

BASICS ON THE USE OF DIGITAL MEDIA IN TEACHING

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Abstract: The usage intensity of media has changed, the spectrum of “teaching media” has expanded considerably. A standard developed, “acoustic”, “visual” and “audiovisual”. The history of digital media, where information is conveyed via interfaces, began in the 1980s. However, their existence alone does not lead to effective use in the classroom. Adaptations by teachers and students are necessary. Media competence is essential. The use of digital media in the classroom must be viewed in a differentiated way; research shows that educators have a crucial role. Not only are the media important, but also how they are integrated into the lessons.

Keywords: Digital media, teaching, media education, media literacy, studies.

Historical Background On the Topic of Media

Until the spread of the Internet in the 1980s, radio, television, newspapers, magazines, etc. were essential for information and (political) opinion-forming processes. Information was provided by so-called “push media”, with a passive role of their addressees. With the spread of the internet, this period of media history gradually changed. In the 1980s, the history of digital media began. Here, information is conveyed via interfaces, and users can also become active. Tim Berners-Lee, a British physicist and computer scientist, then published a so-called concept paper for a system of distributed documents on the Internet in 1989. The implementation simplified the use of the internet in a revolutionary way. One no longer had to make complicated entries, but could go from one document to another connected document by “mouse-click”. Thus the World Wide Web was invented [1].

However, the full cultural potential of digitisation was not available until the mid-1990s. Computers were now no longer just individual machines, they became parts of a network. This network, as a cultural matrix, when viewed longitudinally in history, surpassed everything that had previously existed in the realm of knowledge and experience. Comparisons with the invention of writing systems, the alphabet, printing, etc. are in controversial discussion with the fundamental nature of the digital transformation [2, p. 88 f].

In the field of science, it is assumed that the year 2002 was the year in which humankind was already able to store more information in digital than in analogue media. This was the beginning of the “digital age” with rapid developments of digital media, which are, however, very dynamic. Already at the turn of the millennium, significant technical developments took place. This was now in the context of Web 2.0, which went far beyond the logic of Web 1.0 and enabled diverse communication and participation. Meanwhile, the history of the internet stretches from Web 1.0 to Web 4.0 [1].

Medium or Media

The meaning:

In the field of contemporary science or communication, a medium is basically a set of instruments for communication. It is understood here as a means of communication. In media studies, different concepts and objectives have developed in the context of media [3, p. 15 ff] [4, p. 122 ff].

Media are by no means understood as arbitrary communication phenomena and/or communication aids, but rather as social institutions that have become permanently established after general acceptance.

There is no uniform definition of the medium. What is clear, however, is that a medium makes communication possible in the first place. One can distinguish several dimensions of the concept of media. These are media as a form of communication, the physical concept of media (media as a means of perception), the semiotic concept of media (media as a means of persistence) and the technical concept of media (media as a means of dissemination) [5, p. 183 ff].

The broad and the technical concept of media¹

The human being as a personal medium

In the field of research, the distinction between the broad and the technical concept of media, which is common in media theory, is also significant. The broad concept of media also includes the human being himself; he is a personal medium. Here also his language, his gestures, his facial expressions, his posture, etc. MacLuhan’s assumption in the context of the broad concept of media is that a medium is not intervening, but a comprehensive, revealing instance. This means not something to which, but in which people behave. Therefore, media are mediators between people and their environment. Every communication has a media component [6; 7, p. 305].

The technical concept of media can be explained on the basis of three aspects:

1. the technical aspect: this is the apparatus component and the statement (information) contained in the medium. The pupils and the pedagogues must be able to operate the technology of the medium.

2. the semantic aspect: this is the content and its media design. Educators and pupils must be able to understand the content conveyed.

3. the pragmatic aspect: this means the exchange and dissemination of information and the related intentions of the designers and the interests and needs of the users. Pupils and educators must be able to use and design the media for their own communication [8]².

Cultural Change and Media Change: An Interrelation in the Context of Media Culture

The concept of the medium also developed into a concrete concept in cultural studies around the mid-1980s and defined the concept of media culture. In modern communication and media research, the mediatisation of culture is increasingly the focus of academic research. What is essential here is to grasp how culture is permeated with media and shaped by media. An interrelationship of cultural change and media and communication change is assumed [9, p. 27 ff].

If the diverse forms of medicalisation are not only grasped as subjective expressions but also as elements of a supra-individual discourse about human beings, these become scientifically tangible as constitutive elements of media cultures. Here, media cultures are understood linguistically simplified as a functional totality of medium, media production, media use and assignment of meaning. They are culture-specific, historically changeable and the product of a discursive process. Viewed in the historical longitudinal section, they are renegotiated again and again. Changes in media culture are often based on significant cultural paradigm shifts. One example of this is digitalization [2, p. 88].

The functions of media

The fourth power or force in the state:

In democratic states, media fulfil fundamental functions. Above all, they should inform the people, contribute to opinion-forming through criticism and discussion, and thereby promote (political) participation. The media are often referred to as the fourth power or force in the state. This is an informal term for the public media, such as the press, radio, etc. "Fourth

power" here means that there is a fourth, a virtual pillar in a system of separation of powers. This must be explained to pupils and students, however, because equating it with the three classic powers of the state in democracies is fundamentally problematic^{3 4}.

In democratic societies, the media have long had important functions. First and foremost, they provide information, but they should also create a public sphere that is as plural as possible and thus contribute to the formation of opinion and will. Creating the framework conditions is the task of media policy, which, however, may not exert any influence on content⁵.

Educational Media

Imparting information: Types of use or forms of use

In the context of teaching, media are referred to as "instructional media"; in this context, they are a means of communication used in the classroom for didactic purposes. In addition to textbooks, instructional films, etc., digital media have been current for quite some time. Here they are instruments to achieve teaching goals. They help to evoke parallel learning processes of pupils and can also act as multipliers [10, p. 1 ff].

In particular, texts, illustrations, computers and the Internet are essential teaching media. For use in everyday school life, the types of application or forms of application of learning software, digital encyclopaedias, Internet, etc. are particularly important [11].

(Digital) media are necessary for the acquisition of knowledge, but they are not uniformly defined. However, the communication of information is always essential, it is coded on the basis of a sign system (language, pictures, music, numbers, etc.). Educators must prepare information didactically well, especially in order to optimise learning processes [12, p. 54]⁶.

Gislinde Bovet and Volker Huwendick describe instructional media as "all those aids (...) that are used as a substitute for experience or as a proxy for reality in the classroom" [13, p. 170].

Hüther additionally integrates the improvement aspect in the definition of media in the context of education or teaching by considering media "as the totality of technical aids (...) that serve in a didactically planned way to improve teaching and learning situations" [14, p. 234].

Media Education/Media Literacy

Media Education:

From the point of view of the Federal Ministry of Education, Science and Research in Austria, "media education refers to a self-determined and self-responsible use of media. Media literacy here enables the well-founded reflection and creative design of media⁷.

Media education is “...dedicated to the established media cultures and reflects the ever-changing media worlds. Media education is understood as personality development, as a process and as the result of the mediation process of world and self through media”⁸.

Media literacy a key competence:

Media literacy refers to analogue and digital media. It is a key competence to make better decisions. It is necessary to be able to choose well between different media, to critically evaluate content and information and to communicate in different media. It is also necessary to be able to use the potential of the internet in an unrestricted, risk- and media-competent way⁸.

For the education sector, Dieter Baacke's definition, among others, is of interest here. According to Baacke, media literacy is the ability to use all kinds of media for people's repertoire of communication and action in a way that actively appropriates the world (Prof. Dieter Baacke).

Media competence is an essential goal of media education efforts. Baacke's definition is based on Habermas's competence model for communicative action and is a model of communicative competence [15, p. 122 ff]⁹.

Baacke sees the teaching of media literacy as the most important task in the field of media education; it is a learning process for all people. People who are media literate can actively use media, they can communicate their own opinions and thereby participate in social discourse. This is much more than “just” operating media. In education, it is a “*conditio sine qua non*” [16, p. 98 ff].

Media competence is essential during school life and for the rest of life. The targeted use of digital media and the achievement of media literacy in the classroom is essential, and possible areas of tension should also be identified here [17, p. 49 ff, 18, 19, 20, 21]¹⁰.

Studies On The Use Of Digital Media In Teaching

Study: Advantages of teaching with digital media from the perspective of educators and pupils. Gogues and pupils (study report by Lancaster University) [22].

A joint research project of Lancaster University and a grammar school in Solingen, Germany, showed that the use of digital media improves the learning process in the subjects studied. In addition to the advantages of didactic use of the potentials of digital media, educators and students also named essential advantages of teaching with digital media. These are: A stronger interest and higher participation. The oral participation of the pupils in the lessons was clearly better / faster and more interactive work.

Contents of individual lessons could be worked on more quickly. As a result, the learners were attentive and concentrated for longer/a more intensive exchange and a better understanding. Learners discussed more often, learned from each other and thus understood the topics covered better/a more flexible access to lesson content in terms of space and time. Learners were able to review what they had learned at school at home and access resources online in the virtual learning environment/higher visibility and audio quality. The lesson content was more clearly recognised throughout the classroom and audio content was very well understood/efficient teaching with a wide range of possibilities (Lancaster University study report).

Study: Digital media are not good or bad per se (Research of the Humbolt University of Berlin)

In the field of classroom research, the research findings of Heike Schaumburg on the potentials and risks of digital media in the classroom are particularly significant. According to Schaumburg, research on digital media indicates that educators are very decisive. It is not the media themselves that are important, but how they are integrated into the classroom [23].

Summary/Comments

In the course of centuries, not only has the intensity of use of many media changed, but the spectrum of “teaching media” used has also expanded considerably. Initially, it was booked, selectively and then widely used, which was important for the school sector. Consequently, a certain standard of teaching media developed in the school sector, “acoustic”, “visual” as well as “audiovisual”. In the early 1980s, the computer established itself as a central media innovation and as a mass medium. Digital media then gradually became standard, but their presence did not yet enable effective meaningful use. Adaptations by teachers and pupils were and are necessary. This also means acquiring knowledge in the context of a (worldwide) knowledge network. Digital media are already a necessity here in the context of school, both for “learning methods” and for “teaching methods”, especially for the transmission of knowledge and skills. This requires above all media education, including media literacy etc. and also knowledge of information technologies. In the present, digital media are already very relevant in the context of school teaching, especially because users can also become active. However, the situation must be viewed in a very differentiated way, especially with regard to different school levels, types of school, previous knowledge, etc. and also the topic of the "digital

divide". It is essential to show pupils that (digital) media are above all mediators between people and their environment; every communication has a media component. Digital media affect everyday life and education, which is why both areas are essential for the acquisition of competences. Due to European, international and global developments and contexts, the use of digital media is already a necessity. Digital media are instruments to achieve teaching goals. In principle, they help to evoke parallel learning processes of pupils and can also act as multipliers. In the context of teaching media, they can be regarded as technical aids that contribute to the improvement of teaching and learning situations in a didactically planned way. Audiovisual media, which are often used as "enrichment", also serve this purpose.

A well-founded reflection and creative design of the content are very necessary for the field of education; this requires media competence. According to Baacke, teaching media competence is the most important task in the field of media education, it is a learning process. This is much more than "just" operating media and is a "conditio sine qua non" in the field of education.

The analysis of the two scientific studies on the topic of digital media in the classroom brought, among other things, the essential research result that the use of digital media improved the learning process in the subjects studied. This was the result of joint research between Lancaster University and a grammar school in Solingen. Researchers from Lancaster University had scientifically accompanied the introduction and use of two SMART Boards for eight months. The research result of Heike Schaumburg and her research team concerning the potentials and risks of digital media in the classroom is very important. The essential facet "It is not the media themselves that are important, but how they are integrated into the classroom".

Notes

¹ <https://foc.geomedienlabor.de>. Sidebar: AB02-1: The broad and the technical concept of media

² (Filzmaier et al., 1999, p. 248) Two other topics in the context of education should also be addressed. These are the re-evaluation of political institutions and the thematisation of the threat or endangerment of our existence and our previous way of life

³ (Die Presse, Friday, 10 May 2013, p 1) The topic of "Big Data" is also very topical for the education sector. In this respect, it is also important for students to know that our behaviour is becoming more predictable every day than it used to be due to the increase in the amount of data. However, new cross-connections between these data can be very problematic

⁴ [bpb.de](https://m.bpb.de) // [https://m.bpb.de>grundfragen>medien-die "vierte gewalt?"](https://m.bpb.de/grundfragen>medien-die-vierte-gewalt?), p. 1 f

⁵ [Hsozkult.de](https://www.hsozkult.de) // <https://www.hsozkult.de/journal/id/zeitschriftenausgaben>, p 1

⁶ (Kerres 2013, p 584) According to Schelhowe et al, four learning processes can be defined or distinguished. Learning process 1 means that learning takes place through a simple access

to concrete messages or factual knowledge. Learning process 2 means that didactic preparation of information is essential for learning complex facts. Learning process 3 means that socialisation and end-culturalisation of learners take place or should take place. Learning process 4 means that (digital) media can contribute to identity and personality formation.

⁷ **Bundesverband Medienbildung** // <https://bundesverband-medienbildung.at>, p 1 ff

⁸ **bmbwf** // <https://www.bmbwf.gv.at/> Media education includes critical and creative thinking as well as the resulting action as essential areas. Media literacy refers to the ability to use digital media, to understand their contents and to critically question them.

⁹ (**Süss et al 2013, p 125**) In addition to the term media literacy, the term "media literacy" from the Anglo-American language area is also in use. Media literacy has now also become relevant in areas of the European Union (EU). For example, through media literacy projects, EU citizens should participate more actively in processes within the EU.

¹⁰ <https://de.m.wikipedia.org/wiki>, p 1; see also http://www.unifr.ch/mukw/sgkm2008/uploads/P07_Dohle_Vowe_Wodke.pdf, p 1 ff). The appropriation by or the exploitation of the media should also be a teaching topic (medialisation). It is a theoretical approach in communication studies that explains changes in social spheres by the fact that communication is increasingly oriented towards the time horizons, selection rules and role specifications of the media.

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