RESEARCH REPORT

Nursing students' awareness about websites
－comparison of frequency of website use for self-learning－

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Abstract   This survey is to study the difference in awareness of student nurses about websites depending on the frequency of website use for self-learning for a class on "Health assessment".   The subjects were 127 freshmen at a nursing university.   The questionnaire survey was carried out the last day of the class on "Health Assessment" in 2009 and 2010.   The aim of the research was explained, and the submission was their free choice.   The questionnaire consisted of questions asking how often websites or textbooks were used for self-learning and the 13 questions concerning "Awareness of Websites".   The results showed that 38 students were "Website users", 17 students were "Intermediate website users", and 72 students were "Non-website users". Response points of "website information is reliable" came from the website user group who had a significantly higher ratio than the non-website user group （p＜0.05）.   Regarding the 13 questions concerning "Awareness of Websites", the factor analysis was performed.   Three factors were extracted and interpreted as follows.   The first factor was "habitual websites use" ; the second factor was "convenience of the websites" ; the third factor was "trust to the websites".   We compared the factor scores according to the frequency of website use.   The first factor score of "Website users" was significantly higher than that of "Non-website users" （p＜0.05）.   There was no significant difference in the other factors.   The results revealed that website use has already become a habit and is indispensable for the purpose of self-learning for the students who use it frequently.   However, about 55% of the students used textbooks for their self-learning and they did not use websites for it.   It was estimated that this difference might depend on the student confidence level in websites.   It is certain that, in future, the majority of students will be using websites.   Therefore, measures that ensure reliable websites for students to use for self-learning are required.

Key words ： nursing student, website, information, self-learning, awareness

Introduction

Even in the realm of nurse education, numerous CAI （computer-assisted instruction） materials have been

developed[1,2].   The technology of one of these for instructing nursing students titled "Health Assessment" is said to be particularly difficult to master, we have also received notification of the production of digital video teaching materials on this subject[3,4].

However, in a survey carried out on nursing students in 2003, around 90% of the respondents answered that they have PCs that they can use freely outside of the university[5].   In other words, students use computers

for utilization of teaching materials developed for training in nursing skills not only at the university, but we estimate that they are also using various websites for training freely outside of the university as well.

Classes on "Health Assessment" are carried out for first year students at Nursing-related universities, and at each course students are given assignments as a preparation for class. Therefore, we carried out a survey based on our desire to determine the actual situation in website use and awareness of websites for advance study by nursing students.

Purpose

The purpose of this survey was to clarify the difference in awareness of student nurses about websites depending on the frequency of website use for self-learning for a class on "Health assessment".

Methods

1. Subjects and investigation period

The subjects were university freshmen of nursing. A self-report questionnaire was developed and distributed to the students on the last day of the health assessment class in 2009 and 2010.

2. Survey items

The questionnaire was comprised of the situation in use of websites for self-learning and the 13 questions concerning "Awareness of Websites". The questions were created originally for this survey. These questions were the followings: Website information is reliable; Using the websites facilitate to complete the assignments; Websites are good because they can be used anywhere for study; Websites are convenient for quickly investigating things that I don't understand; Up to this time, I have studied using websites, so I am used to their utilization; Websites are easier to understand than books; Websites make it possible to obtain a broad range of information; Preparation for class using websites is enjoyable; There is too much information on websites, making it difficult to determine which is

correct; There is sometimes wrong information in the website; Preparation for class using websites is tiring; It is not good to depend too much on websites; and It is difficult to complete the assignments without using websites.

3. Statistical methods

The one-way analysis of variance was performed to compare the three groups. Post hoc analysis was performed with Scheffé tests. P values <0.05 were considered statistically significant.

Thirteen questions were set, and each of them asked the students to answer by choosing one of 5 answer responses, ranging from "I think so" to "I don't think so". For statistical processing, 1 to 5 points were allocated to each of the responses, starting from the response "I think so" with the highest point of 5, and the other responses with less points respectively in order. For statistics, the factor analysis method (principal factor analysis, varimax rotation) and the analysis of variance method were employed.

4. Return rate

In 2009, the questionnaire was distributed to 68 of the nursing students and submitted by 65 of them (the return rate was 95.6%). The valid responses were made from 64 of them (valid response rate of 98.5%).

In 2010, the questionnaire was distributed to 68 of the nursing students and submitted by 63 of them (the return rate was 92.6%). The valid response rate was 100%.

5. Ethical consideration

The aim of this research was explained, and the questionnaire was distributed to the students. The questionnaire was answered anonymously and the submission was their free choice. Those students who had agreed to cooperate in the research were requested to submit their completed questionnaires into a submission box. The students were explained the followings: the cooperation in the research was irrelevant to their academic results in their courses; the data would be processed in a manner in which any particular student

could be not identified ; and the research results would be presented in essay and presentation.

Results

1．Questionnaire results on the use of the websites and the textbook（Table 1）

Approximately 30% of the students responded that they used websites for their self-learning as preparation for a class. About 55% of the students did not use websites for self-learning. Also, the responses from about 70% students used the textbook for their self-learning.

2．The response points of the 13 questions concerning "Awareness of Websites"（Table 2）

The response points of the 13 question questionnaire concerning "Awareness of Websites" were compared with use of websites for advance study in the order of frequency. They were divided into three different frequency of use groups, including those who answered,

"scarcely used" and "not very often used"（Non-website users）; those who answered, "no opinion"（Intermediate website users）; and those who answered, "sometimes used" and "frequently used"（Website users）. Response points of "website information is reliable", "websites are convenient for quickly investigating things that I don't understand", and "up to this time, I have studied using websites, so I am used to their utilization" came from the website user group who had a significantly higher ratio than the non-website user group（p<0.05）. However, there were no significant differences in other questions.

3．Results of factor analysis of the 13 questions concerning "Awareness of Websites"

The "questionnaire concerning student's awareness of website" composed of 13 items, its factor was analyzed. The factor number after principal factor analysis and varimax rotation was set as the eigenvalue of 1.00 or more. As a result, three factors were extracted as shown on the Table 3. Those factors are interpreted

Table 1. Questionnaire results on the use of the websites and the textbook

	Scarcely used	Not very often used	No opinion	Sometimes used	Frequently used
Use of websites for self-learning（n＝127）	40(31.5%)	32(25.2%)	17(13.4%)	25(19.7%)	13(10.2%)
Use of textbook for self-learning（n＝127）	11 (8.7%)	12 (9.4%)	12 (9.4%)	32(25.2%)	60(47.3%)

Table 2. The response points of the 13 questions concerning "Awareness of Websites"

Use of websites for self-learning（n＝127） / Awareness of Websites	Non-website user（n＝72）	Intermediate website users（n＝17）	Website users（n＝38）	p
Website information is reliable	2.79(SD＝0.90)	2.77(SD＝0.64)	3.24(SD＝0.84)	<.05
Using the websites facilitate to complete the assignments	3.71(SD＝0.82)	3.82(SD＝0.79)	4.00(SD＝0.73)	n.s
Websites are good because they can be used anywhere for study	3.74(SD＝0.90)	3.65(SD＝0.68)	3.97(SD＝0.71)	n.s
Websites are convenient for quickly investigating things that I don't understand	3.79(SD＝0.91)	3.77(SD＝0.73)	4.21(SD＝0.69)	<.05
Up to this time, I have studied using websites, so I am used to their utilization	3.00(SD＝1.00)	3.24(SD＝0.88)	3.68(SD＝0.69)	<.01
Websites are easier to understand than books	2.88(SD＝1.01)	3.06(SD＝0.73)	3.34(SD＝0.98)	n.s
Websites make it possible to obtain a broad range of information	3.57(SD＝0.98)	3.24(SD＝0.73)	3.71(SD＝0.86)	n.s
Preparation for class using websites is enjoyable	2.86(SD＝1.00)	2.77(SD＝0.73)	3.11(SD＝1.07)	n.s
There is too much information on websites, making it difficult to determine which is correct *	1.90(SD＝0.75)	2.00(SD＝0.59)	1.87(SD＝0.83)	n.s
There is sometimes wrong information in the website *	1.64(SD＝0.77)	2.06(SD＝0.80)	1.92(SD＝0.93)	n.s
Preparation for class using websites is tiring *	2.68(SD＝0.80)	2.77(SD＝0.94)	2.74(SD＝1.04)	n.s
It is not good to depend too much on websites *	1.78(SD＝0.89)	1.94(SD＝0.54)	1.68(SD＝0.73)	n.s
It is difficult to complete the assignments without using websites	3.32(SD＝1.09)	3.41(SD＝0.77)	3.66(SD＝0.74)	n.s

Note : The questions with * are opposite-questions, and thus their scores are inversed. SD : Standard Deviation
The one-way analysis of variance, n. s＝not significant

as the followings : the first factor as "habitual websites use" ; the second factor as "convenience of the websites" ; the third factor as "trust to the websites".

The averages of the factor scores were compared with use of websites for advance study in the order of frequency. In the first factor, the factor scores of the website user group was significantly higher than the non-website user group (p<0.05). However, there were no significant differences in other factors (Table 4).

Discussion

A lot of students used the textbook more than the internet. However, 'internet use' has been habitual behavior, in about 30% of students. It was suggested their purpose of the internet use was convenient and affordable way for their self-learning. This research finding was that for nursing students, use of websites has already become customary. About 55% of the students used textbooks for their self-learning and they did not use websites for it. It was estimated that this difference might depend on the student confidence level in websites.

In addition, there were reports that website use encourages self-initiated study activities among nursing students[6]. It is necessary for nurses to continue to study throughout their lives, so even after graduating and becoming nurses, they have a strong need and desire to continue studying using websites[7,8]. However, concerning website use, there are problems about the reliability of information. It was thought that the student using the internet believed that it was safe and was right. Nursing students have the knowledge necessary to obtain highly reliable information, but there were also reports that indicated that it cannot be said that the information proves useful in actual practice[9].

Various reports have been made on the actual

Table 3．Results of factor analysis of the 13 questions concerning "Awareness of Websites"

	F1 : Habitual websites use	F2 : Convenience of the websites	F3 : Trust to the websites
Up to this time, I have studied using websites, so I am used to their utilization	0.679	0.349	0.112
It is difficult to complete the assignments without using websites	0.655	0.119	0.038
Preparation for class using websites is enjoyable	0.645	0.190	0.207
Websites are easier to understand than books	0.620	0.355	0.096
Website information is reliable	0.458	0.186	0.144
Websites are convenient for quickly investigating things that I don't understand	0.229	0.740	−0.075
Using the websites facilitate to complete the assignments	0.342	0.638	0.100
Websites are good because they can be used anywhere for study	0.385	0.601	−0.034
Websites make it possible to obtain a broad range of information	0.314	0.414	−0.122
There is sometimes wrong information in the website *	0.067	−0.136	0.725
There is too much information on websites, making it difficult to determine which is correct *	0.113	0.107	0.683
It is not good to depend too much on websites *	0.130	0.021	0.642
Contribution rate of the factor (%)	18.079	15.102	12.213
Cumulative contribution rate (%)	18.079	33.180	45.393

Note : A factor with a factor loading higher than 0.4 is framed with double-line.
    The questions with * are opposite-questions, and thus their scores are inversed.

Table 4．The averages of the factor scores

Use of websites for self-learning (n=127) / The factor	Non-website users (n=72)	Intermediate website users (n=17)	Website users (n=38)	p
The first factor : Habitual websites use	−0.15(SD=0.88)	−0.08(SD=0.64)	0.32(SD=0.76)	<.05
The second factor : Convenience of the websites	−0.08(SD=0.90)	−0.13(SD=0.74)	0.20(SD=0.67)	n.s
The third factor : Trust to the websites	−0.06(SD=0.85)	0.25(SD=0.66)	−0.00(SD=0.88)	n.s

Note : The one-way analysis of variance, n.s=not significant
    SD : Standard Deviation

situation and the methodology of information education for nurses, but educational contents were centered on manipulation of PCs[10, 11]. Based upon the present situation among nursing students, it was considered necessary to evaluate the information on websites and to provide practical education that can be evaluated as reliable.

Conclusion

This survey was to study the difference in awareness about websites depending on the frequency of website use for self-learning for a class on "Health assessment". The subjects were 127 freshmen at a nursing university.

1． The results showed that 38 students were "Website users", 17 students were "Intermediate website users", and 72 students were "Non-website users".

2． Regarding the 13 questions concerning "Awareness of Websites", the factor analysis was performed. As a result, three factors were consistently extracted : the first factor was "habitual websites use" ; the second factor was "convenience of the websites" ; the third factor was "trust to the websites".

3． The first factor score of "Website users" was significantly higher than that of "Non-website users" ($p < 0.05$). There was no significant difference in the other factors.

Our study has a limitation. There is a limit in the generalization of our findings because sample size was rather small. In future, it is considered we must provide the education class to judge the quality of internet information sources. Furthermore, we should prospectively construct environments in which students can learn independently by internet systems.

This article reported in the " 7th International Conference on Natural Language Processing and Knowledge Engineering（2011）" as poster presentation.

Acknowledgement

Declaration of interest

The authors report no conflicts of interest. The authors alone are responsible for the content and writing of the paper.

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