The Internet Usages and Exploring Capability – A Case Study on Regional Culture Knowledge of Primary School Students in Taiwan

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Abstract: - In this paper, we present a case study to discuss the internet usages of primary school students and the exploring capabilities of using internet on regional culture course. 226 students of grade five from a primary school in Taiwan were selected as samples. We designed a questionnaire to analyze the internet usages and behaviors of these sampled students including time spending in internet, frequency, location, and reason of using internet, internet activity, and recognition of internet functionality. We designed questions for the regional culture test and conducted experiments to find the relationships between the internet usages and the scores of the regional culture test. We also discuss the relationships between the internet usages and four main learning fields in primary schools including language, mathematics, nature science and living technology, and sociology. Concluding remarks and the suggestions for future studies are also provided at the end of this paper.

Key-words:- Regional culture, Exploring capability, Internet usages, Internet behaviors.

1. Introduction

Recently, with the reformation of the curriculum in Taiwan, the regional culture course formally becomes one of regular courses in primary schools. Elementary teachers therefore need to pay more teaching hours in such course. However the teaching materials in the regional culture course in primary schools vary depending on the area where the schools are located. No textbooks can cover the learning materials of the regional culture for all of the primary schools in difference areas in Taiwan. In practice, most of regional culture teachers need to design, write, and edit their teaching materials for the course to fit the special needs. It is a big challenge for the primary teachers who teach regional culture course. One of solutions to solve the problem is using internet. Due to the promotion of network bandwidths and web technologies, more and more daily life and behaviors rely on internet such as shopping, retrieving information, banking, and learning. The internet provides unlimited environments in time and geography. People can access internet anywhere and anytime whenever they need. Hence, many teaching activities in regional culture courses are conducted via internet.

Four main integrated learning fields are taught in the primary schools in Taiwan including the learning fields of language, mathematics, natural science and living technology, and sociology. One of the important goals of these learning fields is to let students have widely-scoped knowledge and the skills of integrating their knowledge from different disciplines.

This paper aims at investigating the internet usage and the exploring capability of regional culture of primary school students. To achieve this purpose, we designed a questionnaire and conducted experiments. We also designed a test to evaluate the exploring capability of regional culture. 226 students of grade 5 form 7 classes in a primary school were selected as examples for this study. This school is located in Wanduan, Pingtung, in south Taiwan. It is a middle-size township with about 54,000 residents.

2. Related works

Several studies on the internet usages and behaviors of primary school students in Taiwan have been done in previous researches [1-5]. Some of them indicated that for elementary school students the time-spending in internet is 2.5 hours a week, the frequency is twice to three times a week, and the average time per internet access is 20 to 30 minutes [1,5]. Meanwhile, the popular locations for internet access are, in a descending order, home, school, and Cybercafe (Drinking store with internet access). Male students spend more times in playing on-line games than Female students [1]. The usages of searching engine and email for the students in small-size schools (schools having 12 or less classes) are heavier than...
those of the students in large-size schools (schools having more than 12 classes) \[1\]. In addition, the usages of some internet activities for the students in special classes (classes whose students possess some special gifted talents, i.e., musical classes, and fine arts classes) are heavier than those in regular classes \[1\]. However, the usage of on-line games for the students in regular classes is heavier than those in special classes \[1\].

Recently regionalization issues have become one of important directions for government policies in Taiwan. Many county governments have established different committees to promote regionalization education \[6\]. To fit the trend of localization, the education authority has officially added the regional culture course as a regular course in primary schools \[7-8\]. One of the goals of the regional culture course is to help students establish correct value with empathy to respect different areas, races, and religions for the multi-culture society in Taiwan \[9\]. A previous study also pointed out that the promotion of multi-culture should be conducted together with the education of regional culture to achieve a peaceful and well-developed society \[9\]. The purpose of the regional education is to help people get familiar with environment, establish culture identity, and prepare to be a member of the global society \[10\].

3. Research design

3.1 Structure

Figure 1 shows the research structure of this paper. There are three parts in this figure. The academic achievements of the four learning fields (language, mathematics, natural science and living technology, and sociology) were obtained from the previous academic reports of the 226 participants (students), scored in a five-level basis (A, B, C, D, and E). The internet behaviors and usages are analyzed based on a questionnaire of six questions, as indicated below:

Q1. Time spending in using internet with values of (1) less than one hour a day; (2) between one and two hours a day; (3) between 2 and 3 hours a day; (4) between 3 and 4 hours a day; (5) other.

Q2. Frequency of using internet with values of (1) once a week; (2) twice to three times a week; (3) four times to six times a week; (4) everyday; (5) others.

Q3. Location of using internet with values of (1) home; (2) computer classroom; (3) cybercafe; (4) Friend’s house; (5) others.

Q4. Reason of using internet with values of (1) doing homework; (2) obtaining information; (3) killing time; (4) accessing email; (5) others.

Q5. Internet activity with values of (1) searching information; (2) downloading software; (3) reading news; (4) playing game; (5) chatting; (6) browsing websites; (8) using email; (9) others.

Q6. Recognition of internet functionality with values of (1) email; (2) online game; (3) information searching; (4) web messenger (i.e., MSN or Yahoo Messenger); (5) information retrieval; (6) knowledge acquirement; (7) information providing to other people; (8) others.

Of the above six questions, Q1 to Q3 are answered by selecting one single value only. Q4 to Q6 are answered by selecting multiple values whenever appropriate.

The scores of the regional culture were from a test with 50 questions. The original scores were transferred into five levels according to the distribution of the scores. We will explain the experimental details later in this paper.

3.2 Procedure

\textbf{Step 1: Design questionnaire.}

The questionnaire was designed after interviewing three domain experts (senior computer teachers). This questionnaire was designed to realize the behaviors and usages of internet of primary school students. Six questions were included in this questionnaire as mentioned in Section 3.1.

\textbf{Step 2: Design questions for regional culture test.}

The test was designed based on the www resource about the regional culture of Wanduan township (the area where the selected primary school for this study is located). There were totally 50 questions in the regional culture test. 25 of them were related to Wanduan township, and 25 related to Pingtung county where Wanduan township belongs to. Six senior teachers who have resided in the township or in its neighboring areas for more than ten years were selected to write the questions for the test. The questions were then reviewed by the senior citizens who were familiar with the regional culture and legendary tales of the township and the county.

\textbf{Step 3 Conduct experiment}

During experiment, the questionnaires were first answered by the students. After completing the questionnaires, the students were then tested with 50 regional culture questions. Internet access was provided for the students during the test. Students were encouraged to use www resource when answering the questions. The time period for the test was 40 minutes.
4. Statistical Analyses

4.1 Descriptive statistics and regional culture test results

Table 1 shows the descriptive statistics about the internet usages in time spending, frequency, and location. Table 2 demonstrates the descriptive statistics about the reason of using internet, internet activities, and recognition of internet functionalities.

Figure 2 is the original distribution of the results of the regional culture test. Figure 3 is the smoothed curve of the original test results. The test results were divided into five levels according to the test scores by the following criteria:

- Level A: score higher than \( m + 1.5\sigma \).
- Level B: score between \( m + 0.5\sigma \) and \( m + 1.5\sigma \),
- Level C: score between \( m - 0.5\sigma \) and \( m + 0.5\sigma \),
- Level D: score between \( m - 1.5\sigma \) and \( m - 0.5\sigma \),
- Level E: score less than \( m - 1.5\sigma \),

where \( m \) is the mean of the test scores and \( \sigma \) is the standard deviation. Figure 4 shows the partitioning of the five score levels.

4.2 One-way ANOVA

4.2.1 Statistical hypotheses

\( H_1 \) Tests on the relationships between the scores of the regional culture test and the internet usages.

- \( H_{1-a} \): The scores of the regional culture are not significantly different among the times spending in internet.
- \( H_{1-b} \): The scores of the regional culture are not significantly different among frequency of using internet.
- \( H_{1-c} \): The scores of the regional culture test are not significantly different among locations of using internet.
- \( H_{1-d} \): The scores of the regional culture test are not significantly different among the reasons of using internet.
- \( H_{1-e} \): The scores of the regional culture test are not significantly different among the internet activities.

\( H_2 \) Tests on the relationships between internet usages and the academic achievements of the learning field of language.

- \( H_{2-a} \): The reasons of using internet are not significantly different among the academic achievements of the learning field of language.
- \( H_{2-b} \): The internet activities are not significantly different among the academic achievements of the learning field of language.

\( H_3 \) Tests on the relationships between internet usages and the academic achievements of the learning field of mathematics.

- \( H_{3-a} \): The reasons of using internet are not significantly different among the academic achievements of the learning field of mathematics.
- \( H_{3-b} \): The internet activities are not significantly different among the academic achievements of the learning field of mathematics.
- \( H_{3-c} \): The recognitions of internet functionalities are not significantly different among the academic achievements of the learning field of mathematics.

\( H_4 \) Tests on the relationships between internet usages and the academic achievements of learning field of natural science and living technology.

- \( H_{4-a} \): The reasons of using internet are not significantly different among the academic achievements of the learning field of natural science and living technology.
- \( H_{4-b} \): The internet activities are not significantly different among the academic achievements of the learning field of natural science and living technology.
- \( H_{4-c} \): The recognitions of internet functionalities are not significantly different among the academic achievements of the learning field of natural science and living technology.

\( H_5 \) Tests on the relationships between internet usages and the academic achievements of learning field of sociology.

- \( H_{5-a} \): The reasons of using internet are not significantly different among the academic achievements of the learning field of sociology.
- \( H_{5-b} \): The internet activities are not significantly different among the academic achievements of the learning field of sociology.
- \( H_{5-c} \): The recognitions of internet functionalities are not significantly different among the academic achievements of the learning field of sociology.

4.2.2 Results of statistical tests of one-way ANOVA

Of the above hypotheses, all of them were not different except for the followings:

- The scores of the regional culture test are different between the students who can use emails and the students who can not use email.
The scores of the regional culture test are different between the students who recognize online game as an internet functionality and the students who do not recognize online game as an internet functionality.

The scores of the regional culture test are different between the students who recognize MSN (or Yahoo Messenger) as an internet functionality and the students who do not recognize MSN (or Yahoo Messenger) as an internet functionality.

The recognitions of internet functionalities are different among academic achievements of the learning field of language.

The recognitions of internet functionalities are different among academic achievements of the learning field of mathematics.

The recognitions of internet functionalities are different among academic achievements of the learning field of nature science and living technology.

The recognitions of internet functionalities are different among academic achievements of the learning field of sociology.

5. Conclusions

We presented a case study to discuss the internet usages of primary school students and the exploring capabilities of using internet on regional culture course. 226 students of grade five from a primary school in Taiwan were selected as samples. We designed the questionnaire to analyze the internet usages and behaviors of these students including time, frequency, location, reason, internet activity, and recognition of internet functionality. We also designed questions for the regional culture test and conducted experiments to find the relationships between the internet usages and the scores of the regional culture test. We also discussed the relationships between the internet usages and the four main learning fields: language, mathematics, nature science and living technology, and sociology.

As for the future studies, a pre-test of regional culture might be conducted before the experiment begins. This can help researchers compare the learning performances before and after the experiment.

Reference


[10] National Institute of Educational Resources and Research


### Academic achievement:
(Obtained from score reports)
- Language
- Mathematics
- Sociology
- Natural science and living technology

### Internet behaviors and usages:
(Descriptive Statistics)
- Time, frequency, and location of using internet
- Reason of using internet
- Internet activities
- Recognition of internet functionalities

#### Table 1: Descriptive statistics of time, frequency and location

<table>
<thead>
<tr>
<th>Time</th>
<th>Value (daily) N.</th>
<th>%</th>
<th>Value (weekly) N.</th>
<th>%</th>
<th>Location</th>
</tr>
</thead>
<tbody>
<tr>
<td>&lt; 1 hr</td>
<td>100</td>
<td>44.2</td>
<td>&lt; once</td>
<td>19</td>
<td>8.4</td>
</tr>
<tr>
<td>1~2 hr</td>
<td>79</td>
<td>35.5</td>
<td>1~3 times</td>
<td>162</td>
<td>71.7</td>
</tr>
<tr>
<td>2~3 hr</td>
<td>21</td>
<td>9.3</td>
<td>4~6 times</td>
<td>26</td>
<td>11.5</td>
</tr>
<tr>
<td>3~4 hr</td>
<td>26</td>
<td>11.5</td>
<td>Everyday</td>
<td>19</td>
<td>8.4</td>
</tr>
<tr>
<td>Total</td>
<td>226</td>
<td>100</td>
<td>Total</td>
<td>226</td>
<td>100</td>
</tr>
<tr>
<td>Not answered</td>
<td>1</td>
<td>0.4</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

#### Table 2: Descriptive statistics of reason of using internet, internet activities, recognition of internet functionalities

<table>
<thead>
<tr>
<th>Reason of using internet</th>
<th>Internet activities</th>
<th>Recognition of internet functionalities</th>
</tr>
</thead>
<tbody>
<tr>
<td>Value</td>
<td>N.</td>
<td>%</td>
</tr>
<tr>
<td>Doing homework</td>
<td>122</td>
<td>54</td>
</tr>
<tr>
<td>Obtaining information</td>
<td>99</td>
<td>43.8</td>
</tr>
<tr>
<td>Killing time</td>
<td>140</td>
<td>61.9</td>
</tr>
<tr>
<td>Making friend</td>
<td>44</td>
<td>19.5</td>
</tr>
<tr>
<td>Accessing email</td>
<td>84</td>
<td>37.2</td>
</tr>
<tr>
<td>Others</td>
<td>17</td>
<td>7.5</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Remarks:
- **a**: More than one value selected for a single questions;
- **b**: Percentages are calculated by a 226 participants basis.
- **c**: MSN or Yahoo Messenger.
Scores of regional culture test

Figure 2: The score distribution of regional culture test.

Figure 3: The smoothed curve of the score distribution of Figure 2.

Figure 4: The five score levels (A, B, C, D, and E) for Figure 3.