

Zoltán SZÚTS

Learning in an attention-based economy and society¹

Introduction

The information society has transformed the routines associated with learning that we have brought into the 21st century from the context of print books and electronic media. For example, the sharp boundaries between children and adults have faded, and virtual environments of open education have replaced traditional schooling. At the same time, work, leisure, and learning can no longer be separated (Benedek, 2008).

Nevertheless, the most significant change is related to the new social currencies. These include trust, as individuals increasingly have to hand over control to machines and algorithms, and trust that systems will always be at their disposal when working, learning, or even travelling. When this trust is realized, they can do their job more efficiently and get where they want to go faster and safer. It is also based on trust in the algorithm recommendation system or the fact that soon you will not only hand over the steering wheel to the self-driving car, but the steering wheel itself, and with its control, will seemingly disappear, and trust will be the thing that will control your vehicle. Trust is the basis for its interaction with the community, supported by digital technology. It engages in discourse, collaborates, trades, or builds its future, in large or small parts, on the wisdom and opinions of thousands of unknown people. Companies treat trust as a valuable resource or even capital. An equally valuable resource or convertible currency is attention.

Attention is increasingly valuable because it is dispersed in the information society. The digital ecosystem, including smart devices and social media, is trying to capture as much of individuals' attention as possible, offering them different content and experiences. While devices and platforms can sell this attention to advertisers by aggregating it, individuals' attention needs to be more cohesive. This fragmentation harms the learning process and is no longer just a topic of everyday discourse. However, in Italy, due to the decision of Giuseppe Valditara, Italian Minister of Education, smartphones will be banned from classrooms immediately in December 2022. The devices will only be allowed if they meet predefined didactic or training objectives, always under the strict control of the instructors. On the impact on attention and the mind, the minister compared the devices to cocaine.²

The paper highlights and focuses on the issue of attention, as it is more strongly related to learning than confidence. One of the key assertions of educational researchers is that we have moved from a hyper-attentive to a deep-attentive era, moving from verbal to written culture. In this study, the authors argue that the digital and internet revolution has brought us back to a hyper-attentive state, where interaction and interruptions are the main focus. At the same time, our school system is still based on strict attention for the most part.

The study's starting point is that we have entered a new level of the information society, where attention is one of the central values. Therefore, we call it an attention-based society. Practical experience has shown that the communication processes facilitated by social media and smart devices now have a more significant impact on the learning and teaching process than, for example, the curriculum, the teacher, or even the methodology. By contrast, most of the issues discussed at education conferences still revolve around curriculum, methodology, or inclusiveness, which only resonates with the changes generated by digital technology. These issues are essential, but digitalization's impact will radically shape pedagogical change in the coming decades. As a result of the

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² <https://time.news/italy-bans-cell-phones-during-classes-and-compares-them-to-cocaine/>

strategies and practices mastered in algorithm-driven social media, we must now look at the most critical challenges in education through the lens of digitalization.

The study focuses on the phenomenon of attention to information selection and processing habits that affect pedagogy, the high degree of experientiality and flow in social media, the expectations of instant feedback, and the system of communication-based rewards.

In our provocative approach, in the information society, of which the attention-based economy is a prominent part, the communication processes determined by social media and smart devices already have a more significant impact on the learning and teaching process than, for example, the curriculum, the teacher or even the methodology. The consequence of the communication strategies, practices, and rites of passage adopted in algorithm-driven social media with personalized content is that the most critical challenges in education today need to be seen through digitalization and communication science.

The attention-based society

Since the 1990s, the growing penetration of the Internet has led to increasing content and services on the web. Individuals spend more and more time-consuming online content and communicating with other users, initially out of curiosity, and then increasingly for work and, to a lesser extent, learning. As a consequence of being online, some aspects of learning, such as obtaining information or even interacting with peers, have moved online and governments themselves have launched online education portals. The 2000s saw the opening up of read-only online platforms to users who could create and share content, a revolution of Web 2.0 (Gerencsér 2019, Tófalvy 2017). The previously passive position of the user was transformed into that of the active communicator. In the information society, which is the heir of an industrial society, the production, distribution, dissemination, use, or even management of information is a principal economic, political and cultural activity (Molnár et al. 2022:81).

This brings us to the 2020s, where the specific, dynamically expanding segment of the information society is the attention-based society and the related attention-based economy. Attention-based economics is an approach to information management that treats human attention as a scarce commodity. Digital technology, networks, and various algorithms are generating an ever-increasing amount of data and content, more and more of which is personalized (see, for example, Facebook ads or content recommended according to various pre-established preferences). Since human perception is finite, the ability to select between signals, in reality, narrows the choices. Attention with finite capacity thus becomes a value like precious metals.

The process began a generation and a half earlier, in 1990, when the web gave access to unprecedented amounts of information. This change has affected not only the economy but also the daily lives of users, society, and the way we communicate, consume media and learn and teach. The complexity of communication channels and media has increased considerably in an attention-based society. This complexity hurts attention, as the evolution of the human mind cannot keep pace with change. Moreover, experiential content is competing with each other at an ever-increasing rate; videos are getting shorter. The result is that attention is divided and fragmented, and the individual's mind becomes saturated and exhausted.

Educational challenges of an attention-based society

Education in this overflowing information society needs to redefine itself and use the tools and content of the web to organize teaching and learning processes. According to Bertalan Komenczi, the spread of info-communication systems is irreversibly changing the information environment in which individuals live. Networked computers and digital content are creating, in the process of convergence, a new universe of knowledge in a diverse world of information, telecommunications, mass communication systems, and institutions (Komenczi, 1999). This new hypermedia, interwoven with links and multimedia content, will make information available anywhere and anytime, but it is

attention that will be the necessary raw material for selection processes. Algorithms, however, put attention to sleep.

It has a prominent role in education, with several essential works published, but it is not a high priority in educational research. Research on digital pedagogy also considers the topic as a secondary one, even though in the digital ecosystem, the attention of learners in the classroom is often divided between the information provided by the teacher and the digital content on the screen. A practical example of this is that when learners use their digital tools in a learning process in a way that is not appropriate to the purpose, their interest quickly turns not to the knowledge the teacher is trying to convey but to content related to other subjects, essentially social media (TikTok, Instagram, Facebook) or even real-time communication - chat. Experience in higher education has shown that in huge lecturing halls, it is a typical image of students looking at each other's laptop screens and not at the teacher's lecture (Hadlington, 2015). Based on this experience, in a world of screens, networks, interactive digital content, and algorithms, we need to re-identify the factors that shape the design and management of teaching and learning in formal education (in organized, accredited institutions).

György Csepeli and Gergő Prazsák point out the phenomenon, which is closely related to the practice of learning and teaching. The role of memory is changing; the new culture means, among other things, that we must learn to search. Our brains have more space for thinking and creating. Internet use in society reaches a critical point when it loses its technological novelty value and becomes linked to culture." (Csepeli & Prazsák, 2010:13). Digital technology and the new forms of communication and media platforms that it brings have the potential to transform educational practices on an unprecedented scale. This also means that using digital technology in education can have extreme consequences. Intended use of technology that considers both pedagogical goals and the nature of technology can significantly increase educational effectiveness.

In contrast, the opposite can lead to a drastic decrease in effectiveness. The new ICT and social media are disruptive (creatively disruptive) because they can have a profoundly positive or negative impact on learners' attention, cooperation, or motivation. In the past, using any medium or technology in education did not carry many benefits but also dangers (Szűts, 2021). However, the educator community still deals with the topic basically at the level of tool management competencies.

In an attention-based society, information management practices related to learning and teaching are essential. This 21st-century competence is in the field of communication and includes the search, filtering, evaluation, sharing, revision, and protection of information. Since the 1990s, with the advent of the World Wide Web, the online ecosystem and its hypertextual environment of links has enabled the rapid acquisition of knowledge independent of time and space. Contrary to the Gutenberg tradition, the practices of the web, for example, still need to provide more guidance in selecting authoritative sources. However, in the present, it is clear that the attention-based online ecosystem has taken over the practices of print and electronic media designed to capture individuals' attention. Reality bending (Balázs, 2022), merging facts and opinions, disinformation or even fake news has moved from the tabloid press and conspiracy theories of closed online forums to the world of personalized social media. For example, clickbait headlines capture attention and take users' time away from learning activities. In this environment, the importance of learning selection routines developed in the face of information overload increases, but the education system does not provide sufficient practices to acquire them. As hyperlinks allow learners to scroll through information, they leave the world of textbooks and encounter a surge of reality, especially on social media. With the rise of fake news, images of war suffering replaced by sexual content, communication awareness is often lost, and social media tugs at the emotional focus. Lászlóné Majzik summarises the impact of the network on the teaching-learning process in the fact that online platforms allow a large (unlimited) amount of information to be stored and retrieved, which may call into question the planned development of memory skills. The author points out that the exercises for developing the ability to memorize are enriched with a new function: 'the task of counteracting the instantaneous information broadcast by the media. Learners must acquire the ability to distinguish between information and what is necessary to retain in memory from what is superfluous.' (Majzik 1997).

One of the essential pairs of attention in the digital ecosystem is multitasking and interactivity. Multitasking is "actually a lot of extremely rapid switching between tasks competing for our cognitive capacity, [but an important pedagogical question is] whether this rapid switching between tasks is useful for students, whether it makes the learning process more efficient, and whether the quality of performance of each task is not compromised." (Nádori & Prievara, 2018). In multitasking, learners' attention (users) is not focused on a single activity but results in attention sharing. A serious disadvantage is that deep attention, for example, is pushed into the background. At the same time, the attentional focus becomes shorter, but an advantage is that the user can absorb information on a broader scale. One of the centers of the attention economy is the display, to which the user's gaze is directed. Learners' interests are often not driven by intrinsic curiosity but by search engine and algorithm suggestions. Dozens of daily visits to sites, the compulsion to self-represent in the form of selfies, and microblogs distract from the need to gather and select information and make online exposure a routine practice, constantly blurring the boundaries between private and public spheres. The active scrolling of the endless message boards of social networking sites forces students to continually consider whether what they see there conforms to unrealistic norms and standards. All these exercises take place within minutes of each other. They require a brief but concentrated attention span, making a novel of several hundred pages seem virtually impossible for students and an endless task in time. The rapidity of the information-gathering exercise also fosters a sense of impatience rather than the in-depth research expected in the present and the understanding of the facts, stories, and principles behind the phenomena.

In practice, multitasking has been observed to affect attention in the classroom. The use of media by individual students, multitasking between smart device applications or between smart devices and computers, has a significant impact on the functioning and dynamics of the classroom community. The results also show that the performance of students who watched content on other people's screens was reduced. Therefore, this activity was a distraction, as they focused on alternating, attention-grabbing content on the screen instead of information shared by the teacher. We hypothesize that learners who multitask daily are slower to notice changes in visual patterns and more likely to misremember previously learned information. Levente Székely points out that multitasking is related to the transformation of the concept of time, as time and space are not given as an alignment framework but as changeable parameters (Székely, 2017). Therefore, we should prescribe the kind of lesson planning in which digital media always serves the teaching goals, and the communication processes should be channelled into the lesson. This could be the practice of browsing and searching for resources related to the subject matter in a multitasking context or the communication during group work while editing content, which can be immediately copied into the product.

Before the World Wide Web, the character-based Internet was also a way to exchange information quickly, access library databases, or even correspond. However, the medium needed several elements that define online communication and media today: exciting content with links, high-resolution visuals, the ability to create in a digital environment that also supports the experience of flow, and a high degree of experientialism. Digital tools are associated with many positive experiences but also with stress. Education in digital environments and networks is also embedded in the communication and media science system regarding experience, creativity, flow, anxiety, or instant gratification. In this field, the knowledge of communication and education science is split. In the former, the positive effects, the pleasure of involvement or discovery, have been a significant factor in the spread of ICTs in recent decades, fostering the desire in users to buy digital devices and connect to the network online. Users tolerate the failures of systems and seek new solutions. At the same time, the adverse effects on individuals of using these tools for pedagogical purposes can quickly give rise to a sense of failure. The consequence is that users - in our case, teachers and students - turn away from technology, and only those fearless of making mistakes continue to use it. Unreliable devices that can only interact with a delay, and intermittent video playback, can cause stress in students and teachers alike, which can hinder the learning process and thus have the opposite effect to that intended by the learning objective. In contrast, an unstable application or a slow internet connection during leisure time has

only been found to cause significant stress if the user is playing a game, engaging in a time-sensitive activity, or is in a competitive situation.

All these phenomena are related to the experience of flow. At the heart of Mihály Csíkszentmihályi's flow theory is the peak experience and its experience. This peak experience is achieved when the individual becomes deeply absorbed in an activity. The perfect moment is the flow, which is the unity of joy and creativity (Csíkszentmihályi, 2014). Since the individual perceives time differently during flow and becomes immersed in the activity, it seems obvious to apply the theory to the online environment, which developers of applications and tools are also doing. For example, in learning, the flow is hindered by the sheer volume of information flooding in, which, as we have discussed, distracts attention and dissipates the ability to focus. So learners need considerable self-regulation and media awareness to immerse themselves in learning activities with digital tools. The interactivity inherent in online media allows users to exercise control over the creation and content and, to some extent, the flow, thus arbitrarily defining peak and trough points and flow points. In learning with digital tools and networked environments, flow is manifested in the creative process of making, for example, in digital storytelling, where the learner becomes absorbed in the creation. According to Sándor Forgó (2014: 81), the experience can also be interpreted as the – online flow experience world – of the producer-consumer (prosumer), since in the online space, we move forward, step by step, from side to side, almost imperceptibly, even in a flow state, while a firmly focused attention characterizes our mental state, often by a change in the perception of time and by self-absorption and (apparently) aimlessness.

Previously, websites that loaded up computer screens and, since the 2010s, social media content that has taken up a significant amount of screen time on smart devices have changed how knowledge is managed and claims are made, proven, and argued. The academic hierarchy that prevailed in the printed book system and even in the electronic media system no longer lasted. There are far fewer institutionalized knowledge holders; to use a somewhat simplistic term, anyone can become an opinion leader online. One practical manifestation of this is that in the Covid outbreak, the debate on viruses and vaccines on screens is so severe that academia has joined the discourse alongside the general public and sceptics, and it is unclear which side will 'win the battle' to take the position of authority. One reason is that the democratization of online media - and the proliferation of freely writable databases - means that anything can be claimed, and the opposite can be claimed. Moreover, a significant community can be organized behind these claims, given sufficiently experiential content.

The expectation of immediate feedback

One of the characteristics of social media is an immediacy and the system of instant feedback closely linked to it. While these phenomena help to speed up communication, they are a significant challenge in education. Students evaluate themselves, their appearance, or even the importance or success of their activities in light of the instant likes they receive on social media. In contrast, it still takes teachers several days to improve an essay and get feedback on the results. The consequence of this high level of interaction through tools is that individuals develop a need for immediate feedback, making school communication slow for learners (Wilmer & Chein, 2016:81). Social media has created a dependence on direct feedback. At the same time, education through ICT cannot meet the need for quick and high levels of input generated by algorithms simply because of the lower number of interactions. One consequence of this is that students' attention in the classroom – if they are allowed to use smart devices but are not given specific instructions and the task is not sufficiently experiential – is diverted towards social media platforms or even real-time communication platforms and interactive content, where they receive immediate rewards. The always-online state, palm-worn smart devices, real-time communication, and social media all lead to an instant increase in dopamine levels. For example, when an individual waits for a message, they check their smart device more often than usual. When the notification of the message appears, dopamine levels spike and then suddenly drop. A loop develops, and it becomes increasingly difficult to stop checking what signals you are receiving from your device. This can negatively impact motivation and distract from the learning process, during which feedback is much less frequent (Robertson, 2017). In this way, instant gratification, combined with multitasking,

can become a factor that makes learning difficult. This constant readiness diverts learners' attention and focuses away from the task at hand, preventing immersion. This prevents the flow that helps understanding and the long-term storage of knowledge in memory.

Conclusion

Education is familiar with the role of attention in learning, but the issue has yet to be explored in detail in digitalization. This is because digital pedagogy has so far focused mainly on the use of tools and methodologies. An important area for future research could be to investigate the impact of smart devices and social content on the attention of individuals in terms of what is expected of education in this changing learning environment.

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