

Chu, S.K.W., Mak, M.Y.K. & Wong, P.T.Y. (2009, November). WiseNews database for upper primary students and teachers? Paper presented at *International Conference on Primary Education*, The Hong Kong Institute of Education, Hong Kong.

WiseNews database for upper primary students and teachers

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Abstract

Electronic databases are widely used by students and teachers at secondary and tertiary level to gather information for academic purposes. Few studies have investigated their use in primary education, especially in the Asian context. A pilot study conducted a year ago has shown that WiseNews, an electronic news database, was effective in facilitating the inquiry project-based learning of primary students at a school in Hong Kong. The current research extends the pilot study by examining the use of WiseNews by upper primary students and their teachers in five local primary schools. Automatic records of students' and teachers' database activities provided by WiseNews will be used to examine the usage habit of students and teachers. Students and teachers will be surveyed regarding their perceived usefulness of WiseNews database for learning and teaching purposes. Data collection and analysis adopted a mixed method design. The qualitative analysis will include an in-depth analysis of the types of articles retrieved by the students, in addition to the responses to the open-ended questions on the survey. This research will help teachers and school administrators to assess the effectiveness of WiseNews database in facilitating learning at upper primary levels.

Keywords: news database, primary education

1. Introduction

Nowadays, electronic databases or libraries are widely used by secondary and tertiary students for gathering information related to academic studies (Atakan, Atilgan, Bayram, & Arslantekin, 2008).

The educational value of these electronic databases for higher education has been well-established in literature (e.g. Tenopir, 2003, Vibert et al., 2007). In 2004, Education Bureau (EDB) of the government of the Hong Kong Special Administrative Region suggested to expand the use of electronic databases to secondary and primary schools in order to empower teaching and learning at primary and secondary levels (EDB, 2004). However, relatively little research work has been done to evaluate their use of electronic databases at primary level since then. A significant body of research findings has revealed that young learners' interactions with electronic resources and their information seeking behaviors are very different from those of adults' (Hirsh, 1999). Being so, it is important to investigate the use of these electronic resources in primary education context in order to identify resources that suit the specific learning needs of young learners.

A pilot study undertaken in a local primary school has revealed that WiseNews, an electronic news database, can be useful for Primary 4 students for their inquiry-based learning (Chow, Chu, Ng, Fong, Kwan & Leung, 2007). WiseNews database draws information from a myriad of sources such as newspapers, magazines, journals and newswires and is updated every day with content direct from nearly 1000 content providers and 500-plus top tier websites. Containing such vast wealth of

information, WiseNews database could be a very useful resource to enhance teaching and learning at primary education level.

To further investigate the usefulness of WiseNews database in primary education, the present study expanded the pilot project for implementation to five local schools and included students from different upper primary levels (P.3 – P.6). WiseNews database accounts were given to students and teachers in the five participating schools at the beginning of the academic year. Databases activities of students and teachers are automatically recorded throughout the year by the service providers to examine user habits. Students and teachers' opinions of the news database were also collected at the end of the academic year to examine its usefulness for teaching and learning at primary level.

The present study aims to examine the use and usefulness of electronic databases in primary education.

2. Literature review

Electronic databases in education

Electronic database or library is an organized collection of digital information focused on one or more specific subject areas (Monopoli, Nicholas, Georgiou and Korfiati, 2002). An electronic database does not only allow users to access a vast amount of resources of different areas of knowledge; it also enables users to retrieve those resources systematically and efficiently. The

potential of electronic databases in enhancing teaching and learning has long been discussed by scholars and researchers. For example, Marchionini and Maurer (1995) pointed out that the introduction of electronic databases to educational settings would greatly benefit teachers and students as it opens up opportunities for them to access information resources that have traditionally been inaccessible outside school. The benefits these electronic resources bring are not only limited to formal classroom learning, it also facilitates informal learning as students are being equipped with tools to conduct general browsing and creative discovery on their own (Marchionini & Maurer, 1995). Wallace, Kupperman, Krajcik and Soloway (2002) further contended that the introduction of electronic database enhances self-guided learning as information resources become accessible for students to pursue questions of personal interests.

Use of electronic database in higher education

Various kinds of electronic databases are now widely used by academics, teachers and students in higher education and it is gradually becoming more preferable than printed versions of books and journal articles. Tenopir (2003) analyzed over 200 studies on the use of electronic databases in higher education and concluded that most academic staff and students use and like electronic databases because of their convenience and relevance. Electronic databases have been rapidly adopted in different academic spheres (Tenopir, 2003) and some research revealed that users in higher institutions use electronic databases for many educational purposes including teaching, researching and keeping up with progress in relevant subject areas (Monopoli, 2002). Borgman and colleagues (2000, 2004)

conducted several case studies on the impact of electronic database on education and found that electronic databases can be used to support research and teaching applications in undergraduate classrooms.

Research on primary students' use of electronic resources

Various kinds of electronic resources, such as databases or search engines, are now increasingly used in primary classrooms (Kuiper, 2005). Yet, only limited amount of studies has been done in primary education context and these studies have generated rather inconsistent results. Some research results suggested that the use of electronic databases can be beneficial to students at primary levels. For instance, Owens, Hester, and Teale's (2002) research on the use of databases at primary schools suggested that electronic information enhanced cognition, particularly in the areas of reading and writing, of the primary and lower secondary students. A pilot study undertaken by the author at a local primary school also found an electronic news database useful in enhancing the quality of primary students' inquiry-based projects when it is used under the guidance of subject teachers and librarians (Chow, et al., 2007).

Nevertheless, other research findings revealed that primary students have difficulties handling the vast amount of online information resources because they lack the necessary levels of information literacy to find relevant information and the skills to critically evaluate the information they find (Livingstone & Lynch, 2000; Salovaara, 2005; van Aalst, Fung, Li & Wong, 2007). Bilal (2001)

examined the use of search engine by young learners and found that students had difficulties in completing the task because they lacked adequate research skills. Bowler, Large, and Rejskind (2001) also found that many students lacked basic IT skills to use Web-based information in primary classroom.

Electronic News Database

Electronic newspaper has important teaching potential and using it in classroom can improve the quality of teaching and learning in various ways (Trillo, 2003). News database does not only offer resources for teachers to teach skills such as communication and critical thinking, it also provides good materials for language learning (Trillo, 2003). Besides, it attracts young people to learn as news materials are relevant to their daily lives (Trillo, 2003). The aforementioned pilot project conducted by the author also found that electronic news database is useful for students in their inquiry-based learning project (Chow, et al., 2007).

Research Gap

Although potentially useful for teaching and learning, study on the use electronic news database in primary education is virtually non-existence. The present study, expanding on the pilot WiseNews database project, aims to fill existing research gap by examining the use of electronic news databases for learning and teaching in upper primary students and their teachers. It is hoped that the findings of the present research may reveal unique insights on how children in primary levels use databases for

education purposes and provide ideas in the design and development of electronic databases that are specifically directed for the use of children. Moreover, the findings on the usefulness of the news database may be useful for helping the school administrators to make decision on the kind of database they may want to subscribe to enhance primary students' learning.

3. Research methods

Research questions

The major objective of this study is to examine the use of WiseNews database for upper primary school students and teachers. Specifically, we have the following research questions:

- *How do students and teachers interact with electronic database?*
- *How do primary students in different grade levels find WiseNews useful to their learning?*
- *How do students and teacher use WiseNews differently?*

To answer the above research questions, the present study adopted a mixed methods research design which used both quantitative and qualitative methods to provide analysis to the data collected. The employment of both methods is expected to generate better understanding of the research problem (Creswell, 2008).

Participants

The research included two groups of participants: 1) the upper primary students from P.3 – P. 6 and 2) the teacher staff in five local primary schools. Altogether, 561 students and 99 teachers used WiseNews during the academic year and hence their usage activities are used for analysis.

Procedure

News database WiseNews was introduced to students and teachers in the five participating schools at the beginning of the school year. One-year free trials of the database were then given to the schools for educational purposes. Prior consents to record database activities were granted from the five participating schools. The use of WiseNews by each students and teachers was recorded automatically by service provider Wiser Information Limited throughout the academic year. Surveys and interviews were conducted at the end of the academic year to collect students and teachers opinions on the usefulness of the news database.

Data Collection

To understand teachers' and students' database use habits and their opinion on the usability of the databases, the following data was collected:

1. *Usage report on students' and teachers' database activities*

The use of WiseNews by each student and teacher was recorded by the Wiser Information Limited. Data in the report includes the mode of search, data and time, document management, names and locations of the publications and headlines viewed.

2. *Surveys*

Surveys were conducted with students and teachers who consent to participate in order to collect their opinions on the usefulness of WiseNews.

4. Findings and Discussions

Only students and teachers who have used WiseNews database at least once during the academic were included in the analysis. One student who used WiseNews 58 times more than the mean usage ($M = 33.26$) was excluded in order to avoid skewing the result the study. Altogether, there were 561 students and 99 teachers participated in the present studies.

4.1 Usage Habits

4.1.1 Information retrieval

17489 activities were performed by the 561 students and 4462 activities were performed by 99 teachers during the academic year. Table 1 is a summary of how information resources were retrieved.

Table 1. The way information was retrieved by teachers and students.

| | <i>P 3</i> | <i>P 4</i> | <i>P 5</i> | <i>P 6</i> | <i>Teacher</i> |
|------------------|---------------|----------------|----------------|----------------|----------------|
| | <i>N = 90</i> | <i>N = 127</i> | <i>N = 141</i> | <i>N = 203</i> | <i>N = 99</i> |
| Browsing | 3239 (82.3%) | 4310 (83.8%) | 3190 (81.0%) | 3067 (68.6%) | 2476 (55.5%) |
| Searching | 697 (17.7%) | 832 (16.2%) | 749 (19.0%) | 1406 (31.4) | 1986 (44.5%) |

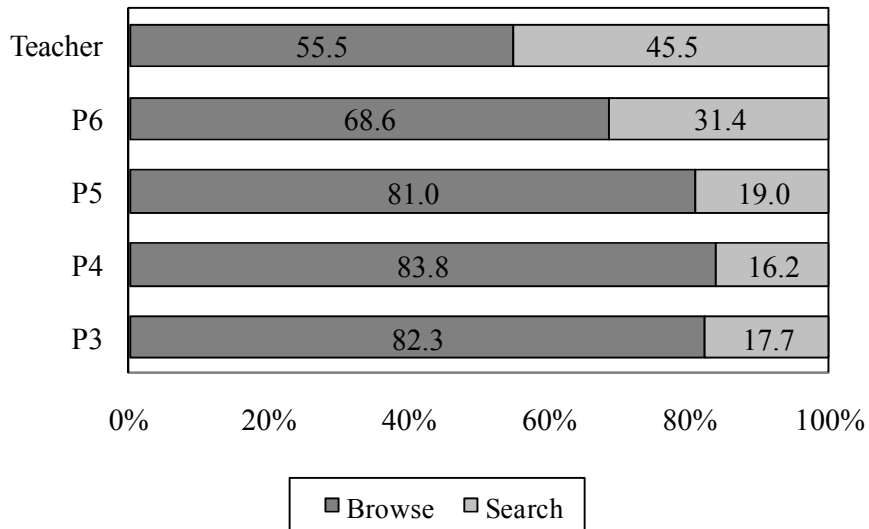


Figure 1. The percentage of browsing and searching activities in WiseNews database.

Overall, students did more browsing (78.9%) than searching (21.1%) in WiseNews database. For students from Primary 3 to 5, only one-fifth of the articles are retrieved through searching, as opposed to fourth-fifth through general browsing (Figure 1). This is quite different from the results of previous studies, which showed students' preference for searching over browsing (Bilal, 2002, Chow, et al., 2007). The pattern may be explained by the fact that students' were not given any task to complete in the present studies and thus did not have specific targets for searching.

It is interesting to note that P.6 students did more searching when compared to P.3 to P.5 students. One speculation is that students acquire necessary skills and knowledge for information searching and Chinese typing at primary 6. It is also worth noting that teachers performed much more searching

activities than students in general. This can be attributed to teachers' better information literacy and IT skills which enable them to locate relevant information quickly via searching.

Type of activities performed

WiseNews database allow users to perform four kinds of activities (i.e. view, email, print and download) on the information resources. Overall, viewing constitutes over 95% of students' activities at all primary levels and students rarely archived any information they retrieved (i.e. storing the information via email, printing or downloading, see Table 2). Despite the substantial amount of viewing conducted by students, it does not guarantee that these activities helped students with their learning because students can views a lot of articles in minute by just clicking the headlines, without actually process them.

Table 2. Distribution of the type of activities performed.

| | <i>P.3</i> | <i>P.4</i> | <i>P.5</i> | <i>P.6</i> | <i>Teacher</i> |
|----------------------|-------------|--------------|--------------|--------------|----------------|
| Viewed | 3857(98.0%) | 5055 (98.3%) | 3881 (98.5%) | 4313 (96.4%) | 3771 (84.5%) |
| Archived | | | | | |
| 1) Emailed | 31(0.8%) | 11 (0.2%) | 5 (0.1%) | 7 (0.2%) | 8 (0.2%) |
| 2) Printed | 2 (0.1%) | 11 (0.2%) | 2 (0.1%) | 10 (0.2%) | 3 (.01%) |
| 3) Downloaded | 45 (1.1%) | 65 (1.3%) | 51 (1.3%) | 143 (3.2%) | 680 (15.2%) |
| Total | 3935 | 5142 | 3939 | 4473 | 4462 |

Time of usage

As showed in Figure 2, the peak hours for WiseNews usage are 11:00-11:59, followed by 12:00-12:59 and 15:00-15:59. All of the peak hours are within school hours. In general, students used WiseNews database more during school hours (8:00am to 3:00pm) (56.7%) than non-school hours (43.3%). The high usage rate during school hours may be a result of WiseNews training or usage in classroom.

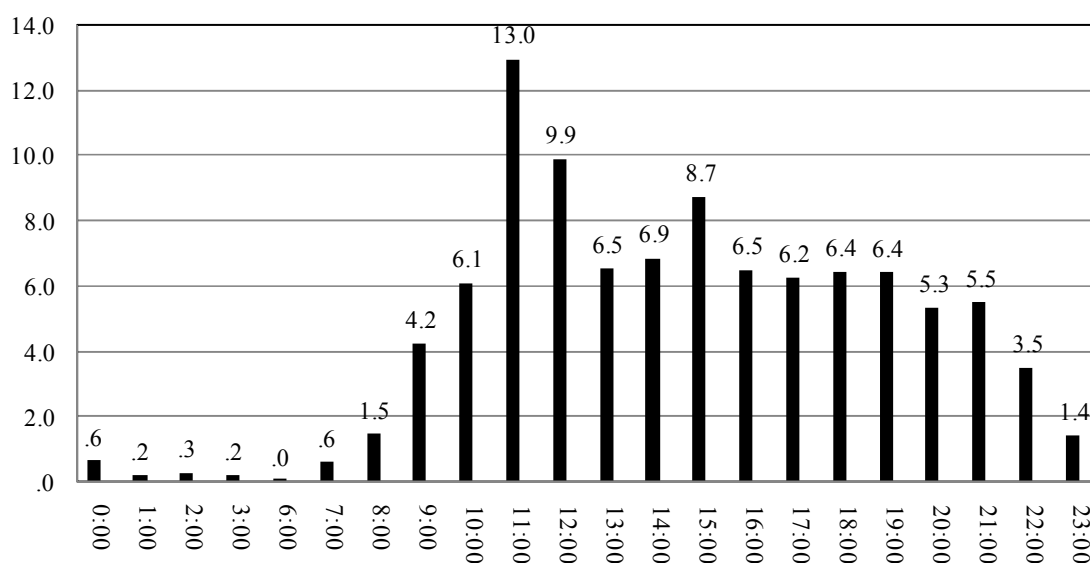


Figure 2. The percentage of activity conducted in WiseNews database by students each hour.

The peak hours of usage for teachers were from 15:00 – 16:59. Teachers used WiseNews mostly during working hours (76.6%). Compare to the students, teachers were less likely to use WiseNews outside working hours (23.3%). The high usage rate during working hours of teachers may indicate that they use the database for teaching-related purposes.

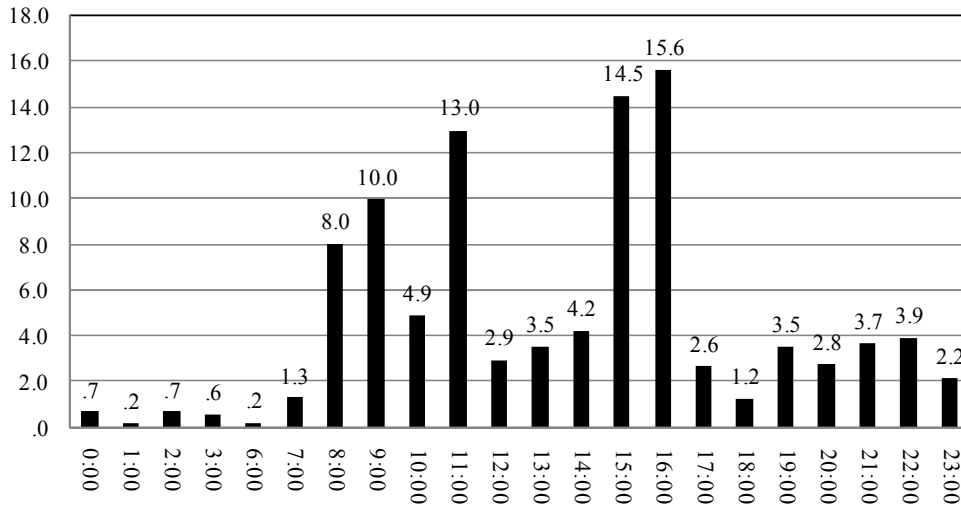


Figure 3. The percentage of activity conducted in WiseNews database by teachers each hour.

Sources of the publication retrieved

Students mainly retrieved articles from local publications. Out of the top ten most retrieved publications, nine are from Hong Kong and only one from Mainland China. In fact, over 80% of the overall publications retrieved are from Hong Kong (Figure 4), revealing that students rely heavily on local sources and failed to make use of the resources from other regions. Figure 4 showed the distribution of locations of the publication viewed. Only less than 1% of the articles retrieved were from sources outside Hong Kong, Mainland China and Taiwan.

Table 3. Top 10 publications retrieved by students

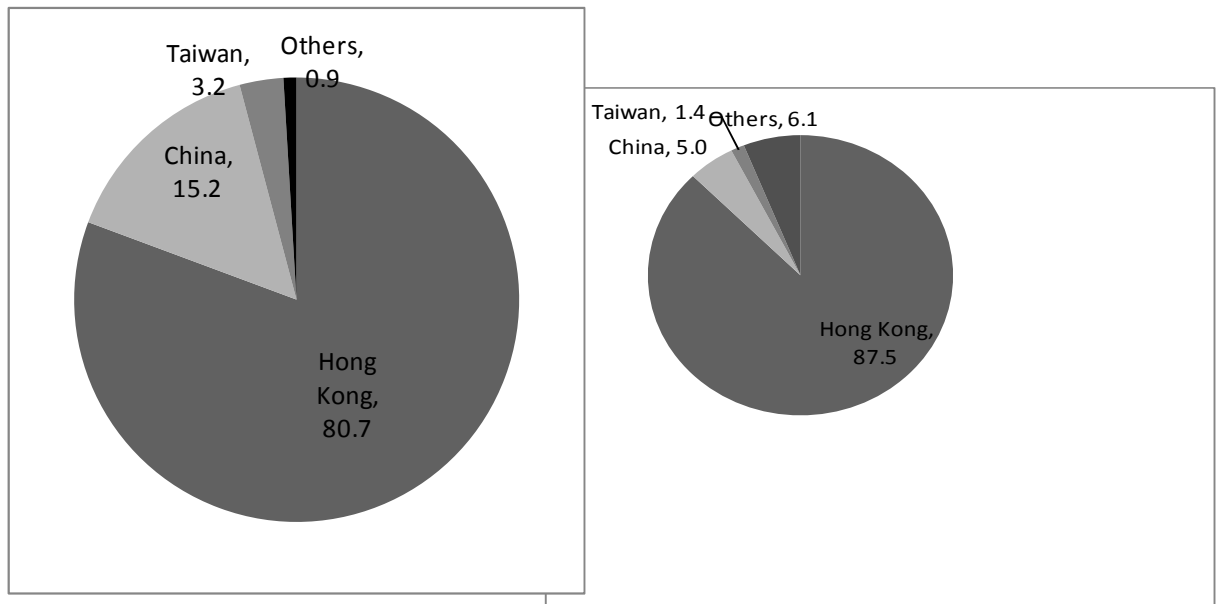
| | <i>Publication</i> | <i>Region</i> | <i>No. of times retrieved</i> |
|----|----------------------------|----------------------|--------------------------------------|
| 1 | Sing Tao Daily (星島日報) | Hong Kong | 3188 |
| 2 | Oriental Daily News (東方日報) | Hong Kong | 2217 |
| 3 | Apple Daily (蘋果日報) | Hong Kong | 1330 |
| 4 | Ming Pao Daily News (明報) | Hong Kong | 1044 |
| 5 | Ta Kung Pao (大公報) | Hong Kong | 744 |
| 6 | Hong Kong Daily News (新報) | Hong Kong | 733 |
| 7 | Wen Wei Po(文匯報) | Hong Kong | 716 |
| 8 | The Sun (太陽報) | Hong Kong | 697 |
| 9 | Guang Zhou Daily(廣州日報) | China | 662 |
| 10 | Sing Pao Daily News (成報) | Hong Kong | 604 |

Similar to students, teachers retrieved information mostly from local sources. All of the top 10 most viewed (Table 4) and over 85% of overall viewed publications (Figure 4) are from Hong Kong, revealing that teachers preferred local sources. Nevertheless, teachers were more likely to retrieve information from sources outside Hong Kong, Mainland China and Taiwan (6.1%), when compare to students (0.9%).

Table 4. Top 10 publications retrieved by teachers

| | <i>Publication</i> | <i>Region</i> | <i>No. of times retrieved</i> |
|----|-------------------------------------|---------------|-------------------------------|
| 1 | Sing Tao Daily (星島日報) | Hong Kong | 898 |
| 2 | Apple Daily (蘋果日報) | Hong Kong | 332 |
| 3 | Ming Pao Daily News (明報) | Hong Kong | 312 |
| 4 | Sing Pao Daily News (成報) | Hong Kong | 282 |
| 5 | Oriental Daily News (東方日報) | Hong Kong | 263 |
| 6 | The Sun (太陽報) | Hong Kong | 223 |
| 7 | Ta Kung Pao (大公報) | Hong Kong | 213 |
| 8 | Hong Kong Economic Journal (信報財經新聞) | Hong Kong | 194 |
| 9 | Hong Kong Daily News (新報) | Hong Kong | 142 |
| 10 | Hong Kong Commercial Daily (香港商報) | Hong Kong | 140 |

Figure 4. Location of the publications retrieved by students (left) and teachers (right).



Contents of the publication retrieved

In terms of contents of the retrieved articles, students tended to view articles related to current issues.

Out of the top 10 most retrieved articles, 9 are about swine flu, the most heated topic in Hong Kong in the current year (Table 5). Although it is good that students knew how to use the database to access information about current news, the contents of the articles they retrieved were quite monotonous. It is speculated that the large amount of current news viewing may be a result of students' lack of skills to retrieve past news or articles of different contents.

The contents of articles that teachers retrieved contain more varieties than those of students'. The top 10 most viewed articles by teachers include diverse topics such as government policy, education-related issues and some other current issues. Table 6 is a list of articles most viewed by teachers.

Table 5. Source, region and contents of the 10 most retrieved articles by students

| | <i>Contents</i> | <i>No. of User viewed/archived</i> | <i>Source</i> | <i>Region</i> |
|---|--------------------------------------------------------------------|----------------------------------------|---------------------|---------------|
| 1 | Singing performance from Chinese astronauts (Spaceship Shenzhou 7) | 30 | Ta Kun Pao | Hong Kong |
| 2 | Swine flu spread in police force | 26 | Oriental Daily News | Hong Kong |
| 3 | Swine flu virus damage lung | 26 | Oriental Daily News | Hong Kong |
| 4 | Swine Flu cases reach one thousand in Hong Kong | 22 | Ming Pao Daily News | Hong Kong |
| 5 | Unknown source for swine flu spread | 19 | Wen Wei Po | Hong Kong |
| 6 | 90 confirmed swine cases today | 19 | Oriental Daily News | Hong Kong |

| | | | | |
|----|-----------------------------------------------------------------------|----|---------------------|-----------|
| 7 | First Chinese died of swine flu | 18 | Oriental Daily News | Hong Kong |
| 8 | Swine Flu cases reach one thousand in Hong Kong | 17 | Sing Tao Daily | Hong Kong |
| 9 | World Health Organization raised swine flu alert to the highest level | 16 | Apple Daily | Hong Kong |
| 10 | 22 new swine flu cases | 16 | Sing Tao Daily | Hong Kong |

Table 6. Source, region and contents of the 10 most retrieved articles by teachers

| | <i>Contents</i> | <i>No. of User viewed/archived</i> | <i>Source</i> | <i>Region</i> |
|----|--------------------------------------------------------|----------------------------------------|-------------------------------|---------------|
| 1 | Policy amend to regulate unscrupulous businessmen | 31 | Sing Pao Daily News | Hong Kong |
| 2 | Two teachers committed suicide in four months | 14 | Apple Daily | Hong Kong |
| 3 | Innovative strategy to motivate students | 11 | Ming Pao Daily News | Hong Kong |
| 4 | Singer admits drug trafficking | 11 | Sing Pao Daily News | Hong Kong |
| 5 | Direct Subsidy Schools | 11 | Sing Tao Daily | Hong Kong |
| 6 | Financial secretary predicts economic growth next year | 9 | Hong Kong Commercial Daily | Hong Kong |
| 7 | Australia uses real eggs for testing | 8 | Hong Kong Commercial Daily | Hong Kong |
| 8 | Lack of regulation for electronic cigarette | 8 | Oriental Daily News | Hong Kong |
| 9 | Whale appears in Hong Kong water | 8 | Sing Tao Daily | Hong Kong |
| 10 | Great Wall's protection and disappearance | 7 | Economic Information Daily | China |

Usefulness of WiseNews – Survey results

A survey was conducted to gather students' and teachers' opinions on the usefulness of WiseNews database. A total of 160 students and 31 teachers have completed the survey. The results was tabulated in Table 7.

Table 7. Results of students and teachers survey

| <i>Survey Questions</i> | <i>Teacher</i> | <i>Student</i> |
|--------------------------------------------------------------------------------------------|-----------------------------------|------------------------------------|
| | <i>Mean (SD)</i> <i>N = 31</i> | <i>Mean (SD)</i> <i>N = 160</i> |
| WiseNews is easy for me to use | 3.07 (.53) | |
| WiseNews is easy for me (my students) to use | 2.71 (.62) | 3.21 (.80) |
| Resources in WiseNews are relevant to my lesson planning | 2.63 (.69) | |
| Resources in WiseNews are relevant to my self-learning | 3.07 (.37) | |
| WiseNews is useful for in-class activities | 2.76 (.60) | |
| Resources in WiseNews are reliable | 3.07 (.58) | |
| Resources in WiseNews are relevant to my (my students') project-based learning (PBL) | 2.85 (.67) | 3.31 (.65) |
| Resources in WiseNews are relevant to my (my students') homework (other than PBL) | 2.65 (.69) | 3.07 (.72) |
| WiseNews is useful for my news reading | 2.96 (.64) | |
| WiseNews is useful for me (my students') news reading | 2.82 (.66) | 3.34 (.81) |
| I can search for relevant resources in WiseNews easily | 3.07 (.46) | |
| I can search for relevant resources in WiseNews easily | | 2.95 (.81) |
| Overall, WiseNews is useful for me as a teacher | 3.03 (.32) | |
| Overall, WiseNews is useful to me (my students) | 2.92 (.48) | 3.24 (.70) |
| I would recommend my students to use WiseNews | 3.00 (.52) | |
| I would recommend other people to use WiseNews | | 3.11 (.98) |
| I found the training on WiseNews from my teacher helpful for my use of WiseNews. | | 3.08 (.78) |
| I found the training on WiseNews from the school librarian helpful for my use of WiseNews. | | 2.82 (.74) |

***Note: 4 = strongly agree, 3 = agree, 2 = disagree, 1 = strongly disagree**

Usefulness for learning

Students rated the usefulness of WiseNews on various aspects of their learning using a 4-point

ordinal scale. Higher score represented higher level of usefulness and low score represented lower level of usefulness. In general, WiseNews database received positive reviews from students. Students agreed that WiseNews is useful for their project-based learning ($M = 3.31$), which is consistent with the result in the pilot study (Chu et al., 2007). They also found WiseNews useful for homework of other subjects ($M = 3.07$) and news reading ($M = 3.34$). In their comments in the survey, students revealed that WiseNews also helped them to gather information for self-learning. As a whole, they rated WiseNews useful for them as a student ($M = 3.24$) and would recommend other people to use it ($M = 3.11$).

The teachers' survey results also revealed positive view on WiseNews database. Teachers generally agreed that the database is helpful to their teaching-related activities (e.g. lesson-planning, in-class activities and self-learning (see Table 7). They also believed that WiseNews database is helpful to various aspects of their students' learning (see Table 7).

One interesting thing to note from the survey is that students' ratings on the usefulness of WiseNews to their learning are higher than what their teachers expected. WiseNews database may benefit to students more than what teachers think.

Usability

In terms of usability, students found WiseNews easy for them to use ($M = 3.21$) and that they could

find relevant information in WiseNews easily ($M = 2.95$). However, students also made some comments on the usage problems. For example, some students found the searching process difficult because of the database settings; this problem arose probably because WiseNews is not specifically designed for primary students. It may also due to students' lack of necessary computer literacy. Other students found WiseNews searching difficult because they did not know how to input Chinese characters. The same problem was encountered in the pilot studies as students lacked Chinese word-processing skills. In addition, students revealed that materials in the database are too difficult for them and they also have difficulties handling such vast amount of information. This is consistent with the many research findings that primary students lack information literacy to handle large amount of information (e.g Livingstone & Lynch, 2000).

Teachers generally found WiseNews easy to use ($M = 3.07$) and that they can search for relevant information easily ($M = 3.07$). Again, teachers' ratings on the usability of WiseNews to students are different from students' own ratings. Students perceived WiseNews easier to use than their teachers.

Conclusion and Implications

The present study found that teachers and students at primary level have a positive view towards the usefulness of WiseNews databases to their learning in various aspects (see Table 7). The survey results are also consistent with previous literature that electronic databases are useful in promoting learning beyond classroom (Marchionini & Maurer, 1995).

The examination of usage habit of students and teachers in the present study helped us to understand how students and teachers used the database to learn. The study results also highlighted the different between children and adults' usage of electronic resources. The usage habit of students and teachers revealed that primary students lack certain IT skills for them to fully benefit from the electronic resources. Their usage patterns are more monotonous and they relied a lot on browsing as they did not know how to make use of the searching function. It is suggested that proper training on the use of the database is needed for it to be more usable to students. Students and teachers also gave some suggestions on how to improve the usefulness and usability of the database. For example, simplifying the searching procedures, adding clearer user instructions and more pictures to help understating the text and have better organized article categories etc. Service provider can use these suggestions to put together a more user-friendly database for primary students.

One limitation of the study is that only qualitative data were used to measure the usefulness of WiseNews database at primary level. These data only reflect user opinions and cannot provide us

answer to whether WiseNews database actually helped teachers and students in learning and teaching. In the light of this limitation, future studies on usefulness of electronic database can adopt quantitative measures or use experimentation method to compare learning before and after usage.

Another limitation of the present study is that not all students and teachers received WiseNews database usage training, which may have undermined the usefulness of the database as students and teachers fail to maximize the benefit from the database. Some students revealed in the survey that more instructions are needed for them to fully utilize the database. Future study could investigate whether training from teachers or librarian would be useful to teachers and students.

The present study supported the view that electronic databases can be useful in primary educational settings. As teachers' and students' usage patterns are better understood, school administrator would have a better idea on how to select appropriate electronic databases. In addition, database service providers can also use these information to design databases that better suit teachers and students at primary levels. If appropriately designed, electronic databases have an enormous potential to benefit primary students and teachers.

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