no easily available education materials appropriate for school children.⁸

However, China’s policies on sex-related education have been in place since 1988, and HIV/AIDS-related policies since 1993.³⁹ In 1990 and 1993, the Ministry of Education issued an official document, *Basic Requirements for Health Education in Primary and Secondary Schools*, stating that HIV/AIDS prevention education should be included in a variety of ways in school curriculum. It further states that educational materials should be available from libraries or reading rooms in high schools, vocational schools, and higher education institutes.⁷ In 1995, the State Council authorized the Ministry of Health to issue another official document, *Suggestions for Enhancing the Prevention and Control of HIV/AIDS*. In 2003, the Ministry of Education officially made HIV/AIDS prevention part of the standard high school curriculum by issuing a guideline. The guideline stipulates that two courses on HIV/AIDS prevention should be offered each academic year in high school. The Ministry of Education coordinated the compiling and publishing of standard HIV/AIDS educational materials for use in high school.⁷ Nevertheless, while content guidelines on sex and HIV/AIDS education were formulated at the national level by the Ministry of Education, development of actual curriculum has been devolved to the provincial level.³⁹

Along with the government’s push for integrating the teaching of sex-related content into K-12 curriculum, some government-affiliated agencies started several initiatives to promote sex education in school. Since 1996, the Yunnan Provincial Education Commission has collaborated with the “Save the Children” Foundation (UK) in piloting a reproductive health and sex education project. The program was initially based in middle schools in Kunming, Ruili, and Xishuangbanna. Within each school, the program developed a core group of student trainers who then passed on to fellow students the knowledge they had acquired. Both agencies later vowed to replicate the project in 15 additional middle schools in Yunnan.⁸

In 2000, the China Family Planning Association started a five-year project of reproductive health education among teenagers and unmarried youth in several major cities and counties in China. In Beijing, the association managed to persuade local authorities to make sex education courses a requirement in 240 junior and senior high schools.³⁸ In 2005, the Ministry of Education organized a national arts competition among middle school and high school students across China to promote HIV/AIDS awareness.³⁷

School Libraries in Health Education

Health education experts around the globe mostly believe that school-based health education, specifically the health-promoting school approach, is the best idea.^{29, 40} However, it seems that school libraries and school media programs have barely entered their scope of attention, let alone for them to view school libraries as a necessary part of the solution.

Touting the idea of health-promoting schools as a “whole system approach” to health education, Moon²³ states that “health education and promotion are not simply concerned with what is taught in the classroom and the content of a health curriculum, but also involve every aspect of school life” (p.25). It follows then that a “whole system approach” should involve the school library as an essential aspect of school life, but Moon stops short of making an explicit mention of either school library or school media program.

Similarly, library resources did not make into Petersen et al’s⁶ semi-structured questionnaire designed for assessing teachers’ use of educational materials in an oral health promotion program in primary schools in Wuhan. The questionnaire focused exclusively on teachers’ use of materials distributed through the program by the organizer. Apparently, Petersen et al were thinking only about the use of materials distributed through health education programs, but not what might be available from the school library. Furthermore, library use was not presumed as a possible instructional method that teachers can use to educate children about oral health.

The role of school libraries in student health education has been largely overlooked by health education professionals and school library researchers alike. It is about time for both communities to turn their attention to this important issue.

Purpose of Study

To bridge this gap and to bring researchers’ attention to school library’s role in student health education, we conducted a recent survey of 115 teachers and 42 librarians in more than 40 K-12 schools in China. The study also includes analysis of collection and circulation data from 29 schools (among those surveyed ones) where the Hua Xia 2000 school library automation system has been in operation. The questionnaire survey was mainly to gather librarians and teachers’ assessments of library collection and health-related programs. The analysis of collection and circulation data was to determine the general availability and use of health-related materials in school libraries in China.

Specifically, this study attempts to answer the following questions: (1) What is the typical collection structure of school libraries in China and is it adequate to support health education? (2) Do students make use of school library resources for learning about health-related topics? (3) Do teachers make use of school library resources for teaching health-related topics? (4) Are school librarians involved in school health education, and if they are, to what extent? (5) What activities and programs, if any, have been implemented by school librarians to promote students’ learning about health?

Methods

An ideal approach of investigating the role of school libraries in student health education is to conduct a survey of all involved parties (students, teachers, and school librarians) in combination with collection/circulation analysis. With this understanding, we planned to do a full-scale survey of students, teachers, and school librarians in selected schools. However, the plan of student survey was not carried out, due to school administrators’ reluctance to get students involved. The following sections document the research design and actual implementation of the study, excluding the student survey part.

Research Design

The study consisted of three distinct parts: a school librarian survey, a teacher survey, and collection/circulation data analysis. The method of convenience cluster sampling was employed for selecting research subjects (teachers and school librarians) by identifying schools that were willing to participate.

Questionnaire Development

The survey questionnaire for school librarians included the following parts: demographics, assessment of overall library resources, evaluative ranking of health collection, observed teachers' library use for teaching, and reporting of health education programs and activities organized by the school library. Similarly, the survey questionnaire for teachers included a demographic section, questions about general library use for teaching, overall assessment of library services, and evaluative ranking of the school library's health collection in general and on specific health topics. Only PE/health teachers were instructed to complete the last part of the questionnaire.

Both questionnaires were developed in-house. Evaluative questions were in the form of 5-point Likert scale, and collection assessments were categorized ratings on levels of "Absolutely Nothing", "Inadequate", "Manageable", and "Adequate". Some open-ended questions were included for gathering basic facts about school education programs and activities. The questionnaire drafts were reviewed by an expert panel that included a school librarian, a high school teacher, and a health educator, all from China. The questionnaires were revised once based on the panel's comments, but no pre-testing was attempted due to logistical reasons.

Population & Sampling

The target population of this study included K-12 school librarians and teachers in rural and urban regions of China. Cluster sampling of the research population was achieved by identifying schools that agreed to participate in this study, and therefore it was by convenience in nature. Selection of schools was limited to those having the Hua Xia 2000 school library automation system in operation. Initial contacts were made with school librarians in more than 200 schools across the country, of which 50 schools agreed to participate. Eight schools withdrew from this research project last minute.

The geographic distribution of remaining 42 schools is as follows: 7 in the Beijing Municipal Region (5 urban and 2 rural), 13 in Guangxi (6 urban and 7 rural), 8 in Hebei (2 urban and 6 rural), 10 in Jiangsu (4 urban and 6 rural), and finally 4 in Sichuan (1 urban and 3 rural). These schools altogether cover the full range of grades K-12 but are of mixed types. While some schools are of traditional types, i.e., elementary, middle (junior high), and senior high schools covering grades K-6, 7-9, and 10-12

respectively, others are combined. Combined schools are the result of China's past effort of streamlining K-12 education. They may be a combination of elementary and middle (K-9), middle and high (7-12), or elementary through high schools (K-12).

Data Gathering & Analysis

Both the teacher and librarian survey questionnaires were sent by email to school librarians at those schools that were willing to participate. These school librarians were instructed not only to complete the survey questionnaire for themselves, but also to distribute the teachers' version on campus. All survey responses were gathered by school librarians and sent to the Customer Research Division of the Hua Xia software company in Changzhou, with some in electronic form and others in hard copy. For the school librarian survey, 42 responses were received, yielding a response rate of 100%, and all received responses were valid for analysis. For the teacher survey, the questionnaire was distributed to about 300 teachers, and 140 responses were received, yielding a response rate of 46.7%. No follow-up contact was attempted with those who did not respond. Of all responses gathered from teachers, 115 were valid for analysis.

Of the 42 schools whose teachers and school librarians participated in the survey, 29 made their library collection and circulation data available for this study. Of these 29 schools, 5 were in the Beijing Municipal Region (4 urban and 1 rural), 10 in Guangxi (2 urban and 8 rural), 5 in Hebei (1 urban and 4 rural), 7 in Jiangsu (2 urban and 5 rural), and 4 in Sichuan (all rural). In terms of school types, 9 were of grade K-6, 1 of grade 7-9, 9 of grade 10-12, 2 of grade K-9, 1 of grade K-12, and 7 of grade 7-12.

Survey responses were processed in SPSS, and statistical significance of differences in percentage was tested by computing chi-square scores. Library collection and circulation data were also processed in SPSS to generate descriptive statistics. Correlation analysis between survey responses and collection/circulation data was not attempted, due to mismatching of samples between the two data sets. Preliminary analysis found no statistically significant difference between school types. Consequently, school type was not treated as a factor in further analyses, and it is not included in our presentation of results.

Results

The results of data analysis are presented in six parts: overall collection analysis, health collection assessments, circulation data analysis, PE/health teachers' library use, students' library use, and school-based health education programs. Survey findings are presented in relation to collection and circulation data for cross validation. Comparison of teachers and librarians' perspectives is made whenever possible.

Collection Analysis

The collection sizes of surveyed school libraries range from 5,531 titles (22,954 items) to 27,801 titles (42,920 items), yielding an average of 18,550 titles (34,430 items). Overall, the copy per title ratio is 1.856, and health-related books account for only 1.11% of the total collection. Schools with grades 10 and above tend to have a noticeably larger library collection, which is about twice of schools with only lower grades. However, the differences in collection size between school types are not statistically significant. Further, the mean estimates are not statistically significant either, due to too small a sample size.

Given the low copy per title ratio, a small percentage of books on health-related topics, and a large student population (over 2,000 in most cases), students and teachers have to compete hard to gain access to such materials for teaching and learning about health-related topics as required by the national standard curriculum.

Health Collection Assessment

A good collection is essential if school libraries are to provide effective support of health education. To determine if school libraries' health collections are adequate for this mission, PE/health teachers and school librarians were asked to assess their library's health collection by assigning ratings on its adequacy.

In terms of overall rating of the school library's health collection, over half of the PE/health teachers and school librarians found it satisfactory. Of those 36 school librarians and 71 PE/health teachers who responded to this particular question, 56.8% of the former and 58.4% of the latter believed that it met their teaching needs in quality. Further, 50% of school librarians and 57.1% of PE/health teachers believed that it did in quantity as well, although more

school librarians (24.3%) than teachers (9.1%) disagreed on this. (Differences in percentage are not statistically significant.) Similarly, 40.5% of school librarians and 59.7% of PE/health teachers believed that overall their school's health collection met students' needs for self-study (difference in percentage is statistically significant, $\chi^2=20.214$, $p<0.001$).

School librarians and PE/health teachers were also asked to indicate whether they considered the school library's collection adequate on each of the following nine major health topics: general health, physical development in puberty, disease prevention, youth mental health, emergency rescue skills, sex/STD/HIV, PE-related health issues, food and health, and medical knowledge. The percentages of PE/health teachers and school librarians finding their library's collection adequate on specific health topics are presented in Table 1. Overall, about half of the school librarians found their library's collection adequate on most of the major health topics, but only 23.7% agreed that it was adequate on the topic of Sex/STD/HIV. The percentage distribution of school librarians' ratings on specific health topics is consistent with their overall rating of the health collection as noted in the previous paragraph.

About 80-90% of PE/health teachers considered their school library's collection adequate on specific health topics, again with the exception of the topic of Sex/STD/HIV. However, as one may recall, the percentage of PE/health teachers finding their library's health collection adequate overall in quality and quantity is only about 58%. This discrepancy reveals noticeable inconsistency in some teachers' assessments of their school library's collection of health-related materials.

It is interesting to note that generally speaking, PE/health teachers are much more likely to find their library's health collection adequate, especially when it comes to books on specific health topics. However, the percentage distribution shows a much similar pattern for school librarians and PE/health teachers, with the figures for PE/health teachers elevated by about 30 percentage points. Although there seems to be some disagreement between school librarians and PE/health teachers about collection adequacy on the topic of physical development in puberty, the dominant majority of PE/health teachers and school librarians found their library's collection inadequate on the topic of Sex/STD/HIV.

School librarians and PE/health teachers' assessments of their library's health collection appear to correlate

well with collection data provided by the 29 schools. The average counts of book titles by categories of specific health-related topics are as follows: General Health 94.93, Medicine 88.21, Mental Health 6.79, Disease Prevention 21.07, Youth Health 12.24, Female Health 5.69, Sex Education 2.9, STD 1.4, HIV 1.03, and Substance Abuse 0.31. In spite of variations in collection size, the data shows a uniform pattern of collection strength and weakness. Typically, the collection is stronger in general medical/health areas, but extremely weak in the areas of mental health, sex education, HIV/STD, and substance abuse.

Circulation of Health-related Books

In spite of school librarians and PE/health teachers' optimistic rating of health collection in general, our analysis of the 29 school libraries' annual circulation statistics of 2006 revealed low use of health-related books. The annual total of circulation counts is more than 27,000 on average and well above 47,000 in larger schools, but circulation of health-related books accounts for only less than 0.5% of the total. The annual circulation figure of health-related books is about 10 in elementary schools, 130 in high schools, and a little bit over 300 in combined schools of grade K-12. By relating the numbers of health-related books in collection to their annual circulation counts, it is evident that these books were rarely checked out throughout the year. This observation is confirmed by PE/health teachers' self-reported frequencies of library use, as explained below.

PE/Health Teachers' Library Use

PE/Health teachers' self-reported frequencies of library use are summarized in Table 2. Most PE/health teachers (more than 70%) made occasional visits to the school library when having time, with only less than 17% going to the school library at least once a month. As shown in Table 3, more than 66% of PE/health teachers went there to browse newspapers and magazines. Only about 27% visited the library for borrowing and returning books. Nevertheless, about 60% did self-study and research in the school library, and about 21% used the library resources for preparing lesson plans. While print materials were their primary choice, significantly greater percentages of PE/health teachers reported use of reference tools, non-conventional materials, and web-based/online information resources, as shown in Table 4.

This pattern of infrequent library visits and low use of library resources by PE/health teachers is

consistent with the overall pattern of teachers' library use. It stands in sharp contrast with the generally claimed pedagogical belief and practices of information-enriched teaching. More than 67% of school librarians and about 74% of teachers agreed that teachers should encourage students to use information resources for learning. In fact, 65% of surveyed teachers reported having incorporated information literacy skills in classroom teaching. The percentage of PE/health teachers making such a claim is 80.3%, even much higher. While the data suggests an increased awareness of information use for teaching and learning among K-12 teachers, it also reveals a significant gap between their words and deeds.

Students' Use of Health Collection

In spite of the lack of survey data from students and the mix of circulation counts, some inferential observations can still be made about students' use of their school library's health collection. In the section of circulation analysis, we noted that circulation counts of health-related books range from 10 to about 300. We further noted that although the annual total of circulation in 2006 is more than 27,000 on average and above 47,000 in some cases, health-related books account for only less than 0.5%. Given that a typical K-12 school in China has more than 2000 students, even if we assume the best-case scenario and that all checkouts of health-related books were by students, this translates to no more than 15% of the school's total student population. The actual percentage of students who checked out health-related books from the school library has to be much lower than this estimate.

The remaining question then is whether students might have used health-related books in classroom during a health lesson or onsite in the library. While in-classroom use of health-related books may be possible to some extent, onsite use in the library is unlikely. It is well known that in China students are fully occupied with attending classes each day and that school libraries are often understaffed and only open for limited hours.^{11, 13-15}

Health Education Programs

One open-ended survey question asked teachers and school librarians to describe campus-based health education programs in their school. All surveyed schools reported some sorts of one-time activities of health education/HIV prevention on campus, an HIV awareness week or essay competition for instance. Such one-time activities were organized by some

teachers called upon by the school administrators, as a gesture of complying with the Ministry of Education's directive.

However, school library or librarian's involvement in these programs was minimal if anything. A few school librarians explained that they purchased and put on display some sex/HIV education pamphlets during the awareness campaign. Nevertheless, no library-initiated health education activities or programs were reported.

Discussion

In summary, the study yielded the following findings: (1) School libraries in China typically had a copy per title ratio of about 1.8, and health-related materials accounted for only about 1.0% of the total collection. (2) Their collection included fewer than five titles, and in some cases, none on sex/STD/HIV and substance abuse. (3) About half of school librarians believed their health collection was adequate for teaching and learning, and a dominant majority of PE/health teachers considered it adequate on specific health topics. (4) PE/health teachers might have used library resources for developing lesson plans and possibly in classroom teaching to some extent. (5) Students and teachers' use of health-related books in the library was extremely low in general, and health-related books were rarely checked out either by teachers or by students. (6) Some one-time sex/HIV education activities had taken place in K-12 schools; however, school library and librarian's involvement in such activities was mostly nominal.

With such a small amount of health-related materials available for teachers and students to use, it would be impossible for these school libraries to provide meaningful support for teaching and learning about health-related subjects either in or outside of classroom. The low use of existing health-related materials by teachers and students may be due to their obsolescence. Furthermore, students may not have been so much encouraged to make use of library resources as claimed by those surveyed teachers and librarians, since it is well known that in China, rote learning is still dominant in K-12 education, teaching is mostly exam-centered, and students rely exclusively on standard textbooks.

A majority of surveyed teachers (over 80%) found their school library's collection adequate on specific health topics, probably because there had been little motivated needs to use them. The health collection was found "adequate" only for the low level of use they were motivated for and underdeveloped needs in

them. Given that only a tiny portion of the school library's collection was on health topics and that most health-related titles were of single copies, the collection would most likely be found inadequate if all students and teachers were to make serious attempts of using the school library for health education.

While collection development is essential for school libraries to support health education, professional training of school librarians is equally important. One related finding from our survey of school librarians not mentioned in earlier discussion is their overall lack of professional training. None of the surveyed school librarians had a library science degree or a professional certificate of school media specialty. Although all school librarians reported training in some weeklong workshops offered by the Hua Xia software company, such workshops focused exclusively on cataloging process and system operation, and they provided trainees nothing on collection development and user services.

The nearly nonexistence of materials on sex-related topics and substance abuse stands in sharp contrast to the Chinese government's recent campaign of promoting sex/HIV education in K-12 schools. It is true that physical development in puberty has been made part of the standard curriculum and educational programs on sex and STD/HIV prevention may have been implemented in schools. However, with little library resources for support, the effectiveness of school-based sex/STD/HIV education has no doubt been compromised, and such programs will be difficult, if not impossible, to sustain.

Nevertheless, this study is preliminary in nature and the findings should be taken with cautious consideration of its limitations. The sample size was small and the sampling scope was limited. Furthermore, the study did not include students' perspective. Although a student survey was planned as part of the study, it was not implemented due to school administrators' reluctance to get students involved, citing logistical difficulty as a reason.

Conclusion

School library has an essential role to play in supporting both curricular teaching of health and school-based health education programs, and one would expect it to be included in initiatives put forth by health education professionals. Unfortunately, so far this has not been the case. The issues of how school libraries may get involved in and contribute to

student health education have been overlooked by health education experts and researchers in the school library community alike. The study reported in this article is an initial attempt at bridging the gap.

This study, which consisted of teacher/school librarian surveys and collection/circulation analysis of selected school libraries, was intended to assess school library's involvement in and support of student health education in China. The general research finding is that school libraries in China played a rather limited role in student health education. Health-related materials in collection were rarely used by students and teachers, and typically, school library collection was too weak to provide meaningful support for school health education.

In spite of the limitations of this study, the findings have strong implications for school health education. First, school administrators and teachers need to recognize the importance of school library as a valuable resource for health education. More funding resources need to be allocated for developing the school library's health collection. School librarians need to develop programs to promote effective use of library resources for teaching and learning in general, and for school health education in particular. Finally, teachers need to work harder in integrating information resources into health teaching and encouraging students to make use of information resources for health education both on and off campus.

Evidently, more work is needed from both health education experts and school library researchers to advance the understanding of school library's role in health education and to develop effective strategies of utilizing library resources in school-based health education programs. In-depth investigation of some successful cases will be necessary to identify influential factors, effective practices, and useful service tactics, which is what we intend to do in the future.

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Table 1. Percentage of PE/Health Teachers & School librarians Finding Collection Adequate on Health Topics

Subject Area	School Librarians N=38 (%)	PE/Health Teachers N=69 (%)	Chi square (2-sided test)
General health	50.0	88.4	19.158*
Physical development in puberty	44.7	89.9	25.810*
Disease prevention	55.3	88.4	15.033*
Youth mental health	57.9	88.4	13.111*
Emergency rescue skills	42.1	79.1	14.733*
Sex/STD/HIV	23.7	63.2	15.259*
PE-related health issues	55.3	86.8	13.068*
Food and health	60.5	94.1	18.697*
Medical knowledge	59.5	88.2	11.599*

* Difference in percentage is statistically significant at level of $p < 0.001$

Table 2. Frequency of Teachers' Library Visits in 2006

Frequency	Teachers Overall[†] N=115 (%)	PE/Health Teachers N=71 (%)	Chi square (2-sided test)
Daily	1.7	1.4	0.119
A few times weekly	4.3	4.2	0.007
A few times monthly	13.9	16.9	1.384
When having time	40.0	50.7	8.859*
Occasionally	33.9	22.5	10.719*
Never	5.2	2.8	2.162

* Difference in percentage is statistically significant at level of $p < 0.05$.

[†] Including teachers of PE/health and all other subjects required by the national standard curriculum.

Table 3. Percentage of Teachers' Library Usage by Purpose of Library Visit

Purpose of Library Visits	Teachers Overall N=115 (%)	PE/Heath Teachers N=71 (%)	Chi square (2-sided test)
Preparing lesson plans	21.7	21.1	0.041
Self-study and research	51.3	60.6	6.368*
Reading newspaper & magazine	63.5	66.2	0.592
Use computer for word processing	1.7	1.4	0.119
Emailing & web browsing	0.9	0.0	1.628
Checking our & returning books	27.0	26.8	0.004

*Difference in percentage is statistically significant at level of $p < 0.05$

Table 4. Percentage of Teachers' Library Usage by Material Type

Material Types	Teachers Overall N=112 (%)	PE/Health Teachers N=71 (%)	Chi square (2-sided test)
General books	78.6	83.1	2.361
Reference tools	65.2	78.9	16.027**
Research journals	80.4	83.1	0.923
Newspaper & magazine	74.1	81.7	5.812*
Audio/video materials	56.3	70.4	15.830**
Electronic documents	57.1	69.0	11.160**
Web resources	46.4	57.7	9.989*
Online full text databases	40.2	47.9	4.795*

* Difference in percentage is statistically significant at level of $p < 0.05$

** Difference in percentage is statistically significant at level of $p < 0.001$

Appendix A.

Survey Questionnaire for School Librarians
(Translation from the Chinese original)

School Name _____ Province _____ County/City _____
 Gender _____ Age _____ Education _____ Major _____
 When did you started working in school library _____ Fulltime Part time _____
 Are you professionally educated in school library management? Yes No _____
 When was the last training you attended _____ Training Subject _____

Please indicate to what extent you agree with each of the following statements on the associated 5-point likert scale (Strongly Agree / Agree / Not Sure / Disagree / Strongly Disagree).

- A1. School library’s collection meets the needs for classroom teaching in quantity.
- A2. School library’s collection meets the needs for classroom teaching in quality.
- A3. School library’s collection basically meets students’ needs for self-study.
- A4. School library’s resources have been used effectively in classroom teaching.
- A5. School library’s resources have been used effectively in students’ learning activities outside of classroom.
- A6. Internet resources can pretty much replace the school library in teaching and learning.
- A7. Teachers should encourage students to make use of library resources whenever possible.
- A8. Teachers do emphasize students’ development of information literacy skills in classroom teaching.

Please assess the school library’s collection by each of the listed material types.

	Material Types	Absolutely nothing	Inadequate	Manageable	Adequate
A9.1	Reference tools				
A9.2	Curriculum support materials				
A9.3	Leisure readings				
A9.4	Science and technology readings				
A9.5	Foreign language readings				
A9.6	Literature and history				
A9.7	Multimedia				

- A10. Besides regular operation of circulation, has the school library offered any service programs for teachers? Please explain.
- A11. Besides regular operation of circulation, has the school library offered any service programs for students? Please explain.
- A12. In which areas do you think the school library needs improvement? Please explain.

Please indicate to what extent you agree with each of the following statements on the associated 5-point likert scale (Strongly Agree / Agree / Not Sure / Disagree / Strongly Disagree).

- B1. School library’s health collection meets the needs for classroom teaching in quantity.
- B2. School library’s health collection meets the needs for classroom teaching in quality.
- B3. School library’s health collection basically meets students’ needs for self-study.

Please indicate to what extent you consider the school library’s collection adequate on each of the listed specific health topics.

	Health Topics	Absolutely nothing	Inadequate	Manageable	Adequate
B4.1	General health				
B4.2	Physical development in puberty				
B4.3	Disease prevention				
B4.4	Adolescent mental health				

B4.5	Emergency rescue skills				
B4.6	Sex/STD/HIV				
B4.7	PE-related health issues				
B4.8	Food and health				
B4.9	Medical knowledge				

B5. Please briefly state your opinion about health education in K-12 schools.

B6. What special programs of health education has the school library organized, if any? Please explain.

Thanks for your kind support of this survey research. Please write down your email address if you wish to receive a copy of the final research report.

Appendix B.**Survey Questionnaire for K-12 Teachers**
(Translation from the Chinese original)

School Name _____ Province _____ County/City _____
 Gender _____ Age _____ Education _____ Major _____
 Grade Level _____ Teaching Subject _____ Year in service _____

A1 On average, how frequently do you use the school library?

Daily / Weekly / Monthly / When having time / Occasionally / Never

A2 What are the reasons for your library visits Please select all that apply.

Preparing lesson plans / Self-study and research / Borrowing & returning books /
 Use computer for word processing / Reading newspapers and magazines /
 Emailing and web browsing / Other

A3 Rank the following material types based on your use in descending order

Books / References / e-Resources / AV materials / Journals /
 Newspapers/magazines / Websites / Online full text databases

A4 Besides preparation of lessons, what other uses of library services and materials do you make in your teaching life?

A5 Overall, you consider the school library

Very satisfactory / Satisfactory / Not sure / Unsatisfactory / Very Unsatisfactory

A6 Overall, you consider the school librarian's work

Very satisfactory / Satisfactory / Not sure / Unsatisfactory / Very Unsatisfactory

A7 In which areas do you think the school library needs improvement?

B8 Has your school/grade/class participated in any health education campaigns? Please explain.

B9. Does your teaching involve any content on physiological development and health? Please explain.

B10 Have you made use of any materials on health, physical development, and medical topics from the school library?

If you answered YES to any of the questions B8-10 or you are a teacher of the health and physical development course, please continue.

Please indicate to what extent you agree with each of the following statements on the associated 5-point likert scale (Strongly Agree / Agree / Not Sure / Disagree / Strongly Disagree).

- C1. School library's health collection meets the needs for classroom teaching in quantity.
- C2. School library's health collection meets the needs for classroom teaching in quality.
- C3. School library's health collection basically meets students' needs for self-study.
- C4. In classroom teaching, students are encouraged to make use of library resources whenever possible.

Please indicate to what extent you consider the school library’s collection adequate on each of the listed specific health topics.

	Health Topics	Absolutely nothing	Inadequate	Manageable	Adequate
C5.1	General health				
C5.2	Physical development in puberty				
C5.3	Disease prevention				
C5.4	Adolescent mental health				
C5.5	Emergency rescue skills				
C5.6	Sex/STD/HIV				
C5.7	PE-related health issues				
C5.8	Food and health				
C5.9	Medical knowledge				

C6. Please briefly state your opinion about health education in K-12 schools.

Thanks for your kind support of this survey research. Please write down your email address if you wish to receive a copy of the final research report.