"TACTILE GENERATION" AND "DIGITAL IMMIGRANTS": USING MEDIA IN THE FORMAL AND INFORMAL EDUCATION

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Abstract: The article focuses on the way in which current Czech pupils and students as the representatives of the so-called "tactile generation" use various types of media in formal and informal education and what their teachers think about using media in education. The research was designed as practical research. Pupils from one elementary school in Prague (10 – 15 years) and students from two high schools (15 – 20 years) participated in this research. This research serves as the basis for discussion of the role of (new) media in the process of education of Czech youth.

Keywords: tactile generation, media, education, Czech Republic, digital immigrants

1. INTRODUCTION

This article focuses on the way in which students and in comparison teachers use various types of media (so-called "new" and traditional media) in formal and partly also informal education.

Media, understood as the means of learning, are changing and together with them, their appearance and intensity of using them are changing as well. In today's society representatives of the "new" media and the media based on digital technology play a more important role. According to Marshall McLuhan (1964) media is the extension of our body. An example illustrating the influence on the way we think could be using a text processor – the structure of the text written with its help is different than the text written by hand. The text is not linear anymore, it is richer and has more variety and provides more digressions. (Eriksen 2005).

From the perspective of using the media as the means of education, which is part of the process of socialization, D. Tapscott (2009) distinguishes various generations after the World War II. It starts from the **The Baby Boom generation** (born between 1946—64) which was the first generation whose members can remember that television was the accessed entertainment of their household. And continues to the **Net Generation, Gen Y, or Millennials** (1977–97) who are not only consumers

but they are the generation of prosumers (Tofler 1980). And *"For the first time in history, children are more comfortable, knowledgeable, and literate than their parents with an innovation central to society. And it is through the use of the digital media that the Net Generation will develop and superimpose its culture on the rest of society. Boomers, stand back. Already these kids are learning, playing, communicating, working, and creating communities very differently than their parents. They are a force for social transformation."* (Tapscott 2009: 11)

What is important from the perspective of education is the fact that members of this generation also need a different pedagogical approach. *"They are forcing a change in the model of pedagogy, from a teacher-focused approach based on instruction toward student-focused model based on collaboration."* (Tapscott 2009:11)

Due to precipitous development of ICT, we can identify and newly define the current generation (born from 1998 up to now) as **Tactile generation.** In many features, it is similar to the Net Generation, "but [it] is more embedded in technologies. They use touch displays and enjoy closer interface. They are used to controlling machine tools without a keyboard. Gestures in combination with voice will be their main means of communication" (Beseda and Machát 2012: 77-78). It is exactly this generation which is the subject of the text.

In contrast to the tactile generation – literally as well as metaphorically – there are their teachers and according to Prensky (2001) "digital immigrants". However, do digital natives as such exist? As Boellstorff mentions (2008) there are no digital natives in the virtual space, all of us are newcomers even though different experiences from the period of our socializations will play different roles in our relations to the Internet. The question is what differences will there be between the so-called Prensky's migrants and the young generation which he considers to be native.

At the moment, the impact of this media change on education is not known but the comments referring to using these technologies range from very positive ones to purely negative ones. Lora Evanouski (2009) claims that "by adapting technology for education, teachers, students and parents alike will see positive improvements in many different categories such as: academic performance, motivation, critical thinking skills, literacy, attitudes and real life work skill". On the contrary, German psychologist Manfréd Spitzer in his book called Digital dementia claims that digitalization of the world damages our brain (especially children's brains which are still developing), as we do not have to do many things anymore and thus our brains become simpler and dumber and negatively influence the process of education.

In this article, we will present the result of the non-representative research focusing on the way in which current Czech pupils and students, (i.e. the representatives of tactile generation), use the media in their formal and informal education. In addition, we will also present results from the research of teachers.

2. METHODOLOGY

The research was designed as a practical research and the choice of the sample does not correspond with the requirements of the representativeness. Pupils from one elementary school in Prague (10 – 15 years) and students from two high schools (15 – 20 years) participated in this research. It had the form of a questionnaire which was distributed in the classrooms by teachers in March 2014. 265 respondents took place in this research.

Table 1.

Characteristics of the sample of students

	Elementary school		High school		In total	
Girls	67	62 %	71	44 %	138	52 %
Boys	84	38 %	43	56 %	127	48 %
Total	151	100 %	114	100 %	265	100 %

Source: Own work

When dealing with research with teachers, we were interested in their attitudes to using the media in formal and informal education. We distributed a questionnaire with open questions among elementary and high school teachers. We received 60 filled questionnaires from teachers throughout the Czech republic.

Practical research focused on the media as the source of formal and informal education. We perceive the media as (physical) mediator of such education. It is understandable that in such type of research, it is necessary to prepare a selection of potential media-mediators. We included personal computers, notebooks, and tablets and partly smartphones. Traditional media was represented by television, radio, and books (including text books).

3. CONTEXT OF THE CZECH REPUBLIC

This question is valid also in the context of the current situation in the Czech Republic. There is a discussion about the way in which education especially at elementary and high schools should take place. In this sense, there are public political intensions which are concerned with the whole system of education as such (e.g. Minister of Education Marcel Chládek and his initiative supporting the purchase of tablets for teachers which they could use in their lessons (Daňková 2014), on the other hand, there are pilot projects testing new media as the means in the classrooms (e.g. "Touch the school" in Prague 6 (Skotek 2014; Microsoft).

Official statistic data proves the fact that the generation of current pupils and students is the generation growing up with new technologies (media) as a natural

part of their lives. The overall internet coverage of the households in the Czech Republic was 67 % in 2013 (CSO 2013). The number was much higher in the households with children even in 2010: 70.8 % of such households had a connection to the internet and 84.8 % of such households had a personal computer.

The official statistical data refers to using media by children older than 15 years of age. Almost 100 % of students older than 16 years of age have their own mobile phone and similar numbers are valid for personal computers and internet.
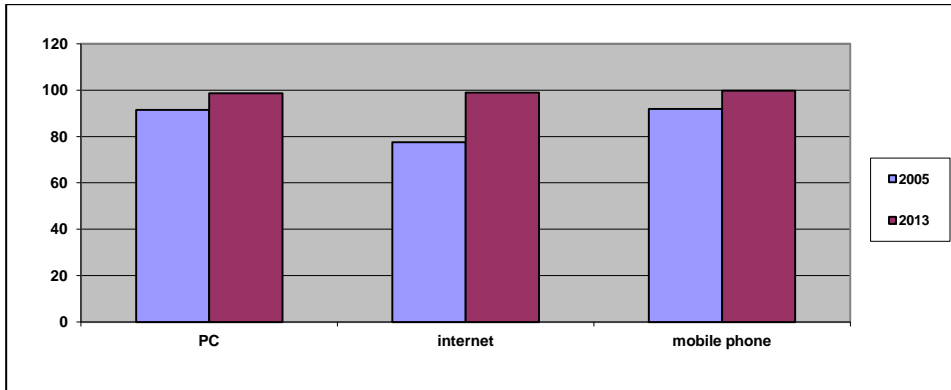

Figure 1: Students using selected information technologie % overall number of students aged 16 or older

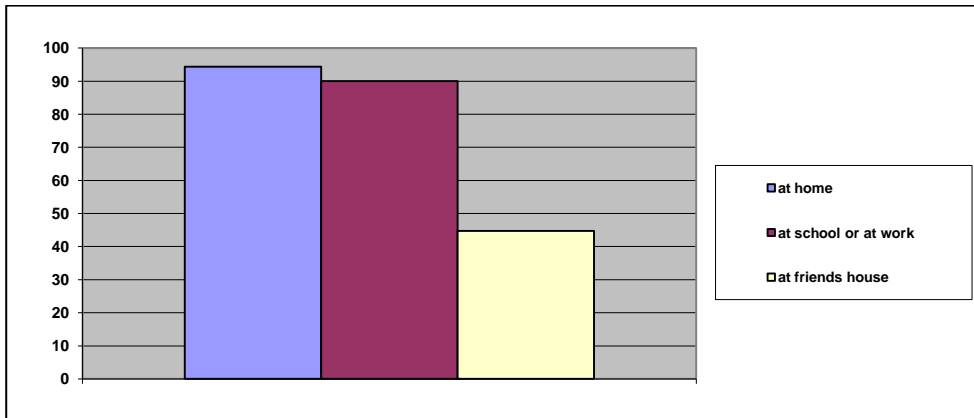*Source: Czech statistical office 2013*

Figure 2: Students using internet according to the place of usage, 2nd quarter of 2013 % students aged 16 and older using the internet

Source: Czech statistical office

4. ANALYSIS OF RESULTS

4.1 Tactile generation: Pupils and Students

Table 2.

How often do you do the following activities? (organized by intensity of their use)

	Using PC/ notebook	Watching TV	Reading books	Using a tablet	Listening to radio	Reading newspapers and journals
every day	67.5	41.1	27.9	24.2	15.8	10.2
several times a week	23.0	39.6	30.6	20.4	20.8	30.2
several times a month	5.7	10.6	23.4	9.8	15.8	34.0
several times a year	1.1	4.2	13.6	5.7	15.5	13.6
not at all	2.3	3.8	2.6	38.5	30.9	9.8
NA	0.4	0.8	1.9	1.5	1.1	2.3

Source: Own work

Respondents of the practical research used personal computers or notebooks most often: 90 % of them at least several times a week (this represent the sum of possibilities *every day* and *several times a week*). Television (traditional media) has a strong position – 80 % of respondents watch it with similar intensity. Books play an important role as well – 30 % of respondents read books every day. And only 2.6 % of pupils do not read at all. In contrast, no user experience with a tablet (representative of the new media) has 38 % of respondents. From this perspective, books are much more accessible than tablets.

Radio and classical newspapers and magazines are the least frequently used media. Even though it does not mean that the respondents do not watch the news or listen to music – not only the physical medium has changed, it was also the format of listening or reading.

Table 3.

Intensity of using various types of media – comparison of elementary school (ES and high schools (HS), in %

	PC/ notebook		TV		Reading books		Reading newspapers and journals		Tablet		Listening to radio	
	HS	ES	HS	ES	HS	ES	HS	ES	HS	ES	HS	ES
Every day	85.1	54.3	36.8	44.4	18.4	35.1	12.3	8.6	23.7	24.5	10.5	19.9
Several times a week	13.2	30.5	39.5	39.7	31.6	29.8	29.8	30.5	11.4	27.2	21.9	19.9
Several times a month	0.9	9.3	16.7	6.0	24.6	22.5	39.5	29.8	12.3	7.9	21.1	11.9
Several times a year	0.0	2.0	2.6	5.3	18.4	9.9	14.0	13.2	7.0	4.6	20.2	11.9
Never	0.9	3.3	4.4	3.3	4.4	1.3	3.5	14.6	44.7	33.8	25.4	35.1
NA	0.0	0.7	0.0	1.3	2.6	1.3	0.9	3.3	0.9	2.0	0.9	1.3

Source: Own work

There are several visible differences between elementary school pupils and high school students. These concern the traditional as well as the "new" media. Probably the most interesting difference is the one visible in using PC/notebooks. 85% of high school students use it every day while "only" a half of elementary school pupils do. On the other hand, elementary school pupils read more: the number are 35 % of elementary school pupils and 18 % high school students read every day. This confirms the results of reading research which show that intensity of reading decreases with the age (National Library 2013, SCIO 2013) (What activities do students and pupils do using "new" media which are *on-line*, i.e. on their PC, notebook, or tablet? Primarily, do they communicate (social networks, e-mails etc.), they have fun (movies, music, videos, games), they search information for their formal education (i.e. preparation for school), or they educate themselves informally by searching information about the areas which are not directly connected to their formal education? We are aware of the fact that this division of activities does not embrace their multidimensionality since education can take place during communicating or primarily accessed training game, etc. (see Table 5).

Table 4.

If you use PC/notebook/tablet what do you do? (in %)

	Listen to music	Look for information	Watch videos	Social net-works	Prepay-ration for school	Watch or down-load movies or TV series	Chat, SKYPE	Play games	Write/read e-mails
All the time	56.2	35.1	36.2	43.0	23.4	27.2	25.7	22.3	12.5
Some-times	29.4	51.3	48.3	34.3	52.8	42.6	27.2	32.5	30.2
Not often	10.2	10.9	13.2	11.3	19.2	22.3	26.0	24.9	43.0
Never	3.0	0.8	1.9	9.8	3.4	6.8	18.9	19.6	13.2
NA	1.0	1.9	0.4	1.5	1.1	1.1	2.3	0.8	1.1

Source: Own work

Table 5.

Factor analysis

If I use PC, notebook, tablet:	Factor	
	1	2
I listen to music	.739	.010
I watch short videos (You tube)	.732	-.161
I chat on ICQ, SKYPE	.596	-.034
I am on a social network site	.568	.273
I watch or download films or TV series	.523	.040
I search information	.135	.695
I prepare for school	.067	.671
I play games	.179	-.612
I write/read e-mails	.343	.374

Source: Own work

When comparing elementary school pupils and high school students, two great differences are visible. High school students are much more oriented on searching information and communication via social network sites. There is a smaller but still visibile difference in playing games and watching short videos – in this case, these activities are more often done by elementary school pupils.

Table 6.

Greatest differences between elementary school (ES) pupils and high school (HS) students in the types of activities , in %

	Searching information		Social networks		Watching short videos		Playing games	
	HS	ES	HS	ES	HS	ES	HS	ES
All the time	47.4	25.8	52.6	35.8	30.7	40.4	14.9	27.8
Sometimes	48.2	53.6	34.2	34.4	57.9	41.1	30.7	33.8
Not often	2.6	17.2	9.6	12.6	11.4	14.6	27.2	23.2
Never	0	1.2	3.5	14.6	0	3.3	26.3	14.6
NA	1.8	2	0	2.6	0	0.7	0.9	0.7

Source: Own work

The last part of the analysis is devoted to formal education, specifically home preparation. Interblending of traditional and new media is also visible in this area. Text books and computers connected to the internet are most frequently used for preparing for school. These two means are more popular than the other ones. The respondents spontaneously added other means of learning: learning from their own comments and notes. It could be said that combining text book, own notes, and PC connected to the internet is the most frequent way to prepare for school. When compared to high school students, elementary school pupils do not only prefer "new"media such as tablets or smartphones but also traditional media (books, television, newspapers, and magazines). This could be interpreted at least in two ways that support each other. Firstly, elementary school pupils are more of a "tactile generation" than current high school students. Secondly, their teachers reflect new technologies and new teaching approaches more[1].

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[1] This is also supported by the research undertaken among elementary and high school teachers: elementary school teachers use new media more and their less conservative than high school teachers.

Table 7:

Formal education - preparation at home - what media respondents use and their ranking

	Average (all respondents)	Average (High school)	Average (Elementary school)	Difference between HS and ES
Text books	2.12	2.26	2.02	0.24
PC with internet	2.22	1.84	2.5	0.66
Books	3.96	4.14	3.82	0.32
Smartphones	3.96	4.45	3.59	0.86
Tablets	4.28	5.04	3.7	1.34
TV	4.5	5.01	4.11	0.9
PC without internet	4.75	5.00	4.56	0.44
Newspapers and journals	4.78	5.11	4.52	0.59
PC games	5.6	6.39	5.00	1.39
Spontaneous answers	Number of respondents			
Own workbooks, notes	44	28	16	
Parents	12	2	10	

Source: Own work

4.2 Digital immigrants: Teachers

According to the Czech Education Inspection (2013) ICT are not available only at 6,5% of Czech elementary schools. Using new media was noted by the Czech Education Inspection at 37,9% of the observed schools and in 21, 4% of cases these were simple presentations using ICT. In the other 16,5 % special software applications for teaching were used.

As the mirror research with pupils showed, the most used medium for teaching is still a text book. Text books are considered to be the primary teaching tool which is easily accessible by students. Teachers consider text books to be systematic and clear. According to teachers, text books are also very important for keeping contact

with written texts, which could be a problem in the future as children are used to reacting to audio and video impulses from the very early age. Under these circumstances, it is easy for teachers to use text books not only at school but also as a tool of home preparation of pupils (especially work books). High school teachers'attitudes are very pragmatic, containing no emotions. Textbooks are guidebooks for them and they use the term "necessity" with them. As far as disadvantages of text books are concerned, teachers generally worry that the books can contain outdated information. They also complain that students often forget the books (leave them at home). Elementary school teachers also often express their worries that the books are not attractive enough (some even say that they are boring).

Other traditional media are considered as supplements to text books. Newspapers are valued mainly because of dealing with current issues. Teachers consider them to be an attractive supplementary material thanks to photographs and infographics. Elementary school teachers appreciate the fact that texts tend to be short and allow students to deal with the world around them. They also think that thanks to the newspapers, it is possible to show pupils that the things they learn at school can also be used in real life. However, teachers are generally concerned about the objectivity of newspapers.

When it comes to books, different attitudes can be traced among elementary school teachers and high school teachers. Elementary school students consider books to be a great tool for developing the reader's literacy (in a general cultural and social scope). In high schools books are used as a tool for deepening knowledge in the relevant field. When viewed from the perspective of Czech language teachers, books are the objects of study. Books were the only medium which some teachers described as having no disadvantages. Other characteristic ascribed to books by teachers is that "books are not for everyone" from several perspectives: books are financially unaccessible, they are heavy, and not all of the students are interested in reading books.

Most teachers think of documentaries when asked about TV and films. They assign great value to the visual perception – for pupils and students documentaries can be more attractive and more interesting than reading. In this case, both media got similar evaluation of their advantages. Their main disadvantage is that it is only passive viewing.

According to teachers, the Internet is a fast tool for searching current information. Elementary school teachers use it more as an accessed entertainment tool, high school teachers use it for more serious purposes. Elementary school teachers also use more short videos placed on the Internet in their lessons. Main disadvantages of using the Internet in the lessons are technical problems with the connection, and the overload of information, which is often unreliable and superficial. If pupils use it directly in the lessons, browsing the net could weaken their focus. High school teachers were more concerned with objectivity and accuracy of information.

A personal computer without internet connection is actually an anachronism now and is mostly used for creating materials or viewing materials, however, it needs to be connected with a dataprojector.

Elementary school teachers mostly said very positive things about the interactive whiteboard (these are probably used more often at elementary schools than at high schools). High school teachers mentioned only a few advantages. This could be interpreted that they perceive IBoards as a tool where the form (funny and accessed taining) exceeds the content. On the other hand, the fact that interactive whiteboards are accessed entertaining is greatly appreciated at elementary schools. They also value the possibility to engage pupils and use the whiteboard for practising and demonstrating. Teachers also appreciate easy operation. Only a few of them feel reserved about using it in the classroom.

According to high school teachers, the main disadvantage of interactive whiteboards is their price and the fact that these are not installed in every classroom. Elementary school teachers are more specific in their comments. From their perspective, the greatest disadvantage is the fact that they cannot engage more than one student into working with the interactive whiteboard (plus there is not enough time to give everyone a go) and thus there is certain passivity included.

PC games are not used very often. Teachers consider them to be useless as students spend enough time with these in their free time.

Generally speaking, most teachers are quite indifferent to using tablets. We received only a few reactions to their use. The main advantage is their compactness and possibility to carry it around. Another advantage is saving paper. Its attractiveness also plays a role. Among its disadvantages (only a few were mentioned) is its high price. Considering the offical debate on using tablets in the classroom, it was quite surprising to receive only such a small number of reactions.

5. CONCLUSIONS

It is visible that elementary school pupils are the ones who represent the tacticle generation as such but from the perspective of educational sources (at school and out of it) it is not solely them. When educating pupils and students, various media interlap. More specifically, their usage has different intensity. However, new media coexist with those traditional ones. For example, listening to radio is diminishing. Current tactile generation listens to music and programs via various internet services, often interconnected with social networks. The importance of tablets is growing. At the moment tablets are used more often by elementary school students. On the contrary, television, especially as the form of accessed entertainment, is still very strong among elementary school pupils as well as among high school students.

Due to fast development of new technologies, it is very difficult to estimate further changes in education. Currently, many educational thought leaders argue that

schools should be providing ways for students to continue to engage in learning activities, formal and informal, beyond the traditional school day with using online media. In the future classrooms, we can expect a rapid growth of using intuitive (touch) tools such as "smartphones and tablets, Xbox Kinect, Nintendo Wii, the new class of "smart TVs" and a growing list of other device built with natural user interfaces (NUIs) accept input in the form of taps, swipes, and other ways of touching; hand and arm motions; body movement; and increasingly, natural language (New Media Consortium 2014: 3) Considering the results of Czech research, these predictions may seem a bit futuristic as they are talking about very near future. We might see in what ways these come true quite soon.

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