INTERNET ADDICTION AMONG PRIMARY SCHOOL PUPILS

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The results of the research point to the need for increased prevention in the school in the school environment in the area of risky online behaviour and will serve as a theoretical basis for the research task VEGA No. 1/0396/20 entitled "The impact of electronic media on the behaviour and development of cross-cutting competences of Generation Z."

Abstract: The aim of the study was to map the extent of internet use among primary school pupils. The Internet Addiction Test (IAT) scale was developed by K. S. Young Kwon and the Social Media Engagement Questionnaire (SMEQ) scale. The construct validity of the scale (SMEQ) was verified through exploratory factor analysis. We determined the internal consistency of the scale through a Cronbach alpha value of 0.860, and for the IAT scale, the Cronbach alpha value was 0.920. We divided the research population into three groups (habitual internet users, addictive internet users, and addicts). The research sample consisted of 1,357 respondents aged 10-16 years (AM = 12.64). From the research results, we found that the higher the level of social media engagement among pupils, the higher the level of internet addiction. There was no statistically significant difference between boys and girls in the rate of internet addiction (p = 0.424). We confirmed a statistically significant relationship between pupils' engagement on social media and addictive internet users (p = 0.001).

Keywords: addictive internet use, internet, school, social media

1 Internet addiction among primary school pupils

Electronic media with an internet connection are a common part of the everyday life of individuals in the digital society of which children and young people are a part. Time spent on the internet does not always constitute a problem of internet use or addiction, but it does have an impact on the 'balance of life'. In cases where repeated compulsive and uncontrolled use of online technologies is associated with negative consequences, one can speak of signs of internet addiction (Šmahel, 2012). However, this statement has been and remains controversial, with different researchers and authors still using different terms to describe the situation, such as: *internet addiction, pathological internet use, netholism, compulsive internet use, webholism, addictive behaviour in relation to electronic media and the internet, excessive use of electronic media.* Other related terms such as *problematic internet use, compulsive internet use and excessive internet use* are mentioned by Shek et al. (Blinka, 2014).

According to K. S. Young (2009), 'internet addiction' is defined as any online compulsive behaviour that disrupts normal life and causes serious negative consequences for an individual's family, friends, loved ones, or work environment.

The term *'internet addictive behaviour'* refers to internet addiction as: a pathology or obsessive-compulsive disorder in which an individual experiences excessive use of technology and includes a wide range of behaviours and impulse control problems. A person may become addicted to addictive substances or activity, as well as to the use of new information and communication tools (Salicetia, 2015).

Throughout this thesis, we will mainly use the term *'excessive internet use'* and this is to avoid medical or morbid naming. We identify with the content of the term as presented by D. Šmahel and his collective, according to whom the notion of internet over-use means more than just use (Šmahel, 2012).

Although there is some consensus among researchers as to which symptoms define excessive internet use, they do not always agree on the extent to which it can be considered an addiction and thus a pathological phenomenon.

According to K. S. Young, the diagnosis of internet addiction is quite complex. Unlike chemical dependency and substance abuse, the internet offers several direct benefits, such as the technological advancement of society. Individuals can use technology to communicate, search for new information, conduct business transactions, access libraries, educate themselves, and more. In comparison, addictive substances are not an integral or necessary part of our personal and professional lives, and they do not provide any health benefits. On the other hand, the possibilities offered by the internet can be seen as 'practical uses of the internet' and any signs of addiction can easily be justified by them. K. S. Young has compiled an 'Internet Addiction Test' (IAT). The IAT assessment tool was constructed to measure the symptoms of internet addiction and is a measure of internet addiction. The form of the test measures the extent of engagement in computer and smartphone use in the client and classifies levels of mild, moderate and severe impairment within addictive behaviours. The twenty-item questionnaire measures characteristics and behaviours associated with internet use that include compulsivity, escape, and addiction.

At the same time, we would like to point out the difference between the concepts of *'addiction'* and *'excessive use of the internet'*. Nestler states that 'addiction' generally refers to a situation in which an individual is unable to control a certain type of behaviour, which is characterised by a degree of compulsiveness, and the individual continues to engage in it despite the fact that it is detrimental to his or her quality of life (In Blinka et al., 2015). Internet addiction can be said to occur when internet use meets the factors of addiction. The internet is now a necessary part of the lives of people living in this society and for many individuals its use can be time-consuming, but at the same time it presents a number of benefits for them. An individual usually becomes addicted when they are repeatedly unable to control a type of behaviour that is characterised by a significant degree of compulsivity and continue to engage in it despite the fact that they are demonstrably harming themselves and the wider environment in doing so.

None of the online addictions have yet been formally introduced into the health care system, nor are they specified in diagnostic manuals. They are implicitly expressed in the manuals of the Diagnostic and Statistical Manual of Mental Disorders (DSM) and the International Classification of Diseases (ICD10).

The revised version of the DSM can be helpful in diagnosing online addictive behaviour, for example pathological gambling as a psychiatric diagnosis first appeared in the DSM-III manual in 1980, when it is classified as an impulse control disorder. The DSM-IV already defines pathological gambling as a behavioural addiction, and it has also proved to be an appropriate manual for measuring CIU - Internet addiction. Based on the DSM-IV, the 14-item CIUS questionnaire (Meerkerk et al., 2009) has been constructed and is considered to be the best-rated diagnostic tool for diagnosing internet addiction. Based on the DSM-V, criteria for online computer game addiction and internet use disorders are derived.

Online addiction can be diagnosed on the basis of Young's (1996) criteria:

1. interest in the internet, thinking about realised activities in the virtual environment in offline time, and thinking about possible future activities realised in the online environment
2. feeling the need for and prolonging the time spent on the internet due to the need to achieve satisfaction
3. failure to gain control over the internet, failure to reduce or stop using the internet altogether
4. experiencing discomfort, restlessness, irritability, depression, moodiness when trying to reduce or stop using the internet
5. a tendency to stay connected to the internet longer than the individual originally planned
6. threatening or risking the loss of a significant relationship (education, career opportunity)

7. lying to family members and others in an attempt to conceal the extent of internet involvement.
8. using the internet as a way of escaping from problems and in order to relieve dysphoric moods (feelings of depression, anxiety and helplessness, guilt)

David Šmahel (2003) complements the diagnosis of addiction to the online world with items

9. the representation of the internet in the value ranking in one of the first places
10. deterioration of mood after disconnection from the internet
11. impaired concentration if the individual is not connected online
12. the perception that the world is largely unreal after disconnecting from the internet
13. experiencing significant anxiety and depression when not online
14. an unrelenting tendency to use the internet despite previous problematic experiences
15. limitation of interests - sporting, cultural, recreational due to the internet
16. causing problems in carrying out work, family or school responsibilities because of the internet
17. reduced social contact with friends as a result of the internet

Addiction can be considered as a state of an individual when he/she identifies with at least 7 criteria in a time span of 12 months.

The issue of internet overuse and addictive behaviours on the internet is becoming a more frequent area of interest among several experts, which brings several clarifications to the concept. M. D. Griffiths (2018) was one of the first experts to address the area of internet addiction. He came to the conclusion that the terms '*internet addiction*' and '*smartphone addiction*', which he initially identified, do not sufficiently reflect the real contents of the issue. Individuals are addicted to the content that is mediated by the device-medium. These are online games, online gambling, online sex, online shopping. The aforementioned contents are seeking to satisfy addictive behaviours.

There is also a risk of dependency in the area of interpersonal communication within social networks, which can be created in both physical and virtual environments. We already find the content of the concept of social networks in the context of the research of J. A. Barnes from 1969. In a study of social ties among fishermen in Norway, he found that an entire society can be defined as a set of points that, connected by ties, form an overall network of relationships - a social network (Barnes, 1969). The term '*sosialt nettverk*' is defined by Fines in 1996 as informal relationships between people who communicate with each other more or less regularly (Berndtson, Gundersen, 2021). In 1988, Jarkko Oikarinen created the first IRC (Internet Relay Chat) application called ‘OuluBox’. It was a redesign of Jukka Pihla's MUT (Multi User Talk) chat program, which represented the first ever real-time possibility of communicating with another person over the internet (www.eye-rys.com, 2021). Here, social networks already represent a virtual space where one translates the human need for interpersonal communication, and the possibility arises to sanitise needs absent in the physical environment. The definition of ‘social network addiction’ as a type of internet addiction is provided by (Griffiths, 2018). The view can be supported by the findings of Shebenova (Sejčová, 2011), who lists the different modes of communication that can give rise to a progressive addiction, as well as specific types of internet addiction. These are: '*word wide web addiction*', '*chat addiction*', '*e-mail addiction*', '*webphone addiction*'.

In the context of internet addiction, it can be stated that addiction refers to the activities provided by the device or transmission and does not refer to the device itself.

2 Methodology

Nowadays, the internet is used by more and more people all over the world, it finds its application mainly in connection with the activation of internet communication applications, social networks installed in smartphones. Among the most famous are Facebook, Instagram, WhatsApp, Twitter and others. It is precisely the 'unlimited' possibility of connecting to the internet via a smartphone, which is owned by 1% of children aged 3-4, 5% of children aged 5-7, 35% of children aged 8-11 and 83% of young people aged 12-15, that allows children and young people to have almost permanent access to their profiles on social networks. Constant access to the internet allows individuals to interact with other people at any time and in any place and can also lead to compulsive 'controlling' behaviour or over-engagement within social networking sites. From this aspect, it is necessary to pay attention to the issue at hand in a theoretical, but especially in an empirical level. The aim of the research was to identify and analyse the risk of the development of addictive behaviour on the internet among children and young people. The results of the research represent a certain starting point for the creation of measures related to the risky use of the internet, and at the same time represent a certain starting point for the design of preventive actions and activities of risky online behaviour of pupils.

To measure internet addiction, we used the *Internet Addiction Test (IAT) scale*, authored by K. S. Young. The test battery consists of 20 items - statements focusing on personality characteristics and behaviours associated with compulsive internet use, escapism, and addiction. Overall, the test measures mild, moderate, or strong internet addiction. The respondent answers statements on a five-point Likert scale, with items 0 = not at all to 5 = always, reflecting the extent to which the statements are indicative of the respondent's specific behaviours, and thus of the respondent's daily routine, social life, sleep patterns, or experienced feelings. The scale was developed based on the DSM-IV criteria for pathological gambling and on a modification of a previous questionnaire by K. S. Young.

The internal consistency of the instrument was assessed by means of Cronbach's alfy 0.920. Based on the IAT scores, we identified Internet addiction (numbers and %); in future analyses, we will work with this subset of the study population.
Reflecting the analysed studies, in our research, we worked with independent variables such as gender and age. Due to limiting circumstances, a within-subjects selection of respondents was chosen in the research. A total of 1,437 respondents participated in the research. Data collection was done through a questionnaire that was distributed to the pupils in person.

We surveyed social media engagement using the Social Media Engagement Questionnaire (SMEQ). Cronbach’s alpha was 0.860. For the Social Engagement Scale, we conducted a factor analysis based on the values. To analyse the internal structure of the Social Media Engagement Questionnaire (SMEQ), an exploratory factor analysis was chosen, using the principal components analysis method. The appropriateness of using factor analysis on the data obtained was verified by the Kaiser-Meyer-Olkin (KMO) test and Bartlett's test of sphericity. Both tests, by their values, allowed the use of factor analysis. The goodness-of-fit of the Bartlett test was $\chi 2 = 3{,}572.638$ ($p < 0.001$) and that of the KMO test was 0.799.

We identified 1 factor that explained 65.143% of the total variability in the sample studied. The items "How often did you use social media 15 minutes before going to bed?", "How often did you use social media within 15 minutes of waking up?", "How often did you use social media at breakfast?", "How often did you use social media at lunch?" and "How often did you use social media at dinner?" saturated this factor. The minimum factor loading for the items to be included in the factors was 0.40.

The scale on the Social Media Engagement Questionnaire (SMEQ) provides a solution to this problem and measures the

extent to which people tend to engage social media in key everyday activities. The SMEQ scale consists of five items on an eight-point Likert scale with response options ranging from 0 = not even one day to 7 = every day of the week. Data collection was conducted through a questionnaire that was distributed to the pupils in person.

We distributed a total of 1691 questionnaires to pupils in grades 5-9, 1,437 surveys were returned, a return rate of 84.97%. We discarded 80 questionnaires (5.57%) due to identical responses to all items, responses without regard to content, or incomplete responses. The final number of correctly completed questionnaires by respondents was 1,357. Of this number, 685 were boys (50.48%) and 672 were girls (49.52%) in the study population. Table T3 presents the representation of respondents from each county by gender.

In terms of age, the age range of the respondents was from 10-16 years (Tab. 1). Table also shows that pupils aged 12 years were the most numerous group (21.89%), while pupils aged 16 years were the least numerous group.

Tab. 1 Distribution of respondents by age and gender

	gender				**total**	
	boys		**girls**			
age	**n**	**%**	**n**	**%**	N	%
10 years	51	3.76	49	3.61	100	7.37
11 years	135	9.95	138	10.17	273	20.12
12 years	149	10.98	148	10.91	297	21.89
13 years	119	8.77	123	9.06	242	17.83
14 years	133	9.80	121	8.92	254	18.72
15 years	90	6.63	79	5.82	169	12.45
16 years	8	0.59	14	1.03	22	1.62
Total	**685**	**50.48**	**672**	**49.52**	1,357	100

Legend: n-number; %-percentage; N-number of all pupils

In the following table Tab. 2, we present the statistical indicators of the age variable. The values obtained show that the mean age of the pupils in the research population is 12.64 years, the value of the sample mean is M = 13.00 and the standard deviation is SD = 1.550. The statistical indicators of the shape of the distribution for the variable age took the values of: the coefficient of skewness $\gamma 1 = 0.112$ and the coefficient of steepness $\gamma 2 = -0.962$.

Tab. 2 Descriptive variables age

AM	**Mdn**	**SD**	**slope**	**steepness**	**min**	**max**	**N**
12.64	13.00	1.55	0.112	-0.962	10	16	1,357

Legend: AM-mean; SD-standard deviation; Mdn-median; N-number of all pupils

Based on the rationale for the selection of the independent variables, we established our research hypotheses:

H1: We hypothesise that there is a difference between boys and girls in the rate of internet addiction in favour of girls.
H2: We hypothesise that there is a positive relationship between social media engagement and the rate of internet addiction.

To identify statistically significant differences and relationships between variables, we used parametric tests of Pearson's correlation coefficient and Pupil's t-test for two independent samples. Parametric tests were chosen based on the analysis of the coefficients of skewness and steepness of the data and the result of the Shapiro-Wilk normality test. Among the descriptive statistics, we used arithmetic mean (AM), standard deviation (SD), median (Me), minimum (Min) and maximum (Max) of the measurement. We analysed the data using SPSS 20.0 software.

3 Research results

Based on the scores of the pupils, we found that 1,051 pupils (77.50%) belong to the average internet users, 276 pupils (20.30%) belong to the at-risk internet users and 30 pupils (2.20%) can be classified as internet addicts according to the scores obtained. (Tab. 3)

Tab. 3 Internet addiction in terms of the gender of the pupils studied
Legend: %-percentage; n-number

	boys n = 685		**girls n = 672**		**N**	**%**
	n	**%**	**n**	**%**		
regular internet users	523	76,4	528	78.6	1,051	77.5
endangered internet users	144	21.0	132	19.6	276	20.3
internet addicts	18	2.6	12	1.8	30	2.2

We found that the level of statistical significance between the measured variables acquired a value of p = 0.424> 0.05. Based on these empirical findings, we can conclude that a statistically significant difference between boys and girls in the degree of excessive internet use has not been confirmed. We can state that the hypothesis H1 was not confirmed and we conclude from this that there is no statistically significant difference between boys and girls compared to excessive internet use. Table 4 shows that there was no statistically significant difference between boys and girls in the rate of excessive use of internet (p = 0.424).

Tab. 4 Statistically significant difference in the rate of internet addiction in the context of gender

Internet addiction							
Levene´s test		**Pupil´s t-test**		**boys n = 144**		**girls n = 132**	
F	**p**	**t**	**p**	**AM**	**SD**	**AM**	**SD**
8.425	0.004	-0.801	0.424	2.50	0.36	2.54	0.42

Legend: n-number; AM-mean; SD-standard deviation; F-value of Levene's test; t-value of Pupil's t-test; p-statistical significance

In hypothesis H2, we assumed that there was a positive relationship between social media exposure and the rate of excessive internet use. The hypothesis was confirmed on the basis of statistical significance p 0.001. Based on the testing, the level of statistical significance took the value of p = 0.001, where the relationship between the two variables was confirmed.

Based on the value of$\varrho < 0.5$, a moderate relationship between these variables is indicated. The coefficient of determination r2 = 0.205 suggests that 19.90% of the variance in the level of social media engagement is accounted for by excessive internet use, 80.10% is due to the influence of other variables. (Table 5)

Tab. 5 Relationship between pupils' engagement on social media and internet addiction

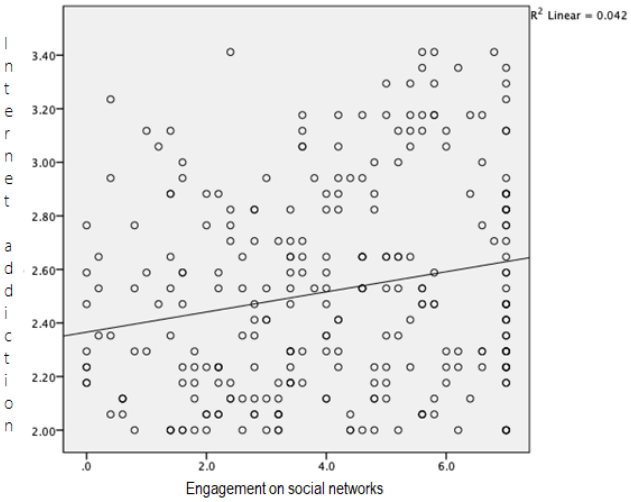
	N	**AM**	**SD**	**r**	**p**
Engagement on social media	276	4.07	2.11	0.205	0.001
internet addiction		2.52	0.39		

Legend: N-number of all pupils; AM-average; r-Pearson correlation coefficient; p-statistical significance

Based on the value of $\varrho < 0.5$, a moderate relationship between these variables is indicated. The coefficient of determination r2 = 0.042 suggests that 4.20% of the variance in the level of social media engagement is accounted for by excessive internet use, 95.80% is due to the influence of other variables. Based on the presented findings, we can state that the higher the level of involvement on social media among pupils, the higher the rate of the excessive internet use among pupils. (Figure 1)

Figure 1 illustrates the graphical form of the relationship between time of social media engagement rate and internet addiction.

Figure 1 Relationship between pupils' engagement on social media and internet addiction



4 Discussion

The aim of the study was to identify internet addiction among elementary school pupils. This is a type of addictive behaviour that research suggests has an impact on children's physical and mental health.

Children also sometimes use the word 'addiction' to describe their own behaviour. For example, in *Common Sense's* 2016 research, half of teens said they "feel" they are addicted to their mobile device. Three-quarters of them said they feel compelled to instantly react to texts, social media posts, and other notifications, John H. N. Fisher and Jennifer Caldwell (2016).

Based on the findings presented, we can conclude that the higher the level of engagement on social media among pupils, the higher the level of internet addiction. Internet addiction and social media have been partially addressed by Fisher, J. H. N. and Caldwell, J. in their research *Social Media, Social Life: Teens Reveal Their Experiences* (2018). The research reports that nearly half (47%) of smartphone-owning young people say they are "addicted" to their smartphone, but only 24% say they are "addicted" to social media. Most teens report that they have no problem disconnecting from their devices when they need to. Twenty-four percent "strongly" agreed and 40% "somewhat" agreed. On the other hand, 35% of respondents claimed that they have a problem disconnecting from their own devices. The results of the research were compared to the 2012 *Social Media, Social Life pedagogy research: How Teens View Their Digital Lives* (Rideout, 2012) and found that there has been no significant increase in addiction over the 6 years. Despite the large increase in smartphone ownership and in the 'boom' in social media use that has occurred over the last six years, there has been only a slight increase in the percentage of young people who describe themselves as 'addicted' to their phones (41% in 2012 and 47% in 2018). The surprising finding is that since 2012, when 20% of young people identified themselves as addicted to social media, the proportion has increased to 24% by 2018, it did not show any statistical change to the authors. According to Ayla Kaya and Ayşegül Işler Dalgiç (2021), adolescents who used the internet for seven or more hours daily or primarily for gaming purposes showed higher levels of internet addiction. The mean HLBS-II scores were higher for participants who started using the internet after the age of 11 or those who used it for an average of up to two hours each day. Research by Terézia Fertaľová, Iveta Ondriová, Livia Hadaš, Lucia Dimunová, Jana Cina, Tatiana Shantova, Andrea Šulíčová, Silvia Cibríková and Jana Cuper (2019) showed that 47% of the respondents felt aggressiveness and irritability when someone disturbed them while using the internet. 60.33% of respondents thought that life without the internet would be boring, empty and sad. 75.33% of the respondents at least rarely think about going online soon.

Jean M. Twenge's research (2017) reports that eighth graders spending 10 or more hours a week on social media are 56% more likely to be unhappy than pupils who spend less time on social media. Frequent social media users have a 27% increased risk of depression. Kross (In Csepeli, Nagyfi, 2014) reports that the more people use Facebook, the more they fall into depression.

Table 4 shows that there was no statistically significant difference between boys and girls in the rate of internet addiction ($p = 0.424$). Similar findings were shown in the EU Kids Online research, where the results were inconclusive between genders. On the one hand, boys were slightly more at risk of excessive internet use, showing higher levels of experience seeking. However, when boys had the same level of experience-seeking as girls, they were less likely to become addicted to the internet. Similar results were reported by Kavinda Gunathillaka, Chamara Wijesinghe, and Trivon Gunasekera (2021), and also Silvia Stefani and Sri Tiatri (2021), and the authors did not observe statistically significant differences between internet use and gender or age. David Šmahel (2012) explains this result by the fact that it is a complex process of factors acting in multiple ways on internet addiction.

Today's 'digital' children, who are, and will be, born into an information and communication society, see media as a natural part of life.

We are of the opinion that preventing children from using electronic media and the internet does not lead to the goal of prevention. An appropriate approach could be targeted education of the child user in the direction of acquiring digital competence, in which the child acquires the skills to use the internet correctly, to regulate the time spent on the internet and to be able to know the benefits and risks of the environment. This raises the question of guiding the behaviour of children and young people in the cyberspace created by electronic media, as well as preventing the risks of cyberspace and, consequently, possible risky behaviour in this virtual environment.

Schools can also play a role in reducing excessive internet using and internet addiction too, among pupils, as can teaching and professional staff. In the framework of primary prevention, the social pedagogue (as a school professional) acts on the pupil in a victimisation and patatorial way. The aim of victimisation prevention is to provide basic information on the safe use of the internet, observance of the rules of decent behaviour in virtual communication. The aim of prevention in the patatorial plane is to inform pupils about the possible negative consequences of antisocial behaviour within the virtual space and to prevent various forms of deviant behaviour, explains Mário Dulovics (2017). Mariya Dishakova and Rumyana Papancheva (2019) point out that parental control is essential. This is relevant not only to prevent internet addiction, but also to guarantee the safety of pupils.

Secondary prevention is aimed at at-risk groups of pupils in whom there is a pre-suspicion of risky behaviour. In the framework of secondary prevention, the social pedagogue pays attention to pupils who are closed, marginalised and from disadvantaged social backgrounds. Understandably, the conducted research shows its limits. It would be appropriate to investigate other age groups of pupils in the questionnaire. One of the limitations is the methodology applied by us. Despite the fact that the methodology reflects the development of electronic media, due to the dynamics of its development, the reliability of the research instrument is rapidly being overcome.

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Primary Paper Section: A

Secondary Paper Section: AM