



---

## **DIGITAL TOOLS IN THE SERVICE OF SOCIAL MEDIA – OPPORTUNITIES AND ROLES OF EDUCATION AND CONTENT SUPPORTED BY MOBILE COMMUNICATION DEVICES IN SUPPORT OF INFORMAL EDUCATION AND DIGITAL COMPETENCES DEVELOPMENT**

*György Molnár, Zoltán Szűts, Budapest University of Technology and Economics, Department of Technical Education, Hungary*

---

### **Introduction**

In today's digital environment, new methods of education (Ollé, Papp, Lévai, Tóth-Mózer, & Virányi, 2013) have emerged from web 2.0 and e-learning 2.0. New Media (Forgó, 2017) systems also significantly transform the learning environment. We have come to the latest achievements of Digital Pedagogy 2.0 (Benedek & Molnár, 2016). The new types of platforms that emerge as a continuation of this trend go even further, just beyond the existing technologies. In addition to the earlier services, they help to navigate through large data sets and focus on mobile technologies.

### **New ways of learning in the information society**

The beginnings of the information society can be traced back to the emergence of broadband Internet connections. It is the time from when the computer network is present both in physical and virtual space. In this environment, the amount of information is constantly growing, more and more users connect to the network through their smart devices. The students become members of online communities. The more content and services move to network environment, the more effectively it transforms the world of education. In the information society, as opposed to the modern industrial society, there is a need to acquire and apply knowledge immediately, and practical know-hows quickly becomes obsolete. In the context of the information society, the nature of knowledge becomes practical, multimedial and transdisciplinary, while the same time it is interactive too. There is also a change in the pattern of knowledge acquisition, ways of learning, lifelong learning becomes dominant, with non-formal learning (Benedek & Molnár, 2014) and crowdsourcing getting more and more popular.

According to Ropolyi (2006), the book was the information source of the modernizing world, whereas today, the masses prefer specific, individual forms knowledge acquisition. It is important to emphasize that in information age knowledge is gained on a wider horizon.

## **Digital media content for learning**

Manuel Castells (1996) points out three major trends that dominate new media:

1. Mass media is largely concentrated in the hands of international media companies that are both globally and locally embedded. This is characteristic of television, radio and print media. Opposed to it, new media lacks this type of concentration.
2. Communication channels are digitized and interactive in the network society. Accordingly, the world's advanced societies are increasingly turning away from mass media and are oriented towards personalized individual new media content.
3. Due to the new communication technologies, a new type of medium has emerged a horizontal communication network. New forms of communication on the Internet flourish: blogs (web log), vlogs (video log) and podcasts (internet radio shows). On the web, these individually-supplied, and mostly free content is easily accessible to anyone, while their producers are able to remain independent from traditional media companies and governments.

From the perspective of the education, several opportunities open up for personalized content development and dissemination.

## **Social media in education**

In the field of internet, the emergence and todays dominant position of Web 2.0 brings to life new forms of communication, digital media and learning platforms. In the context of blogs, wikis and social networks collective wisdom is born and user-added value allows students to become informal teachers. In order to maintain the attention and interest, we need to take the curriculum where the students are, that is to social media. A new community-based learning model has emerged. Teachers for example, create their own Facebook groups and communicate with the students through these. Often curriculum is shared – but its sources are not always verified.

Since 2000's, the emergence of mobile communication and smart devices gradually changed the way space and time were handled and sensed by students. In this context, the most important element is the interaction, as well as the proactive user behaviour, which also requires extraordinary activity from users. While push media assumes a one-way, asymmetric, individual-to-mass communication process where the user (viewer, reader) scans the information, pull media will deliver information according to the user's own interest. This change was largely supported by smartphones

The communication patterns associated with learning have also changed. Likewise, media consumption has also changed. While in the early 2000s, family members gathered in front of the television to listen to and see the news, in the 2010s everyone is using their smartphones individually. From the point of view of learning, this is important because, as a result of the proliferation of such mobile devices, learning becomes highly individualized. Everyone has

their own screen – and at the same time everyone shares online a community experience. Learning supported by mobile devices takes place with informal tools and platforms, while a substantial part of the curriculum is not created in academic environments (Benedek, 2016; Benedek & Molnár, 2017).

## **What has proved to be successful and unsuccessful?**

Although ICT technology can no longer be said to be new, as it is already present since the late 1990s, it is still in the experimental phase. One reason for this is that there is a continuous change, it is in perpetual beta. New platforms that support different types of communication processes require different acceptance strategies. There are too many platforms to be used. MySpace supported sharing of video materials, Pinterest supported visual learning, while recently users have migrated to Instagram and SnapChat. But another example of a fad is augmented reality. First the gaming console manufacturers (Sony, Microsoft) announced a range of accessories and teachers hoped for a transformation in the education. For science subjects such as physics, chemistry or biology this multimedia and interactive demonstration technology proved itself. However, it is still sporadically used by teachers and students. Supported by AR, the physical world can be expanded with virtual elements (e.g. 3D models, videos and animations) that merge into the real-life environment using cameras and screens. Thus information is displayed with the help of a mobile phones, a computer screens or special visors.

However, over the last few years, the mainstream gaming industry has given up on AR technology, and now smartphone manufacturers have been trying to integrate it. At the same time, the presentation of the curriculum was hardly affected by AR, and it is still only a pilot phase.

Likewise, the one dominant social network remained to be Facebook. So, those who created groups on Google+ have migrated over time to Facebook. The same thing happened with local community sites, for example with Hungarian iWiW. Although SNSs are similar in design, they differ in functionality, so students basically need to adapt to a new system every time they want to communicate and collaborate with their peers.

## **Experiences with mobile devices and social networking sites in education**

As the consequence of the integration of online networks and digital technologies into everyday life, the mechanisms of information acquisition and learning have radically changed. Consequently, there is a need for users to quickly acquire knowledge and information, often without questioning its source. The reasons include the transformation of reading habits, the need to access the knowledge as quickly as possible while applying the BYOD logic (Szűts, 2014). Such an environment has become an educational one and often primary source of information, in which the students feel at home. Using social media and mobile platforms is intuitive – rather than using LMS systems (for example Moodle). Multimedia and

communication interfaces also support learning. These tools and platforms often have no institutional cost. The advantage of BYOD is that students use up-to-date, well maintained tools, but this also has a number of disadvantages. While technical issues are solved by administrators in the institutional environment, in case of BYOD there is no official help to be used. Internet access is also provided by institutions, but Wi-Fi systems are often not prepared to handle such a large number of devices. Online cloud platforms provide necessary storage. With normal usage, unlimited storage is available free of charge or at extremely low cost, however there are data security issues. This information does not exist on the servers of the particular institution and as such has many risks. Data handling issues found in Facebook's practice are described in the story of Cambridge Analytica (Grewal, 2018), (Benedek, Molnár, & Szűts, 2015). The company unlawfully accessed users' data and used them for political campaigns. In the case of online curriculums, the risk is even larger, the more influential institutions may gain insight into the operation, strategy and sensitive information of other, less data protective institutions. Many eligibility, personal data and intellectual property regulations need to be taken into account when HEI-s are using the clouds, so in non-formal ICT-supported learning, emphasis should be placed on this issue as well. Even more it is not always clear who is in possession of the content, so there are more uncertain references that often lead to false information.

Not only the social media sites are popular in education and training, but also the dedicated quiz applications such as Kahoot or Quizlet. However, it has several risks as smart devices often mislead students' attention.

## **Empirical Survey**

In a research conducted in May 2018, authors carried out a cross-sectional survey, which was implemented using a quantitative-based questionnaire survey often used in pedagogical research methodology. As an exploratory tool the authors used the Google Drive online questionnaire form (<https://goo.gl/forms/7ITJgodHdIZVpNqq2>), while respondents' results were processed using simple descriptive statistics with text and graphic analysis. The focus was on the role of digital media, including smartphones as mobile communication tools, the role and use of social media, as well as the assessment of usage habits. During simple random sampling, a total of  $N = 47$  evaluable answers were received in first phase of the survey. The target group consisted of students who attend part-time training at Budapest University of Technology and Economics, on the one hand, and full-time economics and engineering teacher students on the other. The questionnaire contained a total of 22 items, with the exception of one they were all closed question. For the reasons of brevity, only the most important issues will be presented in this chapter.

**Digital Tools in the Service of Social Media – Opportunities and Roles of Education and Content Supported by Mobile Communication Devices in Support of Informal Education and Digital Competences Development**  
György Molnár, Zoltán Szűts

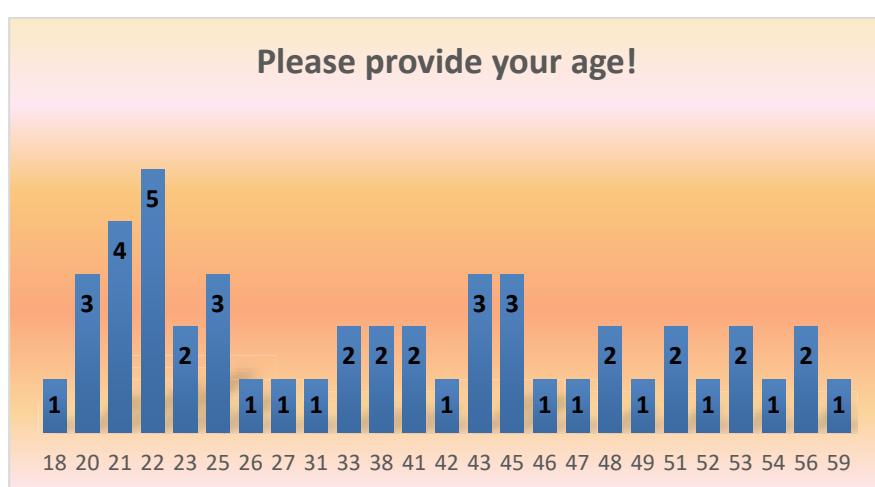


Figure 1. The age distribution of respondents (own chart)

The diagram above shows the age distribution of respondents, which means that 35% of people surveyed are under the age of 25, this showing the dominance of Y and Z generations in the survey. The 26 to 60+ year old were represented roughly equal.

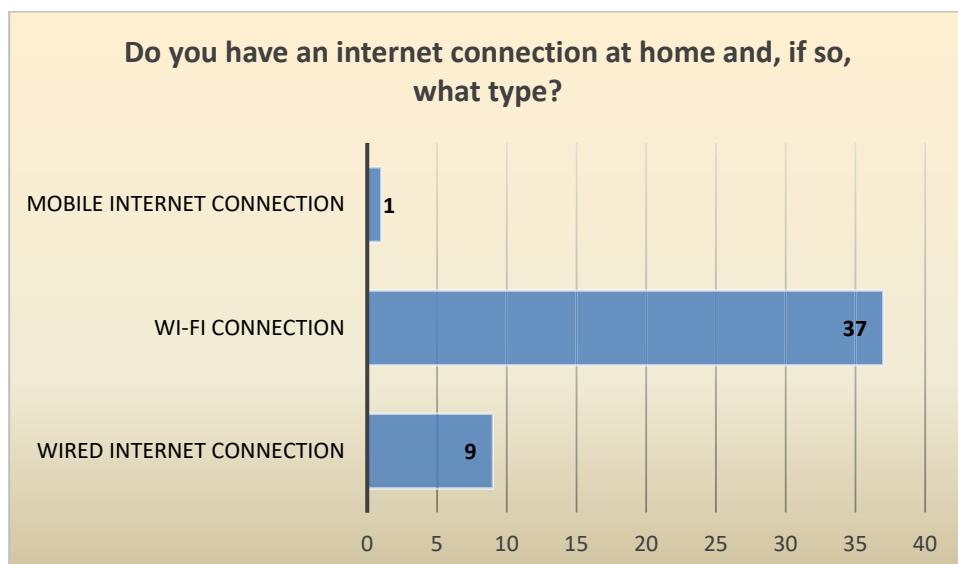


Figure 2. Types of Internet connections and its distribution (own chart)

The following figure illustrates the types of Internet connections and its distribution. According to the answers received, 79% of respondents (37 respondents) use mostly Wi-Fi, while the remaining wired internet connection 20% (9 respondents) and 0,2% use mobile internet connection.

**Digital Tools in the Service of Social Media – Opportunities and Roles of Education and Content Supported by Mobile Communication Devices in Support of Informal Education and Digital Competences Development**  
György Molnár, Zoltán Szűts

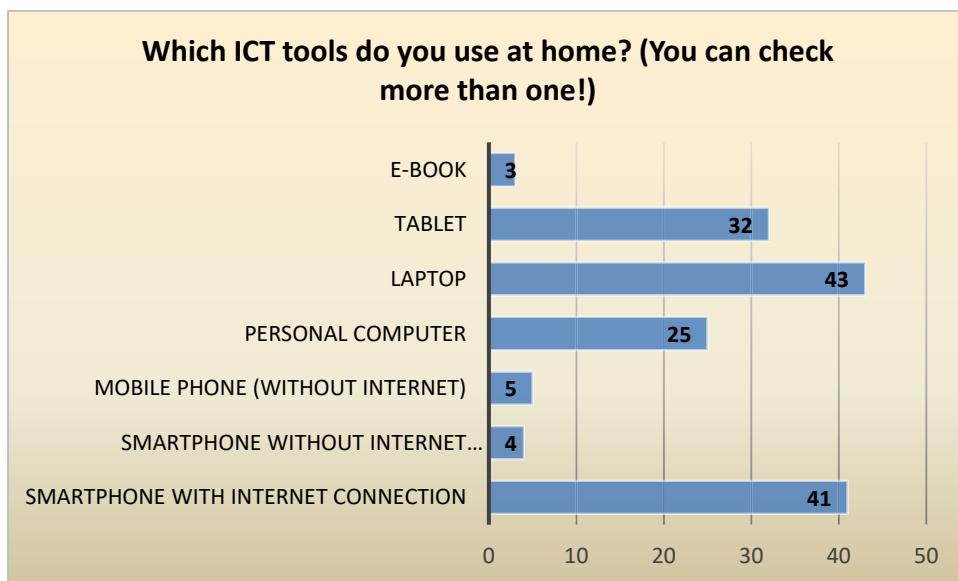


Figure 3. The distribution of ICT use at home (own chart)

The diagram above shows the distribution of ICT use at home, according to which 43 respondents use primarily their laptops and 41 answers use smartphones with internet connection. A further 32 respondents use tablets, and 25 still uses the desktop PC the most.

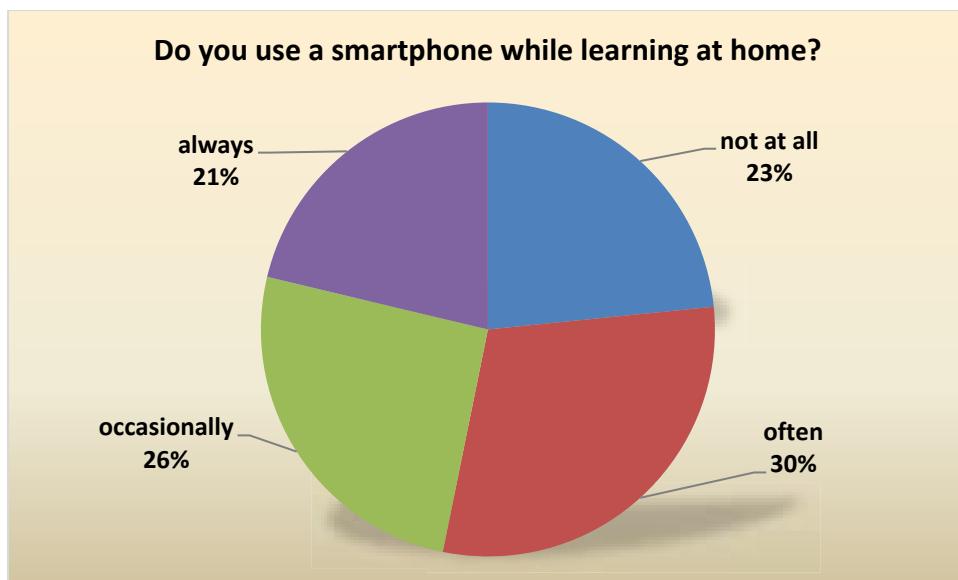


Figure 4. The distribution of use of the smartphone for learning purposes (own chart)

The figure above shows the use of the smartphone for learning purposes, where 30% of the respondents often use it, and another 26% occasionally use it for this purpose. 23% of respondents not at all use it. Budapest University of Technology and Economics does not prohibit use of mobile phones during lectures.

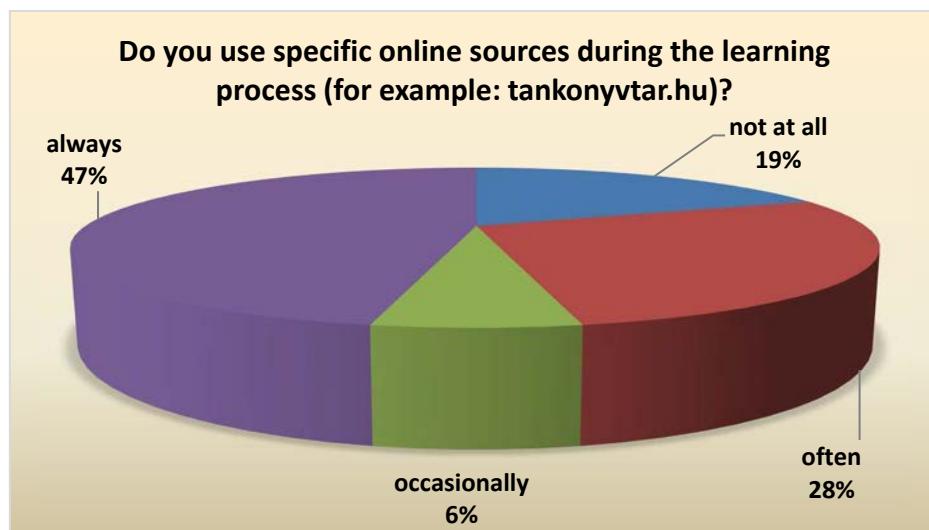


Figure 5. The distribution of usage of online web services (own chart)

The diagram above shows the distribution of usage of online web services. Almost half of the respondents (47%) always use these types of online resource, while 28% often use this option. Another question was about the use of LMS systems, which is used by 80% of the respondents. 77,5% of respondents are members of a closed Facebook study group. Finally, 75% of respondents are confident that their data generated and stored among the framework of social media data is safe.

## Conclusions

Today, the use of mobile technology, digital as well as social media has become more and more common among users. This hypothesis is supported by the results of the empirical research presented in this article. Numerous Hungarian and international surveys have come up with similar conclusions based on which new methodology solutions based on mobile and proprietary tools can be implemented into the education system. Due to the openness of students towards the new solutions, online services, social media in general, professional forums and LMS systems can be used in engineer, economist teacher training. The findings presented in this paper may be suitable for the practical implementation of the innovation both on micro- and mezzo-level when determining the methodology and use of digital curriculum.

## References

1. Benedek, A. (2016). Nyitott tananyag-fejlesztési modell (OCD). *MTA-BME Nyitott Tananyagfejlesztés Kutatócsoport Közlemények*, 2016(1), 5-21.
2. Benedek, A., & Molnár, Gy. (2014). ICT in Education: A New paradigm and old obstacle. In A. Leist & T. Pankowski (Eds.), *The Ninth International Multi-Conference on Computing in the Global Information Technology* (pp. 54-60). Sevilla: IARIA.
3. Benedek, A., & Molnár, Gy. (2016). Formulating active student's contribution to the OERs. In L. Gómez Chova, A. López Martínez, & I. Candel Torres (Eds.), *INTED2016*

**Digital Tools in the Service of Social Media – Opportunities and Roles of Education and Content  
Supported by Mobile Communication Devices in Support of Informal Education and Digital  
Competences Development**  
György Molnár, Zoltán Szűts

*Proceedings: 10<sup>th</sup> International Technology, Education and Development Conference.  
International Academy of Technology, Education and Development (IATED) (pp. 2642-  
2650).*

4. Benedek, A., & Molnár, Gy. (2017). Open content development in ICT environment. In L. Gómez Chova, A. López Martínez, & I. Candel Torres (Eds.), *INTED2017 Proceedings: 11<sup>th</sup> International Technology, Education and Development Conference, Valencia: International Association of Technology, Education and Development (IATED)* (pp. 1883-1891).
5. Benedek, A., Molnár, G., & Szűts, Z. (2015). Practices of Crowdsourcing in relation to Big Data Analysis and Education Methods. In A. Szakál (Ed.), *SISY 2015: IEEE 13<sup>th</sup> International Symposium on Intelligent Systems and Informatics: Proceedings. Subotica: IEEE Hungary Section* (pp. 167-172).
6. Castells, M. (1996). *The Rise of the Network Society. The Information Age. Economy, Society and Culture, Vol. I.* Oxford: Blackwell.
7. Forgó, S. (2017). Új médiakörnyezet, újmédia-kompetenciák. In Forgó S. (Szerk.), *Az információközvetítő szakmák újmédia-kompetenciái, az újmédia lehetőségei* (pp. 9-24). Eger: Líceum Kiadó. ISBN:978-615-5621-35-2
8. Grewal, P. (2018). *Suspending Cambridge Analytica and SCL Group from Facebook.* Facebook Newsroom.
9. Molnár, Gy., Sik, D., & Szűts, Z. (2016). Use of big data in education efficiency analysis. In A. Moreira Teixeira, A. Szűcs, & I. Mázár (Eds.), *Re-Imaging Learning Environments: Proceedings of the European Distance and E-Learning Network 2016 Annual Conference* (pp. 440-447). Budapest: European Distance and E-Learning Network (EDEN).
10. Ollé, J., Papp-Danka, A., Lévai, D., Tóth-Mózer, Sz., & Virányi, A. (2013). *Oktatásinformatikai módszerek.* Budapest: ELTE Eötvös. ISBN: 97896331215734. Retrieved January 30, 2018, from <http://www.eltereader.hu/kiadvanyok/vi-oktatas-informatikai-konferencia-tanulmanykotet/>
11. Ropolyi, L. (2006). *Philosophy of the Internet – A Discourse on the Nature of the Internet.* Budapest: ELTE.