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MYTH-BUSTING REVIEW

THERE ARE NO DIGITAL NATIVES

LAURI HIETAJÄRVI

Summary

- There is no generation with uniform digital and media literacy skills. Young people are divided into different groups based on the people close to them, personal interests and the support they receive.

In which area is there still a lack of knowledge?

- The long-term impacts of media use on the brain or information processing are still unknown.

Recommendation

- Young people's critical media literacy and ability to assess the reliability of information must be improved.

IN 2001, Marc Prensky, an American writer and researcher in education, coined the term digital natives to refer to young people born after 1980, as this generation had grown up and matured in a world in which digital technology had always been present. According to Prensky, this had come to significantly shape this group as people as well as influencing the way they behaved and learned. Using digital technology comes naturally to digital natives, and they have excellent digital skills. Meanwhile, Prensky referred to older generations as digital immigrants. Prensky raised concern that the outdated education system and teachers representing a different generation would fail to respond to the needs of digital natives as learners.

Many empirical studies were quick to debunk the myth of digital natives[1]. As media users, young people do not constitute a homogenous group. Generally speaking, people's media use is diverse[2]. Young people have different motives for using media. While their media use is most commonly motivated by entertainment and maintaining social relationships, information retrieval, creative engagement and gaming are also common[3]. The majority of young people fall into a category of so-called ordinary media users, whose behaviour is not particularly characterised by any single aspect. In addition, distinguishable groups include at least 1) users consuming all media particularly actively (majority of them boys) and 2)

1 e.g. Bennett & Maton, 2010
2 e.g. Ertiö et al., 2020; Kaarakainen & Kaarakainen, 2018; Li et al., 2017
3 Hietajärvi et al., 2016; 2019

particularly socially active users (majority of them girls)[4]. Even a rough division can, then, distinguish clearly different types of media use and user groups.

In response to the criticism against the concepts of digital natives and digital immigrants, Marc Prensky later changed the definitions, but the myth of different generations characterised by a determined set of skills lives on.

THE MYTH OF THE DIGITAL NATIVE AND THE HUMAN BRAIN

One of the basic assumptions of the myth of the digital native is that growing up in a given media landscape is prone to modify the brain of children and young people. This would result in the children and young people developing an ability to execute a variety of tasks simultaneously and process a deluge of information coming at them from multiple directions. It is true that media use can shape a person's brain. However, it remains unclear how exactly media affects the brain and information processing of young people and how permanent the possible impacts are, and this may remain unexplored due to the sheer diversity of the media. Nevertheless, we can make some conclusions about the relationship between brain development, information processing and the media.

Depending on the stage of brain development, children and young people may be particularly vulnerable to the abundant stimuli from digital media[5] or the constant interruptions that disturb information processing and concentration[6]. The young people most likely to be distracted by various kinds of interruptions are the ones whose media use is characterised by media multi-tasking[7]. Moreover, in line with their stage of development, teenagers are both emotionally particularly susceptible to feelings stirred by acceptance or rejection as well as rather immature when it comes to self-regulation, which may render them particularly vulnerable to the effects caused by the media[8]. By contrast, compared to the above examples, the myth of the digital native gains more support from the research findings regarding the positive impacts of gaming on the brain and information processing[9]. Active gamers have been found to have a better working memory performance compared to their peers less active in gaming[10].

Media use may affect the brain development and information processing of children and young people. Nevertheless, there is no clear evidence of causal links and little can be said about this issue, at least at the level of an entire generation.

THE MYTH OF THE DIGITAL NATIVE AND DIGITAL SKILLS

The myth of the digital native assumes that young people have exquisite digital skills compared to their parents or are at least inherently better equipped to learning and adopting skills related to digital media. This is primarily true, as, depending on their developmental stage, young people are able to acquire new skills more quickly than adults. However, learning is significantly affected by a person's previous knowledge and skills, which often puts older people in an advantage.

The key idea of the myth is that young people fluent in using digital technology would get bored in a traditional school setting that does not allow them to use technology. This has been referred to as the gap hypothesis: there is a digital gap between the school and the rest of the world[11]. The hypothesis is supported by a couple of studies conducted in Finland. According to the first, the young people who found the least meaning in school attendance would have liked to use more digital technology at school[12]. According to the second, longitudinal, study, enthusiasm to study using technology predicted a higher learning motivation if

4 Li et al., 2017; Kaarakainen & Kaarakainen, 2018
5 Christakis et al., 2018
6 Firth et al., 2019
7 Moisala et al., 2016
8 Crone & Konjin, 2018
9 Palaus et al., 2017
10 Moisala et al., 2017
11 Hietajärvi et al., 2020
12 Salmela-Aro et al., 2016

the school provided sufficient opportunities for making use of digital devices[13].

Finnish young people rank at the top of the world in multiliteracy, or the ability to identify, modify and produce meaning using a variety of tools[14]. Nonetheless, young people are not on the same footing when it comes to media literacy or digital skills acquired during leisure time, which means that it is also impossible to identify a distinct generation of digital natives in this context. By contrast, it appears that there are various kinds of gaps between young people. Although digital technology has become available to virtually everyone, a gap seems to have formed between those young people who know how to utilise this and those who do not[15]. While digital skills have been presumed to even out the impact of one's socioeconomic background, the gap in digital skills appears to somewhat follow the socioeconomic divides[16]. Those young people who receive support for using digital media from people close to them seem to gain most benefits from digital media. Versatile technology use supports the development of media literacy[17].

While a gap of some degree would seem to emerge between different generations, the findings are not fully conclusive in this area. According to one meta-analysis, on average, media literacy was better among girls than boys[18], whereas an extensive study carried out in Finland demonstrated that Finnish boys fare better in digital skill tests compared to girls[19]. However, girls seem to perform better in linguistic tasks, multiliteracy and computational thinking, which refers to analysing data, recognising and forming patterns in activities, and the automation of functions[20].

Digital natives are presumed to find all the information they need from the internet. However, in principle, young people seem to have rather poor information retrieval skills[21], which has also been observed in Finland[22]. An examination of young people's skills in assessing the reliability of information has revealed that while young people seem to acknowledge that the quality of information found online on topics such as health varies, their ability and means to make a distinction between reliable and unreliable information differ considerably[23]. Most young people lack the capabilities to critically assess the information they encounter online and its reliability[24]. Boys appear to do better than girls at finding information, and girls better at assessing the search results[25]. It seems that moderate media use is linked to better media literacy[26].

In summary: there is no generation with uniform digital and media literacy; instead, young people are divided into various groups based on the support they receive, the people close to them, and their personal interests. There seems to be room for improvement in young people's critical media literacy and abilities to assess the reliability of information.

13 Hietajärvi et al., 2020
14 Leino et al., 2019a
15 Dolan, 2016
16 Siddiq & Scherer, 2019b, Leino et al., 2019a
17 Kaarakainen & Saikkonen, 2015; 2018
18 Siddiq and Scherer 2019a
19 Kaarakainen, Kivinen & Vainio, 2018
20 Kauppinen & Marjanen, 2020; Leino et al., 2019a
21 Zhou & Lam, 2019
22 Kaarakainen & Saikkonen, 2015; Saikkonen, 2018
23 Freeman et al., 2018
24 Kiili et al., 2018
25 Kaarakainen, Kivinen & Vainio, 2018
26 Leino et al. 2019b

This myth-busting review aims to correct a common misconception with arguments based on research knowledge. This is a non-systematic meta-review in that it is based on high-quality research but does this selectively.

This evidence synthesis is based on a list of international systematic reviews compiled by an information specialist based on a systematic information search and Finnish case studies on the effects of digital media on young people (more detailed description of the information search on p. 20–21). Reviews and studies concerning themes related to the myth of the digital native, i.e. particularly young people as media users, adolescent brain development, and young people's media competence, were selected from the list based on their title and abstract. The methods of producing the various papers are described in further detail on pages 17–18.

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