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Applications supporting Polish language acquisition by children: An outline of current issues

Abstract

Modern studies on the use of Internet-connected devices frequently refer to the use of mobile screens by younger children (Makaruk – Wójcik 2015). Reports indicate that approximately one-third of the youngest children between 1-2 years use Internet-connected devices while the number is growing in the group of 2-4-year-olds (two-thirds of respondents) (Bąk 2015). In 2015 mobile devices were used daily by 25% of young children and a few years later the number tripled. Every day, the youngest spend from several to several dozen minutes online (cf. *KUM* 2019; Bąk 2015). As reported by parents, young children come into contact online with educational and entertainment content intended for them (music, movies, games). However, the older the child, the longer the period of independent and non-oriented Internet browsing. In turn, numerous entries and posts published by parents on parenting websites and blogs as well as websites for downloading applications suggest that highly-ranked Android or iOS applications for children are most frequently chosen (e.g. *Apki w łapki* [Apps in the paws]). The applications in question include those used for first language acquisition but also applications for language and communicative competence development, e.g. learning the alphabet, learning to read, write or build simple narration. The present paper outlines the problem of using applications supporting language education among children in the light of the most significant theories of natural language acquisition. The issues that require enquiry result from the problem of "mediation" in language learning which takes place as if outside the social community. However, the acquisition of language as a carrier of symbolic and cultural content requires the co-existence of a 'living' social context in which language as a system is implemented. In most applications, there is an interaction between the child and the device only, without the presence of parents or other people. Furthermore, the absence of the adult playing the role of a wise guide to the world of cultural concepts, implied by the acquired words or stories, raises concerns as to the linguistic-cultural effect of this kind of 'self-education'. It should also be stressed that built-in speech synthesizers often contain and disseminate pronunciation or word stress errors as well as incorrect prosody features.

This article offers a preliminary overview of the research on educational applications for young children which support acquisition of the Polish language as L1. First, a selection of free-access programs, available mainly from Google Play and the App Store, is discussed.

Second, an assessment of the content and functionality of the software is presented: for this purpose, evaluative opinions of the parents of children who use such applications. In this study, I employ the application observation model created for the research purposes and the principles of digital ethnography, thanks to which it is possible to track the statements of adults collected for each individual program.

Keywords: language acquisition, language applications for children, applications supporting Polish language acquisition.

1. Introduction

Today, the acquisition and the development of language competence among children take place in a specific cultural context. Natural language acquisition happens, whether we like it or not, to a large extent through the screens of electronic, mostly mobile, devices. The iGeneration, using the term proposed by Twenge (2017), is developing in a reality of two dimensions – the real and the digital. From an early age, children explore the world through the interface of various applications, define their identity implementing its elements on numerous websites and leaving cultural traces (images, messages, language operations) in virtual reality. Finally, they use digital tools for language acquisition without reservations. The terms *iGeneration, digital kids, e-kids, the application generation* or *the smartphone generation* reflect the specific character of the function of the youngest children in hyper-reality and, in fact, in a new technological and socio-cultural environment. The iGeneration children do not want to, perhaps cannot, live without smartphones or iPhones and the screen remains for them a medium of exploring the world equal to everyday empirical learning.

A convergence culture of this kind revolutionises language acquisition, the communicative use of language, and ultimately language itself. Today, the terms of *language competence*, proposed by Chomsky and understood as the inherited ability to use the language code to encode and decode meaningful and correct sentences, and *communicative competence*, developed by Hymes and viewed as the ability to construe utterances relevant for given recipients, situations and socio-cultural contexts (Hymes 1964), are frequently further specified through the ability to encode and decode poly-semiotic and hyper-textual messages in a digital context. For this reason, basic communicative skills, such as reading and writing, involving active participation in written social communication, are indispensable while using new communicative systems. In this regard, one can observe a significant tendency for 'self-education', referring to the said competence,

and observed in children from a very early age[1] (cf. Wileczek 2016, 2019). This is caused by ubiquitous multimedia applications made available to children by adults primarily through mobile devices, which support and frequently replace traditional ways of acquiring language.

2. Methodological assumptions

In view of the assumptions referred to above, widely available educational applications for children should be reviewed in terms of the role they play in the field of language and speech acquisition. The main objective of the present paper is to outline the specific nature and to indicate the consequences of children using educational language applications in early childhood. To this end, a method of critical analysis is applied, treating the descriptions in applications as source texts. In principle, the study is a qualitative analysis. As many as 50 interactive software programs for children are examined. The following factors are taken into account: language, content, cognitive values, social and emotional values as well as technical and aesthetic criteria. In addition, while selecting the software programs, the opinions of parents and guardians about given products, as they are attested in comments published at application websites and parenting online forums, are considered. Expert reviews and professional evaluations were accounted for on the basis of *Katalog aplikacji mobilnych BeStApp* [BeStApp Mobile Application Catalog].

The parents' opinions, or parental discourse, which is analyzed were gathered from publicly available comment material and are important as analytical context. Because, as a rule, adults choose educational applications for young children, their knowledge, preferences and expectations are important for understanding the role of guardians in language acquisition by means of mobile screens.

The applications considered in the study are available online free of charge, or for a fee from *Google Play*, *App Story* or other digital educational platforms and web portals for children.

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[1]   The present paper is a continuation of two earlier papers on language applications for children published in Wileczek (2016, 2019).

3. Socio-cultural background

The data available in reports indicates that about 30% of children in Poland use mobile devices with Internet access before the age of 1, and some 75% of children aged 2-5 years do so, spending several dozen minutes online every day (cf. *KUM* 2019; Bąk 2015). The cited research shows that smartphones and tablets are made available to children under 6 by their parents, when they wish to "kill time", and somewhat less often when they wish to calm children down, or persuade them to eat a meal, or reward them. This is confirmed by preliminary research carried out under my supervision (cf. Osman 2017), which shows that pre-school children use mobile devices to kill time (68%), to entertain themselves (20%), to learn (7%) and to develop their interests (5%). Children are occupied by various types of web activities and contents. Thus, approximately 88% of children watch films, 70% play on their smartphones or tablets using numerous games and interactive applications, and 55% play with smartphones without any specific purpose, searching for content related to their favourite games, characters or plots (cf. Osman 2017).

Considering the consequences of early and prolonged contact of children with mobile technologies, attention should be paid to the development of their media competence (media literacy) and any loss of skills associated with language efficiency, motor activity or motor coordination. According to a study of children aged 0-5 years (research among parents through digital registers – 2,200 mothers) conducted by AVG Technologies, 75% of children can use a tablet but only 52% can ride a bicycle, and merely 9% can tie their shoelaces (cf. Romanowska – Lis 2015: 10-14). Occasionally, some of the first words uttered by a child, according to the theory of static learning proposed by Linda Smith (naming people and objects that appear most frequently in the toddlers' surroundings) (Clerkin M. E. et al. 2017) are mono- or disyllabic early forms of *tablet* or *smartphone* (see: *Mama tata tablet* [Mom dad tablet]).

The fascination by children with this way of perceiving reality (including language reality) is related not only to the widespread availability of modern software (e.g. Play store offers more than 300,000 applications for children whereas AppStore almost the same number) but also to the tendency of adults to model or stimulate it. Touch devices are made available to children by their guardians. This is confirmed by parents in their comments on parent web forums, or in their opinions on individual applications, for instance:

(1)   My daughter is not even one year old but when she gets her hands on a smart-phone she 'strokes' the screen with her entire hand ('Victoria').

(2)   I have an eleven-month-old daughter and she loves Toddler Lock (available in a store). When she touches the phone it makes funny noises and additionally you can write on a screen and there are also interesting shapes ('RockSteady').

(3)   My 1.5-year-old daughter copes really well with those games on a tablet or smart-phone. She knows which one she wants and how to switch it on and when to call us when a commercial pops up. She can use YouTube and select her favourite songs from a playlist!! Recently she called her dad several times (how on earth does she know that it is the right number!). How are your children doing with these smartphones? ('Zmijka 00').

Guardians also speak about the relevance of, and reasons for, equipping children with portable screens:

(4)   [Applications] encourage my child to get to know objects and animals. My son loves looking at them and listening to them ('Natalia').

(5)   My child (5 years old) loves Mouth Off and Androdify. It keeps it occupied for ages. ('Goszka').

(6)   Cool apps if you want to have some peace and quiet. ('Zosia').

(7)   Fantastic app. Helped my daughter get to sleep ('Anonim').

(8)   We were travelling back home for 2 hours from a birthday party and unfortu-nately she woke up in the middle of the journey. In a supermarket I found 'Learn Animal Sounds' and I gave her my smartphone (…). She kept staring at the pho-tographs of animals and she was absolutely amazed. Well, she will get bored soon so I am looking for more, especially since we are about to take a long holiday trip ('Matka_karmiaca').

The entries quoted indicate that not only do cognitive processes of young and older children develop through touch screens (1, 2, 3, 4) but also that mobile devices considerably support social processes, such as upbringing (5,6) or fostering child independence in a family (7, 8). Additionally, adults, through their enthusiastic reactions, reward children for their screen learning, and trigger the *reinforcement mechanism* in a child-experimenter, encouraging it to learn about the 'mediated' world, i.e. the world accessed through the screen. The stimulation of child development takes place primarily through the senses of sight and hearing. Incoming stimuli are visual (colour images, symbols or icons of animals, people and objects) and auditory in nature (music or sound iconic signals that mimic

sounds) (cf. *Katalog bezpiecznych aplikacji mobilnych* [Catalog of secure mobile applications]. Highly dynamic visual content attracts the child to the screen, and a permanent immersion in modulated sounds makes the child indifferent to external stimuli. As indicated by E. Gruszczyk-Kolczyńska, "moving objects, located within the field of view, encourage children to focus attention on them. At the same time, following the object with one's eyes is effortless and takes place automatically" (Gruszczyk-Kolczyńska 2013: 11). Therefore, concentration on a rapidly changing image/picture requires little effort from the child. It is as if the child automatically focuses on a moving object and follows it with its eyes. In addition, the child participates in numerous interactions and has the illusion of controlling the perceived reality. At the same time, the risk of failure in this kind of exploration is reduced to a minimum, as compared to reality. The pleasure gained from such a perception can be addictive. The child demands constant contact with the screen, even while performing everyday activities, such as eating, going to bed or taking a bath. These activities are performed almost autonomically, as if without the senses of taste, smell or touch. What would ordinarily require concentration and analysis becomes unattractive, and the sensations are evidently postponed. That is why the child rejects books, or messages based on words, even when they contain beautiful illustrations, or does not react to the voice calling its name.

4. Analysis of 'mediated' acquisition

At this point it is worth asking the question whether this 'spontaneous' screen education of the youngest children which was outlined above affects the development of their language and communication competence. Psychologists argue that the method of the child's perception mentioned above activates mostly the right hemisphere of the brain and that constant stimulation of this particular area within the nervous system hinders the natural development of cells in the left hemisphere of the brain, responsible for production, reception and processing of speech. Certainly, I do not share the extreme views of Spritzer, who claims that mobile technologies contribute to 'digital dementia' (2013) or of Small and Vorgan (2011) who argue that children under the influence of such media stimuli remain at an earlier stage of perceptual development (preference for dynamic systems). Rather, I accept the claim of Carr (2011) that technologies, which change human brains, revolutionize both collection, aggregation and processing of information, which is, unfortunately, associated with the depreciation of language as a tool for

shaping and transmission of sense. It is worth noting not only the psychological consequences of this fact but also, inseparably linked with them, the socio-cultural changes related to the acquisition and development of speech.

The digital tools analysed below support primarily language acquisition, i.e. the child's acquisition of a language grammatical and lexical system, mostly in its written form (Wileczek 2020). In turn, the term "speech acquisition" refers to the acquisition of communication skills, i.e. communication by means of language. These are the activities taking place in ontogenesis, which means each time individually. Regardless of the theoretical approach adopted here, a greater or lesser role of a social stimulator is taken into account. Thus, even in the case of the Skinner's behaviourism theory (1957), when learning (including language acquisition) is based on imitation, the social factor cannot be completely ignored. This means that the child acquires language through observation and repetition of language behaviours, which appear in an appropriate environment. The word is a stimulus subject to instrumentalisation. Used in appropriate contexts, it is approved by adults (reinforcement); however, when used wrongly it is corrected by them. It is impossible for digital applications to include all types of interactions related to the everyday impact of social environment (as well as possible ways to express approval except by means of ordinary word quantifiers like *good/bad* or sound quantifiers like *high tone/low tone* used in applications for children). They function as schematic substitutes signalling pragmatic effects of language use similarly to the smiley icon or the worried face. The full potential of verbal and non-verbal means of cooperation, including evaluation, known from communicative interactions remains in this case inactive.

Other theories of speech acquisition take into account the significant role of internal factors, both biological and mental, thanks to which the child's brain after birth develops skills related to language acquisition, triggered by the exposure to linguistic stimuli (Hickmann 2003). This mechanism is referred to as LAD (*Language Acquisition Device*). It presupposes the existence of *Universal Grammar* (cf. Chomsky 1965; Pinker 1984), the general mental structures through which the child analyses utterances of adults and thus acquires certain information about the first language grammar. Next, this knowledge is applied in construing one's own utterances (cf. Crystal 2000: 236). In this case, although digital tools may effectively promote passive memorizing of speech sounds or shapes of linguistic signs and graphic symbols as well as linking them with meanings, the artificial environment in which this process takes place as well as forced and isolated acquisition do not stimulate the creative use of language. These processes occur

beyond the graduality often referred to by researchers. In the social environment, each stage, starting from the cry, through babbling, intonation patterns, simple and more complex syntactic structures up to developed speech (Aitchison 1989), develops as a result of social participation. It has been proven that it is not hearing or sight dysfunctions but isolation from the communicating speech community that constitutes a cardinal obstacle in acquiring language in the form of a certain sub-code (Rakowska 2003: 104).

Moreover, we should not underestimate the role that neurobiological structures, called mirror neurons, play in relation to the development of the communication skills and social functioning of an individual. Mirror neurons, formed during the prenatal stage, developed and stimulated during the stage of biological and social development, are activated through the mechanisms of imitation, speech activity, motor behaviour, feelings of empathy, intuition, mentalization (mind reading), and widely understood socialization (Rostowska – Rostowski 2014: 54). Copying, which occurs as stimulation or creative imitation, involves significant "conceptualization of the four basic context components (…) i.e. people, objects, actions and bodily states as well as the creation supra-modal concepts indispensable for language functioning in general and for wordless interpersonal communication" (Rostowska – Rostowski 2014: 54). Therefore, we might share the concern of psychologists and speech therapists that the constant stimulation of the right hemisphere of the child's brain and the lack of balance "between environmental stimuli and those which arise from contact with people will contribute to the changes in language acquisition as "the brain deprived of such stimuli does not function properly and is unable to create appropriate neural connections (Small – Vorgan 2011: 23).

Further, we should not underestimate the role that the LASS system (*Language Acquisition Support System*) plays in the development of language competence. It gives priority to external factors, both environmental and communicative. It is a set of social and cultural strategies applied by users in order to facilitate the process of language acquisition in children. Thus, socio-environmental factors, including numerous interactions, stimuli and social experience, expand language competence into communication skills. These, in turn, are treated with priority as speech is "a system of cultural behaviour" which involves not only grammar and vocabulary but also makes it possible to "participate properly and effectively in a given language community" (Hymes 1980: 41).

5. Applications and Polish language acquisition - examples

There are hundreds of applications for elementary language learning available for Android, iOS or Windows systems. Young children, through the medium of the screen, learn about phones/sounds and letters (e.g. *Alfabet dla dzieci*, *Telewizyjne abecadło* [Alphabet for children, Television alphabet]), acquire words and phrases in Polish as well as English (*e.g. Pierwsze słowa* [First words], *LingLing*), learn to write either by using a keyboard (*Dzieci uczą się pisać, Klawiatura* [Children learn to write, Keyboard]) or by dragging a finger around the shape of letters presented on the screen (*ABC. Pisanie po* śladzie [ABC. Writing on the trail]). A vast number of available applications also offer instructions for how to learn to read in Polish (e.g. *Czytka* [Reading]*; Pszczółka* [Little bee]*; Nauka czytania* [Learning to read]) or in English (*Kiddy Reader*). The applications under discussion include those which enjoy great interest and are recommended by parents or are collected in various catalogues, such as *TOP 10 aplikacji mobilnych dla małych dzieci* [TOP 10 mobile applications for young children] or *Top 6 aplikacji, czyli o smartfonach i tabletach dla dzieci* [Top 6 applications, i.e. smartphones and tablets for children]. The most popular ones are: *Świat liter*, *Wygilgaj literki*, *Proste słowa*, *ABC Kaligrafia*, *Edulatki.pl* [World of letters, Tickle letters, Simple words, ABC Calligraphy, Learning a few-years-old] *Play & Learn.*

Each application takes into account the child's age, adjusting the content of exposure and the level of language mastery, e.g. learning letters and words through fairy tales (*Poznawanie liter ze smokiem Edziem* [Exploring the letters with the dragon Ed]) and children's literature ("*Abecadło" Tuwima* ["Alphabet" by Tuwim]) for the youngest children, and creating words and recognizing meanings through games (*LiteRaki* [Letter crayfish]) for older children. Almost every interactive application has a structure based on a gradation of difficulty. Assuming that the user is involved in an activity, applications take advantage of the aspect of a game where one can collect 'bonuses' for a correctly performed tasks (*Benc.pl, Znajdź literę* [Find the letter]) or, in the case of older children, moving to the next level. In some cases, the gradation of difficulty is associated with the specific nature of the acquired skill (e.g. one can open subsequent windows/slides, see: *Wee Alphas*).

Some digital software programs for children change into multifunction-al educational tools. For instance, the application *Pszczółka* [Little bee] is an interactive tool for developing the skills of reading and reading comprehension as well as creative conversion of content. It is recommended by its authors as an 'individual reading trainer'. After the initial diagnosis, the software program

creates a personalised list of exercises, allowing for the efficient acquisition of a given skill and a change in the level of difficulty as the user acquires the skills and proficiency at a certain level. The application may be used by children independently or under parental supervision, and also in educational institutions or speech therapy clinics.

Most applications encourage children to initiate actions in order to improve various skills. For instance, learning the shapes of letters and practising pronunciation are available at one level whereas making words out of blocks or puzzles and then searching for hidden meanings for which children collect points or stars are included at the next level (*Magiczne Literki, Wygilgaj literki* [Magic Letters, tickle the letters]). The educational goal is therefore integrated with an effect that is ludic in nature and with the pleasure of winning as well as the enjoyment of a variety of stimuli. Consequently, the software programs under discussion may be divided into two groups: those in which gaming rivalry dominates, and those focusing on reaching an intended effect (*Polski z Basią dla dzieci, Uczymy się i bawimy* [Polish with Babs for children, Learn & play). Other applications introduce elements of role-playing, where the child becomes an explorer discovering various language signs (*Booki odkrywca* [Booki the explorer]), or a main character in a given challenge, e.g. learning to read as freeing animals from cages (*Nauka sylab. Uratuj zwierzęta* [Learning syllables. Save the animals]). Some interesting software programs follow the structure of a riddle, e.g. a screen with a gap-filling exercise, jumbled texts (*Literowa rozsypanka, Album literkowy* [Letter scatter; Letter album]) or puzzles (*Zgadnij, co to* [Guess what it is]).

The quality of graphics and sound as well as the attention to sensory integration in applications for children vary. The most interesting interface is applied by those software programs which develop language competence through tales, plots and stories, such as interactive educational and reading platforms for the youngest (e.g. *Yummy.pl*; *iCzytam.pl* [e-_Read]), or those like the *iOjczysty* [e-Mother tongue] software program. The last tool is distinguished by aesthetic graphics appropriate to the age of the user, sounds from the real world, relaxing music and interactive animations. It stimulates sight, hearing and touch without bombarding the user with excessive stimuli. The application offers the user the opportunity to interact with literary texts (including fairy tales and legends) which makes them understand not only the communicative nature of language but also its practical and artistic nature.

It is worth noting the great effectiveness of software for acquiring grammatical rules and linguistic correctness, especially in terms of spelling or punctuation

(*Kujon junior; Ortografia dla dzieci. Demo; ABC. Polska Ortografia* [Crammer junior; Spelling for children. Demo; ABC. Polish spelling]), which replaces tedious textbook exercises with dynamic and motivating images. However, these applications are targeted at older children, who have mastered the written form of the language.

According to comments made by parents on forums, blogs and websites devoted to language software programs for children, the content of such applications is, for parents or guardians, of secondary importance. There are occasional comments by the automatic reader regarding wrong articulation or common misspellings. Instead, what counts is the attractiveness of interaction for the child, quality and type of images and effects as well as the ability to involve young children, which is typical of games. The applications in question belong mostly to the so-called educational industry, defined as "edutainment", which takes advantage of interactivity, poly-sensory character and game elements used while exposing educational content.

Thus, according to adults, the assets of such acquisition of unattractive language skills include:

Ludic elements, e.g. *A child learns to write letters by hand while having fun; My son did want to learn letters at all but this game got him hooked and there are super results – I recommend it*☺ (*Alfabet dla dzieci*).

Poly-sensory nature and intuitiveness – 'clicking', 'knocking' or 'moving' the screen, dynamically changing images which require reaction guarantee, according to adults, entertainment, e.g. *'Wygiglaj Literki' is specifically designed to entertain kids and develop a positive attitude towards learning letters so as it is associated with happiness (…) children love colours and interaction* (*Wygilgaj literki*)

Modern screen interface, e.g. *Do you know any interesting applications as my 6-year-old daughter does not want to use a primer?; It is good for the small ones and can replace traditional books with pictures; A reader reads out words, there are simple pictures and easy tests* (*Gazeta.PL. Forum*)
Reliability, e.g. *the screen gets frozen and it is extremely irritating!!! I do not recommend it – the sound fades; It turns off at the wrong moment [in-built timer]* (*Google Play*).
No charges, including micropayments and advertising, e.g. *The alphabet ends with the letter F and then you have to buy the full version of the game, I don't recommend it, it is a waste of time and space on your phone; You have to pay! How*

are children to learn if you have to pay!; It is worth downloading – completely free of charge (ibid.)

It should be emphasised that the analysed applications reduce the presence of the human and social 'factor'; the interactive software program assumes the role of a guide to the world of language, e.g.:

The application is prepared in such a way as to make it possible for the child to learn the alphabet INDEPENDENTLY, without any help (*Alfabet dla Dzieci*).

The screen and the voice of the reader become a 'communicative' partner, pronouncing sounds and letters, which is also considered to be an asset, e.g. *The game 'Wygiglaj literki' kept my children occupied for more than 3 hours!* (a parent's entry recommending the application) – and all this hoping for tangible benefits in the child's language development.

Only a few applications are designed for the joint work of a parent and a pre-school child, which is clearly indicated in their introductory descriptions. One such application is *Nauka czytania metodą sylabową.* The description of the software program reads as follows:

The application has been designed as a simple **assistance for parents** working **together** with a child. The application does not teach a child to read without assistance. The application does not have the function of a reader (*Android Lista*).

In turn, interactive narrations are most useful for this purpose (fairy tales, tales in verse and stories). They offer children interesting options to navigate around the virtual world of e-books, and usually have a built-in voice guide that replaces the adult playing the role of a reader (see *Bajkoteka*).

6.   Conclusions: Consequences of screen education

The presence of a communication community where children respond to language sounds but also recognise aspects of encoding and decoding non-verbal messages is essential for the proper socio-communication development of the youngest. Visual interactions and over-activity in the virtual world can interfere with the interaction with 'real' people. Turkle (1995), on the basis of research on

the use of the Internet by children, noted that exposure to only a few minutes of the game is generally sufficient for children to feel the need and affection for many virtual animals or humans. These numerous online 'relationships' are very shallow and superficial, resulting in large numbers of online relations without deeper ties and associated emotional and moral aspects. In addition, the ability to read real emotions from gestures, tone of voice, etc., is altered; the acquisition of communication skills, including the ability to hold a conversation, is modified.

These risks for younger children are by no means diminishing compared to those for older children, especially since the circumstances of Internet verbal and visual activities are generally overlooked in early Polish language education. The examples provided in this discussion show that Polish language acquisition by means of interactive applications happens as if naturally and is one of the important "channels" for the acquisition of language by children, something which of course seems to hold true of the acquisition of other languages by similar means. This is also facilitated by the natural pro-technological attitude of the youngest "digital natives." Interactive applications can be useful tools to develop not only language but also the communication and sociocultural competences of the youngest. This happens for many reasons. Children working online under the supervision of adults appear to be participating in 'compatible' communication with the world in which they are immersed. Nurseries and schools should become spaces complementing the new world, and this is evidently necessary in order to prepare children for active and informed participation in present-day culture.

However, adult supervision in selecting language learning tools and defining the frequency and duration of their use as well as, with respect to normative and cultural conventions, in the confrontation of effects and methods of media communication among the youngest seem necessary. Corrective actions in 'living' language contact as well as in attention to a variety of stimuli accompanying language and speech acquisition should be introduced at an early educational stage, when children are imitating communication structures that they find online. If this is done, there is a chance of eliminating the first 'text-creating' shortcomings, so that they do not become permanent 'dysfunctions' (Wileczek 2015: 167-184). When contact with smartphones, tablets, iPhones or iPads substitutes for communicative relationships with adults or other members of language community, the threats to cognitive and mental development as well as the entropy of interpersonal relations should be neither demonised nor ignored. There is living tissue of life off screen.

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