

Artificial Intelligence for Educational Practices – Opening an argumentative Framework based on Cultural Theory

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Artificial Intelligence emerged in a long cultural-historical line of text production from the printed book via the written knowledge collection of the encyclopaedia to the digital collective knowledge summary of Wikipedia on the Internet. But AI is also changing the familiar societal structures of knowledge production and knowledge appropriation with effects at the agency of children and youth in the processes of their personal development. Because these processes within the actual cultural transformation entangled with AI is just at its beginning, therefore this paper refers to ChatGPT, which arrived everyday life, as one of the first AI programmes for generating texts. Further, stablediffusionweb.com is the example for producing images. The running cultural transformation which correlates with the development of AI is operationalized in four categories of cultural disruptions: contexts as the recent version of space, multimodality of representation, objectivation of agency, and subjectivation of reality. The educationally oriented assumption is that the interrelation of social structures and subjective agency, namely the relevant categories of the Giddens' structuration model, asks for practical interventions in formal learning. Leading outline for a practical educational design is the interpretation of AI as a conversational relation with its users; conversational in the sense of interpretative activities of meaning making which opens and connects - among others - situations of everyday life, the Internet, and formal learning. A leading educational category is to support the development of children and youth as experts in and of their everyday lives by appropriating cultural processes and objects, further by participating in culture.

Introduction: Artificial Intelligence entangled in Culture and Communication

With an orientation to social semiotics, AI can be explained as an algorithmic and conversational generation of multimodal texts and actions in contexts. This definition correlates with the intention of this paper to get an educational access to AI as recent cultural product (see also the overview of Nemorin *et al.* 2023). The aim is to become aware of AI in the rational of the cultural development of knowledge from the book via encyclopaedia of the European Enlightenment to digital objectivations and digital processes like Wikipedia.

This perspective from the European Enlightenment is more than just challenging. Challenging means, it is theoretical risky but motivates the author of this paper to look just to one of the first AI-instruments which appeared in everyday life, which was ChatGPT. In this historical perspective at our recent everyday life, AI is seen as a cultural product which is based on information technology, e.g. in everyday life the smartphone with its variety of apps.

1. Theoretical key concepts: structures and agency, meaning making and multimodal representation

For getting a cultural and societal perspective for interpreting AI, it is necessary to widen the theoretical orientation by looking to the human agency within societal and cultural structures. Agency and structures are the central key concepts, which lead the argumentation of this paper. Agency (Giddens 1984) entails looking at human options of acting and reflection, of communication, and of personal development within societal and cultural structures. E.g. to such structure belong AI's global impulses to everyday life with its multimodal public communication. This leads to the theoretical frame of meaning making and conversation (Laurillard 2002, see Par. .2). The term conversation refers to discourses and interpretative activities of meaning making around learning, further, to the key concept of multimodal representation as "semiotic resources for making meaning" (Kress 2010, 79) (see Par. 4.3) in relation to the information technology's dynamic of AI.

2. The running cultural transformation governed by disruptions leads to a societal and cultural invalidity

In addition to human's agency, with particular reference to the appropriation of knowledge and to the field of public communication as a cultural structure, the theoretical endeavour of this paper is oriented towards cultural transformation. In this transformation, information technology is not only entangled, but also cultural transformation is shaped by information technology. The assumption of this paper is that the long running cultural process in which AI emerged was and is moulded by the running cultural transformation with disruptions as a leading cultural structure (see 3rd chapter of this paper). In addition, AI also contributes to cultural disruptions like the dominance of multimodal forms of representation in everyday life, e.g. with the reduction of the linear writing and reading of a person by using the traditional characters of the book. Therefore, reading and writing deficits of students are no longer just individual deficits but results of the cultural transformation of representation to multimodality to which AI will contribute, currently e.g. with the AI app ChatGPT. In addition, the running cultural transformation introduces digitally organised societal fields which are based on Internet spaces like Tiktok. In this cultural and technological line, nowadays, space is no longer defined in the sense of the Renaissance's central perspective. The central perspective enhanced humans to see and consider 'the' reality in 'my' oppositional relation to reality by means of 'my' perception and its objectivation which is organized by the cultural product of the central perspective. Digitally organised societal fields like the so-called social media are now normal in our culture, but they are based on the disruption of what was defined as space in the European culture since the Renaissance.

A further cultural disruption led to the subjectivation of reality (Schulze 1992, "Erlebnisgesellschaft" / experiencing society) and – in a supplementary contrast - to a digital objectification of agency in everyday life. Because the objectivation of agency within everyday life happens today in modes of measuring within and by economy (Mau 2017). It happens also in the mode of control, e.g. my smartphone 'knows' what I have looked at on Amazon and shows me how to proceed getting it. Specifically control and measuring happens also with a digital watch at the wrist or a navigation

system in the car. AI technology will take over this system of control and measurement.

The actual educational risk of AI within this transformative cultural development focuses on the agency of children and youth within their pre-given structures for their development which does have the capacity to alienate them from their personal development. The economic dynamic of AI together with claims to power will not only influence education and development, it will even shape it. Therefore, the educational effort is on enforcing children and youth against such alienation, among others by recognising in formal learning their age specific experiences and expertise in everyday life. The idea of a supportive agency orientation in education was already developed in the European Enlightenment e.g. by Jean-Jaques Rousseau (1762 [1963]) and the young Wilhelm v. Humboldt (1792 [2002]) (see also the educational framework of Rahm *et al.* 2023).

Summarising these argumentative elements, KI is an information technological product and a cultural object which emerged within processes of cultural transformation, and has consequences for agency, among others, by changing conversation as interpretation within everyday life and formal education. Changing agency is correlating with AI-related cultural structures with consequences for subjectivity and objectivity, for power and autonomy, as well for cultural basics like spatial contexts and representational modes.

3. AI as Simulating Conversation: A theoretical view with a practical example of ChatGPT

These assumptions and concerns about changing cultural structures and agency in relation to AI suggests having a look at everyday life, including practical education, and then again at the issue of cultural transformation. At first, a look at a simple conversation with ChatGPT.

3.1 Chat GPT's own definition of AI as Simulating Conversation

AI, since autumn 2022 with its newly offered Chat GPT 3, an "OpenAI Textgenerator"¹, is in an intensive educational and public debate. In an educational perspective the issue of assessment and whether the learner is the author of a text as a performance record was considered. If one asks the internet site of ChatGPT (<https://chat.openai.com>; May 8th, 2023): "ChatGPT – assessment", the written answer is: "I'm sorry, I'm not sure what you're asking for. Can you please provide more information or clarify your request?" This could be an answer of an academic colleague. The reaction of the human questioner, the author of this paper, to this "request" was to update the request, but by coincidence with a tiny spelling mistake: "Relevance of ChatGPT for assessment in education". The complex answer of ChatGPT started with a definition of AI in a social semiotic perspective:

«ChatGPT is an AI language model that has the ability to understand natural language and generate responses that mimic human-like conversations. As such, it has the potential to be a useful tool in assessments in education, particularly in tasks that require language proficiency or writing skills».

¹https://www.chip.de/downloads/c1_downloads_hs_getfile_v1_184562671.html?detailUrlId=184562669&detailSpeakingUrl=webapp-ChatGPT-OpenAI-Textgenerator&t=1683530725&v=3600&s=81ea088f985d158897da1047bb85738f.

Among other things, an educationally remarkable statement follows:

«ChatGPT can generate questions and respond to answers in a way that simulates a conversation, allowing for a more interactive and engaging testing experience».

My first reaction to reading the core of this defining statement: “that simulates a conversation” was, that ChatGPT used the information from my personal notebook to identify me as an academic with experiences in social semiotic and therefore offered me the keyword conversation for getting me into a simulated conversation. (My reaction hints to the power structure which is combined with AI.)

Of course, Simulating Conversation, is a helpful interpretative opener from social semiotics to the digital algorithm AI. But this statement: Simulating Conversation, does not point in the direction of the running disruptive cultural transformation, instead it promises continuity with its reference to language, communication and meaning. But continuing the semiotic approach to ChatGPT’s definition of AI, I would like to recommend the following statement to define AI:

«AI can be understood as the algorithmic and conversational generation of multimodal texts (multimodal representations) and actions in contexts».

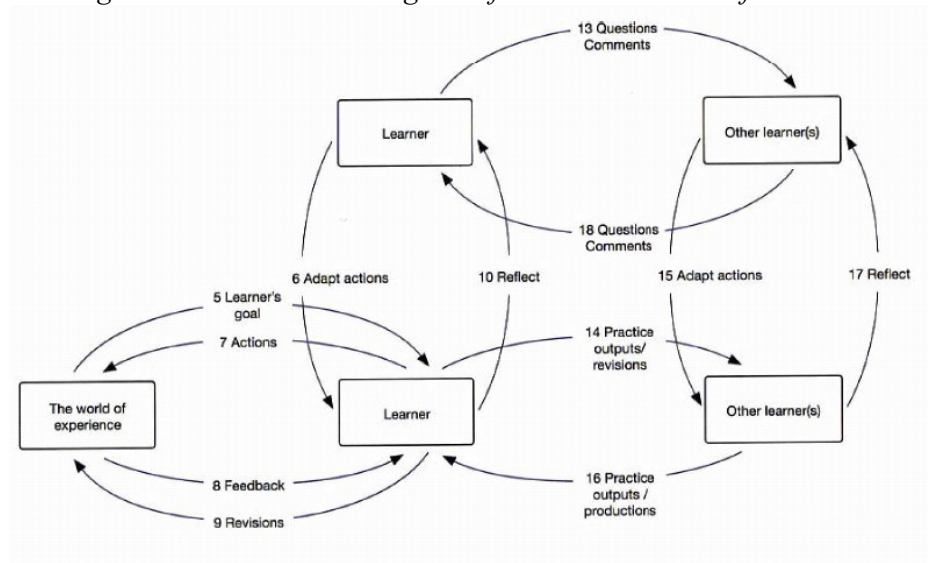
Key words of this definition: algorithmic generation, multimodal representations, contexts hint to a severe cultural transformation. For example, the term actions in contexts lead to a new definition of space. Space was a central category for defining subjectivity in the time of the European Renaissance which is – simply said – replaced by contexts (see 3rd Paragraph, section: Disruption 1: The new space as context).

3.2 *What is conversation about?*

The term conversation links formal learning to meaning making. It aims to capture interpretative activities of meaning making around learning, e.g., in everyday life, and their implications to formal learning. In the British debate, Diana Laurillard (2002, 2007) developed a “conversational framework” for technology-enhanced learning which integrates the constructivist approach of cybernetics, in particular, that of Gordon Pask (1976). Pask rooted his formal cybernetic argumentation about learning in relation to early computer programming by framing learning as a conversation. He did not conceptualise conversation as an option of everyday communication but, instead, he viewed it as “one method of exteriorising cognition to engage on a verbal conversation” (Pask 1976, 1).

Laurillard’s diagram of the conversational framework (2007, 171) shows the interpretative structures of formal learning in schools by means of the smartphone, which in these times, 2007, was a newly constructed, innovative, digital tool (Figure 1). By means of the Conversational Framework the smartphone’s interpretative options beyond talking became visible. In terms of the Conversational Framework, the school could get access to the world of experience via the students with their digital tools. This includes teaching and everyday strategies such as setting goals by the learners, taking actions, giving feedback and revision by means of the Smartphone as digital invention. And now by AI apps.

Figure 1 – Laurillard’s diagram of the conversational framework



2.3 Generating images, an example for an AI based conversation

At <https://stablediffusionweb.com> one can “generate images” by “entering your prompt”. By the “prompt”: Artificial Intelligence, one receives (June 30th, 2023), among others, the following two images (Figure 2).

Figure 2 – Images generated in Time 1 with the prompt “Artificial Intelligence”



Some days later one gets completely different images for the “prompt” Artificial Intelligence e.g.

Figure 3 – Image generated in Time 2 with the prompt “Artificial Intelligence”



Just a remark: Using the website’s proposal to use the term “prompt”, a theoretical communicative option is opened. As user in a learner’s mode of trial and error one can ask Wikipedia (<https://en.wikipedia.org/wiki/Prompt>, 6.10.2024) about a differentiated meaning of prompt: “Prompt engineering, a concept in artificial intelligence in which the description of the task is embedded in the input, e.g., as a question, instead of it being implicitly given.” Or, one can remain in a terminological naivety like the question below.

By entering the “prompt”: AI then <https://stablediffusionweb.com> offers e.g. an image with a dancing female robot (Figure 4).

Figure 4 – Image generated with the prompt “AI”



As a result for the typed “prompt” conversational the website stablediffusionweb.com offers the images below (Figure 5):

Figure 5 – Images generated with the prompt “conversational”



In my impression, these images are rather arbitrary. In general, such options of AI generated images inherit power and control as well as creativity and conversational

designing of formal education. The “facial recognition on streets”² by checking the individual identity on the public street is directly connected with power, control, framing restrictions. But the option for generating images inherits also new ways to and for creativity. Therefore, as already written above, education has to deal with the alienating impacts of AI for the development of children and youth as well as with their supportive options, always by looking for the running culture historical transformation. For understanding these transformative processes in respect of generating images, a comparison of images generated in 2014 by students (Bachmair 2016) and now 2024 by AI is helpful. This view backwards supports also to integrate AI now by educational procedures. In 2014 in a school project about War in a School for Special Educational Needs the students produced images about ‘animals in war’. This request to students: ‘animals in war’ now in 2023 was given as input to the AI generator <https://stablediffusionweb.com> (July 1st, 2023), which led to the results below (Figure 6).

Figure 6 – Images generated with the prompt “animals in war”



The school project in 2014 in London made war concrete with the focus on “animals in war”. Students in 2014 found such images on the internet, as well as at events and cultural objects in London. Furthermore, some students also insisted to go their own way and produced e.g., a comic by means of the software Halftone2 (Figure 7). The design for this lecture, for which the teacher was responsible, offered students the option to an additional and independent learning objective. The question is, if such an option is also a feature element of an AI-app and how such an option supports the learning development and personal development of the students? Looking for conversation as a design feature of a lecture, the students are motivated to apply their everyday life expertise in softwares for creating their own mode of writing, a multimodal writing with letters, images, videos, sound (Kress 2010). Further, the complexity of generating images in a school should not get lost by applying AI-software, even if the complexity of the students’ competences requires a lot of teaching time. Transferring such software expertise from everyday life into the school environment widens intensively the learning context inside the school, theoretically spoken – by conversational options offered by students. This should not get lost by the AI technology.

² E.g. The Guardian’s report from May 10th, 2013: „MEPs to vote on proposed ban on ‘Big Brother’ AI facial recognition on streets”, available at: https://www.theguardian.com/technology/2023/may/10/meps-to-vote-on-proposed-ban-on-big-brother-ai-facial-recognition-on-streets?CMP=Share_iOSApp_Other.

Figure 7 – Images generated by students



4. Cultural continuity and cultural disruptions

AI with its social semiotic features appears as a developed digital technology within the diverse processes of the running cultural transformation with some historical continuity but also with heavy cultural disruptions. Mainly education should ask for the historical guidelines in which AI emerged and is developing.

4.1 AI within cultural continuity and transformation

What does AI mean as a digital innovation within cultural continuity as well as within cultural transformation and cultural disruptions with consequences for education? If education and pedagogy generalise and historically classify the existing concepts of instruction, of learning, of appropriation – e.g., the assessment in schools as actual mode of reflexion and control - then a discursive, conversational door to an educational innovation could be opened. Education as part of digital structures of the Internet depends on cultural standards, frames, and pre-sets, for example on prevailing power which also defines education. However, now a *But* is necessary: Education's task is not to follow what is expected by cultural politics, socio-politics and economy as well as its terminology. The leading criteria is – as written above - the development of the children and youth in human dignity. Therefore, a view at the running cultural transformation is appropriate, especially for the recent disruptions with relevance to the digitally simulated conversation, called AI. As already written above, one can see, ChatGPT 3 as AI's text generating version which prolongs the cultural line from Johannes Gutenberg's printing technology with printing press and movable types from mid-15th century via Denis Diderot's Encyclopedia from mid-18th century, nowadays, e.g. with Wikipedia etc. But there is also the inhuman option to the alienation of human beings from their communicative, conversational activities e.g. by war, dictatorship, digital economic exploitation, or by public control like "facial recognition on streets". Therefore, looking for the innovative cultural continuity from Johannes Gutenberg, Denis Diderot and Wikipedia to AI, pedagogy opens the view at cultural participation by written characters, by reading and writing, not the least by opening the school for

everybody in times of the European industrialisation. Reading and writing offer also an intellectual reflexivity which has not to follow an authoritarian default. This should not prevent the view at the historical discontinuity of culture, which leads to ask for recent cultural disruptions. On the first view the written text of ChatGPT above looks like a proceeding of Gutenberg's movable-type printing press from the mid-15th century. Of course, there is no more movable-type printing. The ChatGPT text above is produced on the screen of a laptop and could be copied into a traditionally printed book or journal. And it fits to the writing and reading modes of the school during the last two centuries. The normality of a visible and reproducible written text on screens is obvious. But it is correlating with cultural disruptions like the recent normality of multimodal representation, now multimodality as digitally formed and offered cultural resources from traditional characters to sounds, songs, or videos on diverse screens and other private or public means of presentation. Looking at an advertising flyer of a big shop it is visible that written characters are relevant for the multimodal representation of advertising, but images do have the leading function. Multimodality of representation is typical for advertising and consumption as a feature element in everyday life. Such a boring printed text like the text from ChatGPT above which consists of linear writing with the letters of the alphabet could get accepted e.g., in the field of academic research or in the traditional version of the school. Of course, there are multimodal versions of AI which correlate with young people's expectation of multimodal writing which is close to everyday life's advertising with a combination of alphabet, GIFS, photos etc. like in WhatsApp. This corresponds with the extension of the AI's options for multimodal representation to images e.g. "Big Brother AI facial recognition on the streets"³.

4.2 A cultural-historical view at multimodal AI-representations in contexts

What is the impact of AI-based generated images and similar multimodal representation for formal learning, having in mind that formal learning is traditionally focused at the characters of the alphabet? Deficits in reading and writing are on the public agenda⁴. But multimodal representations are in the foreground of everyday life's literacy e.g., when one goes shopping. Therefore, multimodal representation seems not to be adequate for institutionalized learning in our actual schools. It is seen as a destructive cultural transformation. This corresponds with the suspicion of the school as an institution school against digitally based communication, especially the communication of everyday life. Therefore, e.g., the digital opening of the teaching space in the traditional sense of the classroom was not successful during the Corona crisis in the school as an institution. The running societal digital transformation by the Internet, mobile devices, and now by AI-modes for generating texts, images etc. needs among others a culturally relevant interpretation of multimodal representation which transgresses the linear writing and reading by means of the alphabet. The alphabet works in the context of the book oriented culture. However, multimodality of signs and conversation now work in a communicative space, which can be named: context.

³Available at: <https://www.theguardian.com/technology/2023/may/10/meps-to-vote-on-proposed-ban-on-big-brother-ai-facial-recognition-on-streets>.

⁴ See the Internationalen Grundschul-Lese-Untersuchung, IGLU, 2021 / Progress in International Reading Literacy Study, PIRLS, 2021 (Mullis *et al.* 2023, Institut für Schulentwicklungsforschung 2023).

Contexts are constructed spaces, constructed by conversation, meanwhile by Social Media. That means that now space is a conversational phenomenon in contrast to the space which was defined during the Renaissance. In the Renaissance reality was constructed as a space which was organised by the central perspective: a human subject stand in opposition to the reality, no longer a hierarchically organized construction of the world. The central perspective space was organised by the reflecting, observing, measuring, and controlling agency, as well as by the controlling subject, which led among others to science and research. In contrast to this, a personalisation in the sense of subjectivation of perception and experiences of reality is beginning to transform the current definitions of knowledge and learning. In the individualised world of consumption and mobility which is now underpinned by digital contexts, e.g. Social Media, the orientation of personal experiences in the mode of the central perspective of the European Renaissance: I am watching the reality in distance is changing. The distance to reality is actually losing its societal and cultural embossing power. Nowadays as a subject I am experiencing my own world and setting up social events e.g. by social media, which enhance me in my subjective construction of my world⁵. In contrast to this subjectivation of what reality is about, as a running processes of the objectivation of agency: the human beings with their attitudes, their competencies are objectified by measurement, standardisation, and similar modes of objectivation. AI with its digital, technological, societal modes of meaning making correlates with these disruptive cultural transformations and contains the probability to structure the socialisation of children and youth. Being aware of these correlating developments - in my terminology: being aware of cultural disruptions – also the institutionalised learning has to be re-considered. The educational perspective should be at the interrelation of societal structures and agency in new digital contexts with the powerful new cultural products of AI. Contexts now do not depend primarily on the teacher. Further, the variety of modes for representation in everyday life are getting rather relevant for learning. In addition, personal experiences in self-selected collective digital sites can produce public validity. In addition, the measuring of agency should be in societal responsibility, not just being an interference of KI with the human agency in line with the controlling owner's power 'behind' the KI technology. Recent cultural disruptions in the dynamics of the transformation of the global culture and their impact for education, a short overview.

4.3 Recent cultural disruptions in the dynamics of the transformation of the global culture and their impact for education

Disruption 1: The new space as context

The new space as context is an activity text based on digital modes of representation. A view back to the European modernity in the 17th century leads to Galileo Galilei's secular definition of the cosmic space with stars including the earth around the sun. Because we don't sail now, Galilei's model of space, this historical model of space is transferred to digital contexts as reaction of our cultural practices with digital tools 'in' the Internet plus the experiences with globalisation. In Corona times these experiences

⁵ Politically seen that is the Trump version of "my" interpretation and "my" construction of "my" world.

led to communication by Zoom or other Internet platforms in combination with home schooling as a new learning practice. Such cultural practices are combined with communicative competences (agency) which integrate the app Zoom (structures) into the practice and agency of digital spaces. In the field of education these Internet spaces, now named contexts, are activity texts. Text + activity as a unit seems to be unfamiliar in formal education because of the dominance of the cultural practice of the teacher guided instruction in the classroom. But it correlates for example with boys' experiences and competences to set up their context by sitting in their individual bedrooms in front of a tablet screen and play with a cohort of other boys on global digital gaming sites (Medienpädagogischer Forschungsverbund Südwest 2021). Probably there are already existing AI-gaming algorithms or will appear soon. An AI-gaming algorithm will generate contexts and prepares not only regulations and processes for gaming.

What defines a context? A context depends on the users' agency within digital structures. A digital user generated context is a spatial option which includes everyday digital platforms, apps, individually owned mobile devices etc. Following Paul Dourish (2004), a context is a frame under construction for optional combinations of actions, representational resources including the media and literacy, virtual and local sites, or social sites like socio-cultural milieus, together with digitally organized and collective experiences as a guaranty for objectivity.

Disruption 2: Multimodal forms of representation are taken for granted

An AI-gaming algorithm will be organized as multimodal text, with images, sounds, written characters etc. The traditional concept of representation, the complex sender-receiver-model, was developed for TV-studies but is still useful: "Representation is an essential part of the process by which meaning is produced and exchanged between members of a culture. It does involve the use of language, signs and images" (e.g. Hall 1997, 15). Nowadays multimodality ranges from linear text to narrative, multimodal collages, to sound and everyday life options of representation on and by smartphones, computer or Internet related screens and loudspeaker systems. In the definition of Gunther Kress and Theo van Leeuwen (2001, 21 f.) social semiotic modes of representation are "semiotic resources which allow the simultaneous realization of discourses and types of (inter)action". In this argumentative line of semiotics, Kress considered the mode of representation as "semiotic resources for making meaning. Images, writing, layout, music, gesture, speech, moving image, soundtrack, and 3D objects are examples of modes in representation and communication." (Kress 2010, 79). "Meanings-as-resource become material 'arrangements' as texts and other semiotic objects." (Kress 2010, 145). For "semiotic resources" in "meaning and meaning-making" are the following feature elements "essential": "agency, audiences, resources and questions about power and its distribution" (Bezemer, Kress 2016, 16). Elisabetta Adami (2017, 451) explains multimodal semiotic resources as the key feature of multimodality: "different resources used in communication to express meaning". "As a phenomenon of communication, multimodality defines the combination of different semiotic resources, or modes, in texts and communicative

events, such as still and moving image, speech, writing, layout, gesture, and/or proxemics”⁶.

Disruption 3: Personalisation and subjectivation of perception and experiences of reality

This cultural transformation leads to an egocentric worlds of personal experiences as a reality construct in and by the individualised mass communication, called: Social Media. It appears as generalizing individualisation from car mobility, via mass consumption to the conceiving and interpretation what reality is about. Formal education usually classifies learning in an individual, egocentric world as disturbance and not as a cultural option of perceiving reality in the learner’s subjectivity. Perceiving reality subjectively is context based e.g., as the individualised mass communication like Facebook and Twitter, TikTok, Snapchat, and Instagram together with mobile devices, recently in relation to AI apps, which are now leading societal structures. One could say: leading for setting up one’s own reality. Gerhard Schulze (1982) described this phenomenon as a social structure with the keyword of the “experiencing society” (“Erlebnisgesellschaft”). This agency-based process of the individualisation of experiences is now combined with the internet-based mass communication of platforms such as Facebook, Instagram, YouTube, or Twitter. Further, the digital, multimodal generation of knowledge and competences is on the cultural agenda. In these individualisation processes, particularly in these group-specific forms of reality modes of communication emerge, what is typical for internet platforms and their specific ways of interpretation and representation. Colloquially described, this individualised form of experience is called a filter bubble, which is explained by cultural research as social disintegration with its specific dynamic (Freiheit *et al.* 2022). For the recent German discussion about the extreme right-wing voters, Wolfgang Heitmeyer⁷ described the loss of recognition as a dynamic feature element of egocentric worlds of personal experiences. The compulsion to diversity and pluralistic lifestyles in and by individuals and self-selected lifestyle groups leads to subjectively experienced and subjectively defined losses of reflection in the sense of the Renaissance and the European Enlightenment. In the logic of this societal development Social Recognition should become a leading criteria. The educational category of Social Recognition should update the traditional criteria of competence. An alternative keyword instead of competence should be: social recognition of everyday life expertise. A main educational task is to see and to interpret how AI apps emerge and intervene in these digital structures, as authoritarian controller or by gentle invitation. Further, by simulating conversation AI can produce public knowledge of and for the filter bubble. We know from corona times how it will work with new forms of communication and their related modes of viewing, as well of constructing reality.

⁶ Proxemics is the study of human use of space and the effects that population density has on behavior, communication, and social interaction. Edward T. Hall, the cultural anthropologist who coined the term in 1963, defined proxemics as “the interrelated observations and theories of humans use of space as a specialized elaboration of culture”. In his foundational work on proxemics, *The Hidden Dimension*, Hall emphasized the impact of proxemic behavior (the use of space) on interpersonal communication”. Available at https://en.wikipedia.org/wiki/Proxemics#cite_note-1, consulted on 8.07.2023.

⁷ Interview of Wolfgang Heitmeyer, *Süddeutsche Zeitung* at 10.07.2023: "Verkürzt und naiv, das einfach als Protestwahl zu verharmlosen", available at: <http://sz.de/1.6012038>.

Disruption 4: Objectification of agency and social structures

The cultural counter processes to an egocentric world construction lead to an objectification of agency and social structures. Among others, the so-called Knowledge Society with its utilisation and standardisation of education by the metrification and the analysis of human agency is based on widening the structural basics of technology and research to agency. Historical example is the individual mobility by car triggered by the Fordian mass production which was based on a standardizing algorithm under the heading of Taylorism. Fedrick W. Taylor's "Principles of Scientific Management" (1911 [2004]) set up and improved industrial efficiency, among others by "methods based on a scientific study of the tasks" (Taylor 1911 [2004], 11). This replaced "mechanical arts" of workers and its rational which led among others to practice and rational of mass consumption e.g., for food in McDonalds' global fast-food restaurant chain. Ritzer (1993) summarized the principles of mass consumption under the heading of the "McDonaldization of Society" with the following characteristics which are now also relevant for AI.

- "Efficiency" (Ritzer 1993, 35): The optimal way to go from being hungry to be satisfied.
- Calculation: to transform food, production and consumers to be measured: e.g. making food units ("Calculability": Ritzer 1993, 62).
- Predictable management of offering and eating food units: surprise is announced ("Predictability": Ritzer 1993, 83).
- "Control" (pp. 100): working people and consumers are subdued to these processes e.g. by pre-organised choices, going through channels.
- "The irrationality of the rationality" (Ritzer 1993, 121) which includes among others the "demystification, deprofessionalisation, and assembly-line medicine" (Ritzer 1993, 139).

Anna Wilson *et al.* (2017) described concretely the objectification of agency and social structures for education which is rather close to Ritzer's description of mass consumption:

- "Real-time insight into the performance of learners".
- "The widespread introduction of virtual learning environments (VLEs) – also known as learning management systems (LMSs) – such as Blackboard and Moodle has meant that educational institutions deal with increasingly large sets of data. Each day, their systems amass ever-increasing amounts of interaction data, personal data, systems information and academic information."
- To realise learning analytics in the sense of the "Society for Learning Analytics Research (SoLAR): Learning analytics is the measurement, collection, analysis and reporting of data about learners and their contexts, for purposes of understanding and optimising learning and the environments in which it occurs."
- This leads to "two assumptions: that learning analytics make use of preexisting, machine-readable data, and that its techniques can be used to handle 'big data', large sets of data that would not be practicable to deal with manually".

In the cultural rational of the more than 100 years old Taylorism now the AI-algorithms are entering our culture. AI-algorithms belong to mass communication because of their social semiotic structures. Although mass communication is oriented to individual consumption, AI will enhance the objectification of agency. The educational task

should follow the question of how AI can connect learning and the developing of knowledge with the rational of interpretative, communicative contexts, not the least because AI enhances the objectivation of agency.

5. Educational guidelines to deal conversationally with AI

The educationally leading question is about the development of children and youth in human dignity as participants in culture and society (Miao, Cukurova 2024, 16: one of the “Key principles”: “Steering AI for human capacity development”). AI offers an extensive realisation of the cultural trends to the subjectivation of perception and experiences of reality as well as to the objectification of agency and social structures. At the moment it is not clear which power structure will become dominant to define the educational practice and the educational reflection by AI. Further it is not clear which impulses to the personal development of children and youth as learners will come from AI. Referring to the European Enlightenment of the 18th century (Rousseau 1762 [1963], Humboldt 1792 [2002]) my proposal is to identify and develop educational options of AI which support the personal identity and subjectivity of children and youth as human beings in their human dignity, not the least by appropriating cultural phenomena and by contributing and participating to culture. The personal development of children and youth by appropriating cultural processes and by participating to culture with their agency, is considered as a guideline for analysing - with a cultural ecological impetus - the cultural disruptions which correlate with AI. As already written, this statement about personal development in the processes of agency as the key idea of education stems from the European enlightenment, which also contributed to the end of the authoritarian and inhuman European feudalism. Perhaps now education will be able to avoid authoritarian power structures which are optional elements of AI-algorithms - optional for alienating the development of children and youth by power structures. In opposition to alienation stands the educational option to support the creative and communicative development of children and youth in the direction of their awareness and reflexivity.

5.1 Patterns for analysing the cultural fields of AI with educational impulses

Meanwhile AI is in concrete discussion for functions in schools. Holmes and Tuomi (2022) summarized the practical educational approaches by a “taxonomy of AIED systems” (p. 550) with three focuses at students / teachers / institutions. Focusing students, they propose: “Intelligent Tutoring Systems”; “AI-assisted Apps” for all learning subject like math; “AI-assisted simulation” like “game-based learning”; “AI to Support Learners with Disabilities”; “Automatic Essay Writing”, “Chatbots”; “Automatic Formative Assessment”; “Learning Network Orchestrator”; “Dialogue Based Tutoring Systems”; “Explorative Learning Environments”; AI-assisted Lifelong Learning Assistant”.

Looking for such educational options and challenges in the school’s practice a wider frame of argumentation should be considered. The following patterns of argumentation could be helpful to open the educational dimensions of AI especially for institutionalized learning in school.

Pattern: The acting subject in everyday life with his or her expertise for digital media and other conversational resources like artificial intelligence apps

This pattern focuses on education in the perspective of agency in the context of everyday life. In this perspective the German Council for Ethics, the Deutscher Ethikrat (2023), asks among others for the “Challenges due to artificial intelligence” and proposes some guidelines (originally written in German):

- ‘Action’ / ‘authorship of action’ / ‘authorship [of one’s own] life’ and ‘reason’. The criteria “authorship of action” / “authorship [of one’s own] life” and “reason” (“Handlungsurheberschaft” / “Autorschaft [des eigenen] Lebens”) can be seen as a link to Walter Benjamin’s critical concept (1936) of the “Aura” of fine art and as a re-definition of singularity / originality now not in “Age of Mechanical Reproduction” but in the age of artificial, digital intelligence.
- People are free and therefore bear responsibility for shaping their actions.
- “Freedom and responsibility are two mutually dependent aspects of human authorship. Authorship ... is tied to the ability to reason”.

A practical access is based on the social recognition of everyday life expertise of learners as acting subject in everyday life which leads to their agency with their mode as AI-experts. Possible educational practice as AI-experts of everyday life could be:

- Students inform their class and their groups of communication about their preferred AI-apps e.g. for gaming, how they use these AI-apps and which advantages and disadvantages they see for these AI-apps.
- Students do research for getting multimodal AI-apps, mainly to find relevant AI-apps for mathematics, chemistry, biology, drawing and painting, music etc. and apply this to their learning experiences in school.
- Students explain how AI-apps could and should support their homework and their assessment.

Pattern: Conversation as meaning making in contexts

An innovative option of AI is to open complex modes of conversation in contexts to which learners contribute to their own expertise. The answer above of the ChatGPT-algorithm about AI’s contribution to assessment was: Simulating conversation. Wikipedia as digital and, partly, as user generated encyclopaedia in the cultural historical line of generating knowledge for everyday life (<https://en.wikipedia.org/wiki/ChatGPT>, March 7th, 2023) hints to the above considered semiotic model of language and communication: “ChatGPT is an artificial intelligence chatbot. ... It is built on top of OpenAI’s GPT-3 family of large language models and has been fine-tuned [an approach to transfer learning] using both supervised and reinforcement learning techniques”.

Students should become aware and widen their experiences with AI for multimodal communication. This means to:

- develop their own AI-based encyclopaedia which can be used for assessment. Such a project could open the students’ view at the development of encyclopaedia and dictionaries and now to digital versions like Wikipedia together with AI.
- consider and explore their application of AI for formal assessment.
- explore their role of an AI-supported influencer.

- use AI's text generating capacity to set up their own publishing house for comics and books which serve as gifts to the own families, friends etc.

Pattern: Changing reality as interrelation of societal structures and user's agency

What does it mean for education if reality as interrelation of societal structures and people's agency is changing? What are the defining issues of how reality appears and the access to reality is defined? Probably reality is not longer connected with the Central Perspective and its modes of reflexivity. In the disruptive cultural process of personalisation and subjectivation of perception and experiences, now the Central Perspective of the European Renaissance is no longer the leading mode of representing and defining reality and its reflexive agency options. This statement opens the question what contributes to the recent modes of defining reality and what opens reflexive accesses to reality. An example, in our today's digital everyday life, the photo function of the smartphone – my smartphone - established a double access to reality. On the one hand, the smartphone with the photo or video app makes it possible, argued in the rational of the Enlightenment, to face the world as an observer in distance to the world. This is a reflexive agency option to access reality. On the other hand, the selfie supports me in confirming my situation and my contexts, which is a subjective access to reality which constructs what my reality is about. Educationally, this double function of the smartphone's photo app offers the opportunity to documenting and reporting one's own learning process with the smartphone by taking photos for the report about my learning by means of AI. To combine e.g., communicative visual results of the smartphone with AI-results, can offer a digital form of reflection which leads to a changing concept and practice of assessment for learning and teaching. Now the educational task is to combine this application of the smartphone with AI by using the smartphone.

Pattern: Alienation of children and youth from their personal development

In parts of the recent public debate, the writing app ChatGPT is considered in opposition to school by replacing original forms of writing, e.g., essays in and for the school. This leads to ask about what is and what was the original form of writing. Already Walter Benjamin considered originality in 1936 for film and cinema which are based on mechanical reproductive structures. Technology-related patterns of appropriation and action correspond to the definition of originality in this former cultural-historical situation. Walther Benjamin (1936) hinted to the relationship between the reproductive structure of the movie and the agency of industrial workers to adopt the rational of the assembly line. Benjamin saw a positive correspondence between industrial workers' experiences with machines and the technically mechanical reproduction of film as a work of art functioning in the logic of industrial production. The running cultural transformation in which AI emerged needs a critical discussion under the headline of cultural ecology. Cultural ecology's task is to explore the societal and cultural structures correlated and introduced with and by AI with the agency of the people; mainly the agency of children and youth who are in their processes of their personal development. Pedagogy has to be aware of the "McDonaldization of Society" (George Ritzer 1993) as a dominant societal structure which leads to a new definition of citizenship. Margetts *et al.* (2016, 1 and 16) emphasize a new version of the public:

“Collective action goes digital” with the consequence that “uncertainty and turbulence” will dominate “in online collective action”.

These dominant societal structures together with the global wide increasing of dictatorial statal power structures are historically connected with the arrival of AI. Of course, just a conservative rejection of the cultural transformation with its cultural disruptions can't be the argumentative guideline to explain educationally the consequences of AI for the personal development of children and youth by appropriating cultural processes and participating to culture with their agency. The personal development of children and youth by appropriating cultural processes and participating to culture as feature of their agency should be considered as guideline for analysing AI as cultural product, soon, as dominant cultural resource. The educational task is now to develop educationally relevant options of AI for the agency's key points of personal uniqueness, of responsibility and originality, as well AI's connection with power and alienation. The experiences of students with AI-apps should lead to understand the societal trends to which AI contributes.

Therefore, teachers and students should be invited to consider their experiences and anxieties about power and economy in the societal background of AI. These experiences and anxieties e.g. by investigating their options how to replace traditional exams and assessments by applying AI supported communication.

Conclusion

Artificial Intelligence is a recent cultural resource which emerged in the rational of the cultural continuity of written texts from the printed book with characters as leading mode of representation to the encyclopaedia of knowledge for making knowledge available for everybody with reading competences. Parallel to this cultural continuity AI is a result of severe cultural transformation which changed societal structures like space to digital context with a large variety of multimodal forms of representation which open or close conversational options for discourses and interpretative activities. AI as a conversational resource is an educational task which asks for practical options in formal learning. These options should include the educational recognition of the students' everyday life expertise. Their existing expertise should be more than just a motivating impulse in formal learning. The social risk of the running personalisation and subjectivation of perception and the experiences of reality. As well the risk of the objectification of agency and social structures is also an educational task within formal learning. Alienation of children and youth from their personal development in dignity is always a risk of societal structures which demands a transformation of agency.

References

- Adami E. (2017), *Multimodality*, in García O., Flores N., Spotti M. (Eds.), *The Oxford Handbook of Language and Society*, Oxford University Press, Oxford: 451-472.
- Bachmair B. (2016), *Disparate culture, disparate education. A discussion on school workshops about re-interpretations of war*, in “Медиаобразование/MEDIA EDUCATION. Российский журнал истории, теории и практики медиапедагогике/Russian journal of history, theory and practice of media

- education”, 1, 2016: 21-46, in: <http://www.mediaed.ru/mediaed/journal/>; Выпуск № 1, consulted on 11.11.2024.
- Benjamin W. (1936), *Das Kunstwerk im Zeitalter der technischen Reproduzierbarkeit*, Frankfurt 1981, 12, Auflage. 1, German edition in Benjamin W, Schriften. Frankfurt 1955; Original written in French edited in Zeitschrift für Sozialforschung Jg. 5, 1936: 14-31.
- Bezemer J., Kress G. (2016), *Multimodality, Learning and Communication. A social semiotic frame*, Routledge, London. DOI: <https://doi.org/10.4324/9781315687537>
- Deutscher Ethikrat (2023), *Mensch und Maschine – Herausforderungen durch künstliche Intelligenz*, Stellungnahme, Vorabfassung 20 März 2023, in https://www.ethikrat.org/publikationen/publikationsdetail/?tx_wwt3shop_detail%5Bproduct%5D=168&tx_wwt3shop_detail%5Baction%5D=index&tx_wwt3shop_detail%5Bcontroller%5D=Products&cHash=2832da3eabd1b566403727910cee637e, consulted on 11.11.2024.
- Dourish P. (2004), *What we talk about when we talk about context*, “Personal and Ubiquitous Computing”, 8, 1: 19-30, in: <https://cseweb.ucsd.edu/~goguen/courses/275/dourish.pdf>, consulted on 11.11.2024.
- Freiheit M., Sitzer P., Heitmeyer W. (2022), *Rechte Bedrohungsallianzen in städtischen Zentren und ländlichen Peripherien – eine vergleichende Analyse*, in Miggelbrink J., Mullis D. (Eds.), *Lokal extrem Rechts - Analysen alltäglicher Vergesellschaftungen. Sozial und Kulturgeographie*, Vol. 48, Verlag, Bielefeld: 49-68.
- Giddens A. (1984), *The Constitution of Society: Outline of the Theory of Structuration*, University of California Press, Los Angeles.
- Hall S. (1997), *The work of representation*, in Hall S. (Ed.), *Representation. Cultural Representations and Signifying Practices*, Sage, London: 13-64.
- Holmes W., Tuomi I. (2022), *State of the art and practice in AI in education*, “European Journal of Education”, 57, 4: 531-691, DOI: <https://doi.org/10.1111/ejed.12533>.
- Humboldt W. v. (1792), *Theorie der Bildung des Menschen. Bruchstücke*, in Flitner A., Giel K. (eds.), *Wilhelm von Humboldt. Werke in fünf Bänden*, Band I, *Schriften zur Anthropologie und Geschichte*, Wissenschaftliche Buchgesellschaft, Darmstadt, 2002: 234 – 240.
- Institut für Schulentwicklungsforschung (IFS) (2023), *IGLU 2021 Kompakt*, Technische Universität Dortmund, in: <https://ifs.ep.tu-dortmund.de/en/newsdetail/practice-booklet-iglu-2021-kompakt-published-2-42033>, consulted on 11.10.2024.
- Kress G. (2010), *Multimodality. A social semiotic approach to contemporary communication*, Routledge, London.
- Kress G., van Leeuwen T. (2001), *Multimodal Discourses. The Modes and Media of Contemporary Communication*, Arnold, London.
- Laurillard D. (2002), *Rethinking university teaching: a conversational framework for the effective use of learning technologies*, Routledge, London.

- Laurillard D. (2007), *Pedagogical forms of mobile learning: framing research questions*, in Pachler N. (Ed.), *Mobile learning: towards a research agenda*, WLE Centre, Institute of Education, London: 153-176, in: https://www.researchgate.net/publication/259405349_Mobile_learning_towards_a_research_agenda, consulted at 11.10.2024.
- Margetts H., Peter J., Hale S., Yasseri T. (2016), *Political Turbulence: How Social Media Shape Collective Action*, Princeton University Press, Princeton. DOI: 10.2307/j.ctvc773c7.
- Mau S. (2017), *Das metrische Wir. Über die Quantifizierung des Sozialen*, Suhrkamp Verlag, Berlin.
- Medienpädagogischer Forschungsverbund Südwest (Hrsg.) (2021), *KIM-Studie 2020. Kindheit, Internet, Medien*, Basisuntersuchung zum Medienumgng, 6- bis, 13-Jähriger, LFK, Stuttgart: 11-61.
- Mullis I.V.S., Martin M.O. (Eds.) (2023), *PIRLS 2021. International Results in Reading*, International Association for the Evaluation of Educational Achievement (IEA), in: <https://pirls2021.org/results/> consulted on 11.10.2024.
- Nemorin S., Vlachidis A., Ayerakwa H.M., Andriotis P. (2023), *AI hyped? A horizon scan of discourse on artificial intelligence in education (AIED) and development*, in “Learning, Media and Technology”, 48, 1: 38-5.
- Pask G. (1976), *Conversation Theory: Applications in Education and Epistemology*, Elsevier, Amsterdam, Oxford, New York.
- Rahm L., Rahm-Skageby J. (2023), *Imaginaries and problematisation: A heuristic lens in the age of artificial intelligence in education*, in “British Journal of Educational Technology”, 54: 1147–1159, DOI: 10.1111/bjet.13319.
- Ritzer G. (1993), *The McDonaldization of Society*, Pine Forge Press, Thousand Oaks.
- Rousseau J.-J. (1762), *Émile ou de l'éducation*, German version, *Emile oder Über die Erziehung*, Philipp Reclam Jun, Stuttgart, 1963.
- Schulze G. (1992), *Die Erlebnisgesellschaft. Kultursoziologie der Gegenwart*, Campus, Frankfurt.
- Taylor F.W. (1911), *The Principles of Scientific Management*, The Project Gutenberg EBook, 2004, in <https://www.gutenberg.org/ebooks/6435>, consulted on 11.10.2024.
- Miao F., Cukurova M. (2024), *AI competency framework for teachers*, UNESCO, Paris, in: <https://unesdoc.unesco.org/ark:/48223/pf0000391104>, consulted on 11.10.2024.
- Wilson A., Watson C., Thompson T.L., Drew V., Doyle S. (2017), *Learning analytics: challenges and limitations. Teaching in Higher Education*, 22, 8: 991-1007, Taylor & Francis Online, in: <https://doi.org/10.1080/13562517.2017.1332026>, consulted on 11.10.2024. DOI: 10.1080/13562517.2017.1332026,