Foreign Language Reading Comprehension in the Context of Internet Use

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Abstract – **Reading comprehension is a complex mental performance of an individual, which is strongly influenced by the modern phenomenon of the use of the Internet. The main goal of the study is to examine the relationship between foreign language reading comprehension (in English and German) and the Internet use (time spent on the Internet, the Internet addiction). The results of the research confirmed negative relationship between the time spent online and reading comprehension in German. Internet addiction is positively correlated with reading comprehension in English, this relationship is influenced by demographic variables of students' gender and the type of school attended.**

Keywords – **the Internet use, the Internet addiction, foreign language, reading comprehension, demographic variables.**

1. Introduction

In the knowledge society, reading comprehension can be considered as a key aspect in terms of education and career, but also the overall orientation and awareness of man. Foreign language reading comprehension is now taking on a new dimension, as people work or have more and more fun on the

Internet, which is associated with reading information and texts in a foreign language. The perception of the text at the morphological, syntactic and lexical levels is also changing [1], [2].

It is important to realize that reading manifests itself in a transformational experience that affects student's thinking and cognition. Regarding the importance of reading comprehension, it is worth mentioning that it is the basic goal for ESL/EFL students to understand the world and themselves which allows them to mentally process what they read, understand the content of the read and respond to it [3].

Reading represents the power to transfer their mind to different places, to different time perspectives and events, thus keeping the reader's attention [4], [5], [6]. New words, meanings and language structures support existing knowledge, while stimulating cognitive processes that support reading comprehension and the activity of metacognitive processes.

The ubiquity of technologies, especially the Internet and its daily use affects an individual's overall cognitive functioning and emotional experience, so we can expect that the direct or indirect consequences of using the Internet will also be reflected in reading comprehension skills. As pointed out by Kožuchová et al. [7], studies dealing with the impact of computer use in childhood and adolescence have yielded controversial results. The first group of studies [8], [9] and others, represented mainly in the didactic literature, point to the possibilities of effective use of the Internet in foreign language teaching in order to develop foreign language skills. However, the second large group of researches [10], [11], [12] carried out primarily in the field of psychology and communication draws attention to the possible risks of the excessive Internet use.

The level of text comprehension by upper-secondary school students has long been one of the critical issues of education in Slovakia [13]. Using the Internet is now an important part of the life of the young generation, so mapping students' Internet use habits can bring new aspects to the discourse on opportunities and threats in developing reading

comprehension. In our research, we have focused on understanding a foreign language text in relation to the Internet use, time spent daily on the Internet and addiction to it. We focused on reading in English and German, as these languages are the most commonly taught foreign languages in Slovakia. In examining the issue, we also took into account the possible impact of selected demographic variables, specifically gender and type of school attended, which may be related to the extent and way of using the Internet.

2. Reading Comprehension and Internet use in School and Out-of-school Contexts

Reading comprehension can be defined in terms of modern theories as the interaction of the reader with the read text [2], [14], [15] and others. During the process of reading, the reader activates his previous knowledge, at the same time trying to integrate the information from the text into their system of knowledge and experience. Snow [15] further emphasizes the importance of the socio-cultural environment, as motivation and performance in reading are often influenced by situational factors and determinants of the wider social reality. The advent of the Internet plays an extremely important role in this regard. According to several researchers [16], [17] and others, elements of formal (school) and informal learning using the Internet are mixed in the current acquisition of reading skills in a foreign language.

As reported by Liu et al. [9], there is a consensus among experts that computer-assisted language learning (CALL) can be an effective tool for developing communication competences. The most important advantages of using a computer in the process of a foreign language learning are the provision of an authentic learning environment (access to authentic foreign language texts and contact with native speakers), facilitation of written communication (reading and writing) via e-mail and chat, positive impact on selected affective factors (significant positive feelings, fun, lower rate of anxiety) and autonomous learning. In addition, online texts bring new tools to the development of reading comprehension that can help readers to overcome barriers to reading in a targeted, immediate and autonomous manner.

However, most research in education is based on controlled situations where students use educational programs or perform teacher-led tasks in the educational process. The use of special software and platforms to learn a foreign language is in fact only one, relatively small segment of the young people's Internet use. In our research, therefore, we continue

to focus on broader aspects of the Internet use in uncontrolled, leisure time conditions.

In addition to the benefits that modern ICT tools undoubtedly bring us, spontaneous and uncontrolled use of the Internet in leisure time also has its risks. The theory is richly documented in the professional literature that the excessive Internet use can lead to a state similar to addiction. In the literature a number of terms have been used to name this condition, the most common of which are the problematic Internet use, the excessive Internet use and the Internet addiction. These terms have many features in common, so we agree with Douglas et al. [18], who consider the construct of the problematic Internet use to be the same as the Internet addiction. The Internet addiction is classified by experts as non-substance procedural addictions [19]. Characteristic behavioural components of addictions are manifested in increasing need to perform a given activity (tolerance), withdrawal symptoms, conflicts (intra-psychic or with the social environment) and relapses. Shaw and Black [20] describe a key characteristic of Internet addiction as the intense emotional experience associated with computer and / or Internet use. Young and Rogers [21] describe Internet addicts as emotionally sensitive, abstract-minded, and preferable independent activities.

The prevalence of the problematic Internet use is related to selected socio-demographic variables, such as gender and education of the user. Studies examining the relationship between gender and Internet addiction have yielded mixed results: Pontes et al. [22], Liberatore et al. [23], Frangos, Fragkos and Kiohos [24] confirmed a higher prevalence of Internet addiction in men in different cultural contexts, while Soule, Shell and Kleen [25], Shek and Yu [26] did not find a significant correlation between Internet addiction variables and gender. The controversial findings of these studies may be partly explained by the inconsistent conceptualization of Internet addiction, as well as the fact that women and men differ in the way they use the Internet. The problematic use of online games is dominated by men, while women prefer, or, more specifically, they are over-engaged in online activities aimed at maintaining social relationships and participating in various virtual communities. There is further evidence in the literature that poor school performance and Internet addiction are interlinked: addicted individuals tend to show worse grades and poor school performance is also a predictor of the Internet addiction [24]. Lower school education also implies a higher likelihood of the Internet addiction [22], [25].

In professional literature, there are several theories to explain the negative impact of the excessive Internet use. According to the causal hypothesis,

online activities replace social or cognitive stimulating activities and lead, among other consequences, to the neglect of work, study and other duties. The problematic Internet use may also reflect existing psychosocial problems in adolescents [12].

The extensive Internet use is now almost a matter of course, but despite of that relatively little research is still done on the links between the Internet use and quality, or quantity of reading. Most studies point to a negative relationship between the excessive Internet use and reading, while a smaller part of researches has not found a direct link between these phenomena. Levine, Waite and Bowman [1] found a negative relationship between instant messaging and reading frequency that was mediated by a greater degree of distractibility in reading. Sending and receiving messages concurrently with reading disturbs the reader and may divert their attention from a deeper understanding of the text being read [2]. According to the research of Bukhori et al. [27], smartphone addiction, which is a subcategory of media and Internet addiction, negatively affects intensity and effort (willingness) to read and indirectly affects students' school achievement. Çizmeci [28] argues that the intensive smartphones use is an attractive alternative for young people to spend their free time, which is reflected in the change of reading habits and a smaller amount of time devoted to reading. However, the links between the use of ICT tools and the change in reading habits have not been demonstrated in other research and there also is a lack of research to examine the links between the Internet use and the quality of reading comprehension.

3. Methodology

The main goal of the research was to find out the connection between foreign language reading comprehension (in English and German) and the Internet use (time spent on the Internet, the Internet addiction). The partial goal of the research was to find out the sources of connections with regard to selected variables - type of school attended and gender of students.

H01: There is a relationship between English reading comprehension and time spent online on weekdays.

H02: There is a relationship between German reading comprehension and time spent online on weekdays.

H03: There is a relationship between English reading comprehension and the Internet addiction.

H04: There is a relationship between German reading comprehension and the Internet addiction.

H05: The relationship between reading comprehension and time spent online on weekdays depends on gender and the type of school attended.

H06: The relationship between reading comprehension and the Internet addiction depends on gender and the type of school attended.

The independent variables in our research were as follows: time spent on the Internet on weekdays, the Internet addiction, gender of students and type of school. In the research, we also monitored the dependent variables reading comprehension in English language and reading comprehension in German language.

The variables of the time spent on the Internet on weekdays and the Internet addiction were determined using the AICA-S questionnaire. The time spent on the Internet on weekdays was operationalized in response to the question "How many hours do you spend online on weekdays?". The Internet addiction was defined as the number of points that respondents achieved on the Internet Addiction Scale in the AICA-S questionnaire. The items are based on the diagnostic criteria of non-substance addictions, to which the respondents answer using a 5-point Likert scale, or dichotomous response (yes-no). The reading comprehension variables in English and German were operationalized as the total number of points achieved in the didactic reading comprehension test in the respective language.

3.1. Sample and Procedure

447 students from secondary vocational schools and grammar schools in Slovakia participated in the research. They were 3rd year students aged 17-19. Of the participating students, 56% were men and 44% were women. The distribution of respondents according to the type of school attended was similarly balanced, 51% of respondents attended grammar schools and 49% secondary vocational schools.

In our sample, students studied English or German as a compulsory foreign language. There were 305 students studying English. They were at language proficiency level B1, studying English for an average of 10.5 years. There were 142 students studying German. They were at language proficiency level A2 and studied German for an average of 5.2 years.

Data collection took place from January to March 2020. Respondents received a set of measurement tools, which consisted of a didactic test of reading comprehension in a foreign language that the student studied and an AICA-S questionnaire. Students completed the test and questionnaire anonymously during a lesson, then handed them over to a member of the research team.

3.2. Instrument

The Assessment for Computer and Internet Addiction-Screener (AICA-S) is a test developed by German scholars Wölfling, Müller and Beutel [29]. The test was originally developed as a tool for measuring Internet gaming addiction, but after minor modifications [30] it can be used to assess Internet addiction. The questionnaire has 16 items with a 5-point Likert scale, or dichotomous choice of answer. The first group of items examines the general characteristics of Internet use and contains questions about the length of time of the Internet use, the frequency of its use and the preferences of different online applications. The other group of items belongs to the Internet addiction assessment scale. The items are based on diagnostic criteria for non-substance addictions (desire, tolerance, withdrawal symptoms, loss of control, involvement, and others), then, they examine the negative consequences of the Internet use, such as school problems, family conflicts, financial problems, neglect of leisure time activities and deterioration of health. The questionnaire defines three zones of Internet addiction: normal Internet use, moderate addiction (excessive use) and Internet addiction. The test was adapted to Slovak conditions by a standard procedure and its psychometric properties are good (Cronbach's $\alpha = 0.80$) [19].

We determined the success of reading comprehension for the English language by a didactic test of reading comprehension for the English language at B1 language proficiency level. The author of the test is Gadušová et al. [31]. The reliability rate reached the value: $C\alpha = 0.85$.

The test contained texts for intensive and extensive reading (two texts for intensive reading and two texts for extensive reading). For intensive reading factual everyday texts were used with a focus on the selection of specific information. Extensive reading used literary and factual professional texts. The total number of test items was 21 (5 items per a text with the exception of the task number three where there were six items designed for the information transfer task). The test techniques used were: true/false, matching, information transfer and multiple choice items (selection from four options: one correct answer and three distractors).

We determined the success of reading comprehension for the German language by a didactic test of reading comprehension for the German language at the A2 language proficiency level. The author of the test is Hockicková et al. [32]. The reliability rate reached the value: $C\alpha = 0.84$.

The test contained texts for intensive and extensive reading (two texts for intensive reading and three texts for extensive reading). For intensive reading factual and everyday texts were used with a focus on the selection of specific information. Extensive reading used literary and factual professional texts. The total number of test items was 20. The number of items varied in relation to the content structure of the text. The item types used were: multiple-choice items (selection from three options: one correct answer and two distractors) and three open short-answer items.

3.3. Data Analysis

The collected data were analysed using IBM SPSS statistical software. We performed a descriptive analysis of the research data. The relationship between foreign language reading comprehension and the Internet use variables was determined using Pearson's correlation. To exclude the influence of socio-demographic variables, i. e. gender of students and type of school attended, we used a partial correlation. Partial correlation was used to find the correlation between foreign language reading comprehension and the Internet use variables after the mathematical elimination of the influence of other, socio-demographic variables.

4. Results

Table 1. shows the descriptive statistics of the different research variables: achievement in the reading comprehension test in English and achievement in the reading comprehension test in German, the Internet addiction rate, time spent on the Internet per working day. Based on descriptive statistics, we can state that students performed an average of approximately 50% performance in the reading comprehension test in German (11.74 points out of a maximum of 23 points). In the case of English language, students' performance was slightly below average (14.46 points out of a maximum of 32 points). On the scale of the Internet addiction, our respondents achieved an average of 6.86 points, which is around the upper limit of the band of the normal Internet use. Students spent an average of 4.98 hours online on weekdays.

Table 1. Descriptive statistics of variables

	English reading comprehension	German reading comprehension	Internet addiction	Time spent online on weekdays
Mean	14,46	11,74	6,86	4,98
Median	15	11	6	5
Min	2	2	2	1
Max	32	23	18	10
Range	30	21	16	9
Standard deviation	5,916	5,075	3,292	2,026
Variance	34,994	25,760	10,839	4,103

Pearson correlation analysis was used to test the research hypotheses. Using correlation, we found a relationship between reading comprehension in a foreign language (English and German) and selected characteristics of the Internet use. The result of correlation analyzes between the time spent on the Internet and reading comprehension in English and German are shown in Table 2.

Table 2. Correlation between the degree of the Internet addiction and foreign language reading comprehension

		English reading comprehension	German reading comprehension
Time spent online on weekdays	Pearson Correlation	-.150	-.319*
	Significance (2-tailed)	.221	.039
Internet addiction	Pearson Correlation	.252*	-.093
	Significance (2-tailed)	.038	.560

While the time spent on the Internet is not significantly related to reading comprehension performance in English, in the case of reading comprehension in German, a statistically significant negative relationship with the time spent daily on the Internet was confirmed (p = .039*). Based on the above results, the first null hypothesis was confirmed, while the second null hypothesis of our research was rejected.

Table 2. further shows the result of the correlation analyzes to test the relationship between the degree of the Internet addiction and foreign language reading comprehension. With regard to the Internet addiction variable, the opposite trend was confirmed

as in the case of the variable time spent online on weekdays. Correlation analysis confirmed a statistically significant positive relationship between reading comprehension in English and the degree of the Internet addiction (p = .038*). A statistically significant relationship between the degree of Internet addiction and reading comprehension in German language has not been demonstrated in our research. Based on these results, the third null hypothesis of our research was rejected, while the fourth null hypothesis was confirmed.

Consistent with other research hypotheses, we tested the relationship between reading comprehension and the Internet use variables, excluding the influence of the school type and gender of students' variables using partial correlation. We tested the partial correlation in the case of the variables between which a statistically significant correlation was confirmed in the previous analyzes. The results of the partial correlation between reading comprehension in German and the time spent on the Internet on weekdays excluding the influence of variables type of school attended and gender of students are shown in Table 3.

Table 3. Elimination of the impact of the school type and gender of students on the correlation between reading comprehension in German and the time spent online on weekdays

Control variable		Time spent online on weekdays
None	Pearson Correlation	-.319*
	Significance (2-tailed)	.039
School	Pearson Correlation	-.373
	Significance (2-tailed)	.016*
Gender	Pearson Correlation	-.329
	Significance (2-tailed)	.036*
Internet addiction	Pearson Correlation	-.367
	Significance (2-tailed)	.020*

After excluding the influence of both variables, the relationship between reading comprehension in German and the time spent on the Internet on weekdays slightly strengthened. The correlation between reading comprehension and the time spent on the Internet on weekdays was strongest after excluding the influence of the variable type of school attended (p = 0.016 *). The fifth hypothesis of our research was confirmed on the basis of the partial correlation.

We used the partial correlation to confirm the relationship between reading comprehension in English and the Internet addiction, excluding the influence of the variables type of school attended and gender of students (Table 4.). The positive relationship between reading comprehension in English and the Internet addiction was influenced by

both the type of school attended variable and gender of students. Excluding the impact of these variables, the relationship between reading comprehension in English and the Internet addiction did not reach the level of statistical significance. The sixth hypothesis of our research was rejected on the basis of the partial correlation.

Table 4. Elimination of the impact of the school type and gender of students on the correlation between reading comprehension in English and the Internet addiction

Control variable		Internet addiction
None	Pearson Correlation	.252[*]
	Significance (2-tailed)	.038
School	Pearson Correlation	.188
	Significance (2-tailed)	.129
Gender	Pearson Correlation	.197
	Significance (2-tailed)	.110
Internet addiction	Pearson Correlation	.174
	Significance (2-tailed)	.163

5. Discussion

Findings about reading comprehension in German language showed the negative relationship with the time spent on the Internet, which means that the less time a student spends in front of the Internet, the better the reading comprehension of texts in German and vice versa. Correlation testing, i.e. whether the negative correlation is influenced by the variable gender of students and type of school attended did not explain the impact of these variables. Other variables appear to have impact on this negative correlation. One of them seems to be the English language. Since the primary language of the global and most popular websites is English, it is unlikely that students would normally encounter German language during their leisure time online activities, so even the benefits of an authentic foreign language described in the didactic literature have no direct impact on students learning German [9], [17]. A possible barrier to developing reading comprehension in the online space is the lower level of German proficiency in our sample: A2 level students would probably be exposed to vocabulary and linguistic structures that are disproportionate to their language proficiency when reading authentic online texts, and do not meet the criteria for comprehensible language input. In line with George et al.'s [12] argument, it also can be assumed that the excessive use of the Internet may lead to neglect of study activities, e.g. learning a foreign language, which is a natural prerequisite for developing reading comprehension in a given foreign language. Our results are in line with the findings of Çizmeci [28], according to which frequent use of ICT tools affects reading habits and limits reading time, which was also reflected in our sample (comprehension of the read German text was in the average band, comprehension of the read English text was slightly below the average band).

Findings about reading comprehension in English have shown a positive relationship with the Internet addiction, which means that the more a student is addicted to the Internet, the better the comprehension of English texts and vice versa. We can talk about a paradoxical result. Here, a negative correlation could be expected, based on the findings of Çizmeci [28], the Internet use limits the comprehension of the read text and reading habits. The positive relationship between the Internet addiction and reading comprehension in English can also be interpreted based on frequent encounters with English while using the Internet. Since the relationship with the time spent online have not been proven in the case of the English language, another interpretation may also be related to personality variables, such as personal adaptability, or emotional sensitivity [20], [21]. A student with a tendency to be Internet addicted may show greater adaptability and sensitivity to stimuli, in this way, the concentration from other activities oscillates on the Internet activities. According to Griffiths [33], for the Internet addicted individuals the Internet is becoming the most important activity in their life, which is associated with strong emotional experience and subjective experiences. Since most respondents in our research were in the range of normal to excessive Internet use (outside the range of the real addiction), the score on the Internet addiction scale can also be interpreted as sensitivity and stronger self-reflection of respondents regarding the Internet use. We see this as a perspective on researching the issue of the Internet use. On the other hand, the personality variable of sensitivity can support success in developing foreign language competence. The other research carried out by Stranovská and Ficzere [34] pointed out that personal adaptability, sensitivity are related to foreign language competence and real self-image with a higher comprehensibility of texts read in foreign languages. Foreign language competence is predicted by the factor of psychoticism in a negative correlation, which manifests itself here as the adaptability and sensitivity of the individual in the area of the lexical and grammatical competence. Individuals who tend to be adaptable in social situations appear to be successful at the level of lexical and grammatical competence; they more sensitively perceive morphological and syntactic phenomena, different word combinations and meanings in a foreign language.

When testing the variables and their impact on the positive relationship between reading comprehension in English and the Internet addiction, it was found that the variables gender of students and school type attended influence this relationship. This means that the Internet addiction and reading comprehension in English is influenced by the type of school attended - vocational high school and grammar school, and the gender of students - girls and boys. We agree with the findings of Holdoš [19], Soule, Shell and Kleen [25], who found that the Internet addiction is associated with several demographic variables, such as age, education, academic performance, and socio-economic status. In our research, the biggest impact showed the variable education, i.e. the type of school. We agree that the Internet addiction is a complex phenomenon and its consequences can be manifested mainly in the field of communication skills, social relationships, emotionality and personality development [10], [12], [19] and others. The results of our research show that the Internet addiction interacts with several psychological and demographic characteristics of the student, such as, for example, the gender of students and the type of school attended and especially indirectly, in concurrence with other factors, it influences the performance of students in reading comprehension in a foreign language.

6. Limitations

The design of our research and the choice of variables have several limitations. First, the Internet use is a complex phenomenon, which we have characterized in this research with only two indicators, i.e. the time spent on the Internet use and the degree of the Internet addiction. In the future, it would be necessary to extend this narrow operationalization to other aspects that would provide us with information about the activities students spend their free time on the Internet. Based on this data, we can further explore the relationship between the Internet use and reading comprehension. Second, there is evidence in the specialist literature that the Internet use, similarly as reading comprehension, may be related to selected personality traits, in particular sensitivity and adaptability factor. Verification of these hypotheses was, however, not the subject of our study, so we see in it the perspective for further research.

7. Conclusions and Implications

We believe that there is a significant justification for continuing the research in the area of educational technology and foreign language reading comprehension in relation to the Internet use, because a student in an online environment has the opportunity to be exposed to authentic foreign language texts and get in touch with native speakers. The results of our research show that a especial attention should be paid to the differences in the Internet use in relation to reading comprehension between students of different types of schools such as grammar schools and vocational schools, as well as differences with regard to boys and girls, and to adapt pedagogical behaviour to prevent possible addiction risks as well as the adverse effects of marketing. Within the field of education, we see the use of the research related to the success of reading comprehension and the Internet use in the identification of students differences in reading comprehension and the degree of the Internet addiction based on the selected variables (gender of students, type of school attended) to be able to set appropriate facilitation or intervention in different schools and also in different groups of students. We believe that the appropriate Internet use plays an important role not only in educating students in general, but also in the successful development of reading comprehension in everyday situations. Here, the pedagogical facilitation or intervention can guide students to use educational technology in a suitable way, as well as to use appropriate language markers, or language register within various social groups (communication on blogs with experts in the field, communication with peer groups within social networks and others) the students communicate with, and to focus their attention to the essence of the text in the online environment of wide stimuli array.

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