Internet Literacy vs. Technology Addiction:
Relationship Analysis with Time Perspectives of Secondary School Students

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Abstract. Recently, secondary school students have been required to have Internet literacy for their school life and study. However, the parents of the students do not want their children to be addicted to the Internet and smart phones due to the heavy use of their devices. In this paper, we analyze the relationship between Internet literacy and the Internet and smart phone addictions with secondary school students’ time perspectives and their academic achievements. By showing the results of this paper, we can prove that having Internet literacy does not cause their academic achievement problems. In order to achieve our research, we surveyed 970 students in Jeju-do, South Korea, and then performed statistical analyses such as correlation analysis and regression analysis. The research results can help teachers to educate their students so that they have enough Internet literacy as well as they achieve the high level of academic performance.

Keywords: Internet literacy, Internet addiction, Smart phone addiction, Academic achievement, Time perspectives

1 Introduction

The advent of technology brings two sides to human being; one is good and the other is bad. The good effects are conveniences in life, easy access to meaningful information, and so on. The bad effects are security problems, addiction, and so on. Since the Internet was adopted as an instructional method in traditional classrooms, many researchers have concerned about the technology addiction of adolescent at the same time. There have been a lot of research to find out the factors that affect the Internet addiction [1][2][3]. Also, the research about smart phone addiction has been performed actively by many researchers [4][5][6].

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On the other hand, due to the addiction problem of adolescent, their parents prohibit their children from using the Internet or the computer. Thus, a few researchers analyzed the interrelationships among the Internet literacy, the Internet activities, and the Internet addiction symptoms. In the study, they focused what kinds of activities affected more to the Internet addiction. However, it has been rare so far that the research showed the relative importance among personal factors with Internet literacy to the internet addiction and academic achievement. Thus, in this paper, we analyze the relationship between Internet literacy and the Internet/smart phone addictions with students’ time perspectives and academic achievement.

2 Background

Professor Zimbardo proposed Time perspective theory composed of 6 categories [7]. Time perspectives are made by what people learn and what they expect. The substantial addiction caused by alcohol and drug makes people have good feelings. The addicted people concentrate on momentary satisfaction rather than their future [7]. According to Professor Zimbardo’s research results, people who are professional workers or belong to the upper class tend to have the higher future time perspective than the present time perspective. Also, a student who has a high future time perspective also has a high academic performance [8]. In order to prevent people from having impulsivity, educators should teach learners to have the future time perspective more than the present time perspective [7]. Recently, some studies showed that time perspective affected personal happiness, health, suicide rate [7]. In this paper, we focus on two time perspectives among 6 categories; (i) the present time perspective (fatalism) and (ii) the future time perspective. On the other hand, browsing and navigating the Internet are essential literacy. In this paper, we define Internet literacy as the confidence in the Internet usage.

3 Analysis Results

This Section presents the results of the survey that performed on 970 secondary school students who reside in Jeju-do. Our respondents are shown in Table 1. We asked them about the time perspectives, Internet literacy, the Internet addiction, and the smart phone addiction.

<table>
<thead>
<tr>
<th>Gender</th>
<th>Grade</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Middle school</td>
<td>High school</td>
</tr>
<tr>
<td>Male</td>
<td>251</td>
<td>188</td>
</tr>
<tr>
<td>Female</td>
<td>288</td>
<td>243</td>
</tr>
<tr>
<td>Total</td>
<td>539</td>
<td>431</td>
</tr>
</tbody>
</table>

Table 1. The respondents of our survey
Table 2 shows the correlation coefficients and the \( p \)-values among the time perspectives, Internet literacy, and the two addictions. The present time perspective had a negative correlation with the future time perspective. However, the present time perspective had positive correlations with the two addictions. The future time perspective had the opposite result compared with the present time perspective. In addition, the future time perspective had a positive relation with Internet literacy at this time. Finally, the two addictions had positive correlations with Internet literacy.

**Table 2. The correlation coefficients and \( p \)-values**

<table>
<thead>
<tr>
<th></th>
<th>Future time perspective</th>
<th>Internet addiction</th>
<th>Smart phone addiction</th>
<th>Internet literacy</th>
</tr>
</thead>
<tbody>
<tr>
<td>Present time</td>
<td>-0.204</td>
<td>0.425</td>
<td>0.231</td>
<td>0.054</td>
</tr>
<tr>
<td>perspective</td>
<td>(( p &lt; .001 ))</td>
<td>(( p &lt; .001 ))</td>
<td>(( p &lt; .001 ))</td>
<td>(( p = .095 ))</td>
</tr>
<tr>
<td>Future time</td>
<td>-0.143</td>
<td>-0.093</td>
<td>0.228</td>
<td></td>
</tr>
<tr>
<td>perspective</td>
<td>(( p &lt; .001 ))</td>
<td>(( p = .004 ))</td>
<td>(( p &lt; .001 ))</td>
<td></td>
</tr>
<tr>
<td>Internet addiction</td>
<td></td>
<td>0.274</td>
<td>0.144</td>
<td></td>
</tr>
<tr>
<td>Smart phone</td>
<td></td>
<td></td>
<td></td>
<td>0.063</td>
</tr>
<tr>
<td>addiction</td>
<td></td>
<td></td>
<td></td>
<td>(( p = .048 ))</td>
</tr>
</tbody>
</table>

Next, we show the results of the regression analysis among time perspectives, Internet literacy, the two addictions, and academic achievement. According to the results, Internet literacy affected more on the Internet addiction than the two time perspectives (standardized coefficient: -0.14 (future), .10 (present), .40 (literacy)). Since the factors did not have multi-collinearity problem, we can use the standardized coefficient when we compare the relative importance among the factors. The 3 variables explained the Internet addiction about 20.3\% (\( R^2 \)).

However, the smart phone addiction had a different result compared with the Internet addiction. The present time perspective affected more on the smart phone addiction than the other factors. And, the 3 variables explained the smart phone addiction about 5.2\% (\( R^2 \)).

Finally, we found out that the future time perspective affected the academic achievement level more than the other factors. And, the Internet addiction and Internet literacy affected positively to the academic achievement respectively (\( r = 2.14, p = .033 \) (literacy); \( r = 2.50, p = .013 \) (addiction)).

In summary, Internet literacy affected the Internet addiction positively. In addition, Internet literacy and the Internet addiction also affected academic achievement positively. However, the smart phone addiction and the present time perspective affected the academic achievement negatively. Finally, the future time perspective affected the academic achievement the most.
4 Conclusions

In this paper, we analyzed how the Korean adolescent’s time perspectives and their Internet literacy affected the Internet addiction and the smart phone addiction. In addition, we showed the relationship among their time perspectives, Internet literacy, the two addictions, and the students’ academic achievement. As a result, Internet literacy was positively correlated with both future time perspective and the two addictions. However, Internet literacy was also positively correlated with academic achievement. For smart phone addiction, the present time perspective affected more than Internet literacy. Thus, Internet literacy is helpful for secondary school students for their academic achievement even though it is related with the Internet addiction. Also, the Internet addiction affected academic achievement positively in our study unlike the existing research. It implies that the Internet is a little bit old and an ordinary tool for our adolescent. It is not new anymore. Thus, teachers have to educate their students to have high Internet literacy without any worry about the Internet addiction. However, in order to prevent the smart phone addiction, our teachers have to educate the students to have the future time perspective more than they have now.

References