PALGRAVE STUDIES IN EDUCATIONAL MEDIA

Postdigital Participation in Education

How Contemporary Media Constellations Shape Participation

Edited by
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Felicitas Macgilchrist

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Palgrave Studies in Educational Media

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There is no education without some form of media. Much contemporary writing on media and education examines best practices or individual learning processes, is fired by techno-optimism or techno-pessimism about young people's use of technology, or focuses exclusively on digital media. Relatively few studies attend – empirically or conceptually – to the embeddedness of educational media in contemporary cultural, social and political processes. The **Palgrave Studies in Educational Media** series aims to explore textbooks and other educational media as sites of cultural contestation and socio-political forces. Drawing on local and global perspectives, and attending to the digital, non-digital and post-digital, the series explores how these media are entangled with broader continuities and changes in today's society, with how media and media practices play a role in shaping identifications, subjectivations, inclusions and exclusions, economies and global political projects. Including single authored and edited volumes, it offers a dedicated space which brings together research from across the academic disciplines. The series provides a valuable and accessible resource for researchers, students, teachers, teacher trainers, textbook authors and educational media designers interested in critical and contextualising approaches to the media used in education.

Andreas Weich • Felicitas Macgilchrist
Editors

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Foreword

There is no education without some form of media. The field of educational media is a growing area of interest in education, as educational policy papers on the 'digital agenda,' the rapid expansion of media sections in national and international educational research associations, and the range of academic books on media in education show. Educational media are crucial to producing knowledge and shaping educational practices. Conflicts over the contents of textbooks and curricula, widely discussed in the daily news, illustrate how many different stakeholders are invested in sharing their particular understandings of our (shared) past, the current society, and potential imagined futures with the younger generation. Policymakers, politicians, and activists regard educational media as important tools which not only foster young people's media skills and world knowledge, but also shape which ways of living are considered desirable or even legible. Textbooks and other educational media are deeply embedded in the socio-political contexts in which they are developed and used. Given this context, alongside the emerging interest in digital technology in education, the *Palgrave Studies in Educational Media* series takes stock of current research on educational media by focusing on three issues.

First, today's vibrant and dynamic research and scholarship on technology stems from a broad range of disciplines, including sociology, history, cultural studies, memory studies, media studies, and education, and also information, computer, and cognitive science. Traditionally, this research has drawn on textbooks and other educational media in order to engage

with specific disciplinary questions, such as device-specific reading speed or social inclusion/exclusion. Studies on educational media are only beginning to be consolidated into the kind of inter- or transdisciplinary field which can build and develop on insights generated and exchanged across disciplinary boundaries.

Second, the majority of work in this field is focused on best practices, individual learning processes, or concerns over the risks involved when young people use technology. There are still relatively few studies which attend—empirically or conceptually—to the embeddedness of educational media in contemporary cultural, social, and political processes, and to the historicity of the media used in education. If we see educational media as a highly contested and thus crucially important cultural site, then we need more studies which consider media in their contexts, and which take a carefully critical or generative approach to societal concerns.

Third, current work emerging in this field has turned its attention to computers and other digital technologies. Yet looking at today's educational practices, it is clear that (1) they are by no means predominantly digital, and simultaneously (2) 'postdigital' practices abound in which the digital is no longer seen as new or innovative but is integrated with other materials in daily teaching and learning. The potentials and risks of digital education emit a fascination for politicians, journalists, and others concerned with the future of education and are undoubtedly important to consider. Empirical observations of education around the globe, however, demonstrate the reach and visibility of a broad range of media (textbooks, blackboards, LEGO™, etc.), as well as the postdigital blending of digital and non-digital media in contemporary educational settings.

Palgrave Studies in Educational Media aims to address these three issues in an integrated manner. The series offers a dedicated space which brings together research from across the academic disciplines, encouraging dialogue within the emerging space of educational media studies. It showcases both empirical and theoretical work on educational media which understands these media as a site of cultural contestation and sociopolitical force. The focus lies primarily on schools, across the school subjects. The series is interested in both local and global perspectives, in order to explore how educational media are entangled with broader debates about continuity and change in today's society, about classroom practices, inclusions and exclusions, identifications, subjectivations, economies and global political projects.

We are delighted to present a new publication in the series that addresses the impact of digital technologies on educational media. This volume, *Postdigital Participation in Education: How Contemporary Media Constellations Shape Participation*, focuses on two aspects central to the debate around educational technologies: the 'postdigital' and 'participation.' The 'postdigital condition' describes the fact that, while digital technologies have become part of our daily lives, their relevance and importance for many aspects of human practices need to be critically examined. In terms of 'digital education,' this means not that education itself is digital *per se* but rather closely intertwined with digital materialities and contents. Thus, education is understood as inherently *postdigital*, with entangled materials and socio-technical practices, online and in-person. At the same time, the volume addresses the challenges around 'participation,' such as "participation-washing" in postdigital assemblages, or how it might be instrumentalized as an empty imperative, becoming an end in itself.

The focus on various contexts of postdigital participation in education presented in this volume has emerged from the *Leibniz ScienceCampus Postdigital Participation*, a regional research network based in Brunswick, Germany. This network explores, reflects on, and actively shapes participation in today's postdigital world. Since 2019, the ScienceCampus has been investigating postdigital participation by combining research, participatory design, and community engagement. Based on multidisciplinary and participatory work, it reflects critically on the promises of digital technologies to foster participation, identifying and creating innovative ways of engaging students, teachers, and community members in co-designing socio-technical solutions to equip them to participate more fully in school and public life. The Leibniz ScienceCampus thus addresses the core dimensions of postdigital participation, fostering individual digital competence, (co)designing participatory socio-technical assemblages, and reflecting on current practices and broader societal implications.

The two editors of this volume have been instrumental in developing the Leibniz ScienceCampus from the beginning. As experts with a socio-critical approach to educational technologies and media constellations in educational settings, they contribute here their experience and research findings, which partly originated in the ScienceCampus. They have brought together emerging scholars and scholars who have been working for years on issues of digital education and the role of educational

media from a critical perspective, thus providing a comprehensive picture of the current state of research on education under the postdigital condition as well as the major socio-ecological transformations that come with it.

Director
Leibniz Institute for Educational
Media | Georg Eckert Institute
Brunswick, Germany
March 2023

Eckhardt Fuchs

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We extend our sincere thanks to all colleagues in the *Leibniz ScienceCampus—Postdigital Participation—Braunschweig*, in which we have been working, talking, and thinking across disciplinary boundaries since 2019. We are also grateful to our colleagues in the Media | Transformation department of the Leibniz Institute for Educational Media | Georg Eckert Institute, for many years of instructive and inspiring debate. Most importantly, however, our warm thanks to the contributors to this volume, whose writing has given us a host of new insights into postdigital participation and education.

March, 2023

Andreas Weich
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Contents

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List of Figures

CHAPTER 1

Postdigital Participation in Education: An Introduction

Andreas Weich and Felicitas Macgilchrist

Setting the Stage

In recent years, digital technology has become an integral part of everyday practices—a condition that has been labeled "postdigital" in a number of academic publications. Although this label is ambiguous, most authors seek to overcome the assumption that "progress" is driven by digital technology and that society, culture, and the economy must adapt to the new situation. Assuming society and/or culture to be postdigital means to focus on the entanglement of the digital and analog, material and symbolic, technology and sociality. In this approach, the prefix "post" does not mean that digitality has become irrelevant or been "overcome." Instead, it contextualizes the digital, locating it in a set of relations within

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specific media constellations. The "post" thus invites critical analysis of interwoven, messy elements and interconnections.

These interrelationships and correlations are at the analytical focus of this book, with a particular interest in participation. As the COVID-19 pandemic has made obvious, contemporary media constellations can facilitate communication and collaboration for remote or isolated people or people facing barriers to mobility, but they also require material resources such as technical devices and connectivity as well as the knowledge, ability and energy to use them fluently. In addition, participation in the "postdigital condition" is already woven into power relations and political economies. This book understands the postdigital condition with its complex media constellations as a precondition of participatory processes themselves. These preconditions shape how participation is being conceptualized and put into practice, who can participate, and how.

Against this backdrop, education plays a crucial role. On the one hand, educational institutions and practices are deeply affected by the recent transformations of media technologies and practices. At the same time, educational institutions such as schools and universities are tasked with enabling people to participate in today's media practices in an informed and reflective way. It is therefore important to analyze how and under what conditions educators and students can participate in contemporary media constellations.

Mapping Postdigital Participation in Education

Within contemporary "western culture," there is hardly any kind of meaningful action that is not connected to digital technology in one way or another. In the obvious sense, this refers to the fact that most people use digital infrastructures such as the Internet and digital devices such as smartphones in nearly all life situations: communicating with friends and family, buying goods online, paying in stores, navigating, searching for information on diverse topics, banking, dating, fitness tracking, reading e-books, streaming series and movies, playing games, and so on. In the subtler sense of this assumption, it also refers to the oft-unnoticed implementations of digital technology in devices such as cars or fridges, in data centers and "clouds," political decision-making, healthcare, financial economy, and the production and distribution of goods based on data and algorithms. In this reading, even the seemingly most analog process of buying a newspaper in a store with cash is pervaded with digitality: the

editorial staff of the newspaper used digital media for research, production, and printing; the ordering by the store and transport from the press to the store were organized by digital technologies; and even at the checkout the system will register that the newspaper has been sold, note the other goods that were bought with it, and that it was paid for in cash. Negroponte's statement of twenty-five years ago seems to have come true:

> Its literal form, the technology, is already beginning to be taken for granted, and its connotation will become tomorrow's commercial and cultural compost for new ideas. Like air and drinking water, being digital will be noticed only by its absence, not its presence. […] Computers as we know them today will a) be boring, and b) disappear into things that are first and foremost something else […] Computers will be a sweeping yet invisible part of our everyday lives […]. (Negroponte, 1998)

The notion of the "postdigital" assumes that digital technologies are already deeply woven into everyday practices and have lost their novelty value per se, but have by no means become less relevant as a result. Cramer writes that the prefix 'post' should be understood in the sense that postcolonialism "does not in any way mean an end of colonialism […], but, rather, is mutation into new power structures, less obvious but no less pervasive" (Cramer, 2015, p. 14 f.). Or, as Sinclair and Hayes put it: "the prefix post(-) signals that we have something to talk about" (Sinclair & Hayes, 2019, p. 129). Stemming from discourses on art, the term "postdigital" has established itself in recent years as a common "counterconcept" to that of digitalization and its varieties, not least in educational science and philosophy (Jandrić et al., 2018). But what characterizes postdigital research and what does the postdigital imply for a theory-driven analysis of contemporary education?

Striano distinguishes between three conceptions of the postdigital, first as a description of the contemporary world, that is, "the post-digital condition as a situation in which digital has become part of everyday use and has become integrated into everyday life, action and gestures"; second, as a critical-analytical perspective considering "that the term post-digital should refer to a critical reflection on digital, to a full awareness of the influence of digital culture and technologies on our modes of perception, cognition and action"; and, third, as a kind of policy or goal: "If we consider that a more aware class of users is a goal to pursue, in order to avoid risks related to the reckless use of new technologies, then we must

understand post-digital as an aim to be achieved" (Striano, 2019, pp. 83–84). Given this assemblage of meanings, he concludes that "a good media theory is needed" (Striano, 2019, p. 84). We, the authors of this chapter, also observe these three parallel uses of the concept, but while Striano finds a "good media theory" in the technological determinism of media archaeology, we assume that "what digitality does to us and what we do with digitality […] depends on the specific contexts in which digital technologies are embedded" (Macgilchrist, 2019).

A critical analysis of (educational) media in view of the "postdigital condition" as defined above, requires then, in addition to analyzing the formatting, contents, or materiality of any given media technologies, the analysis of the contexts of the technology and/or the practices in which it is embedded. One way to grasp this kind of analytical perspective is to orient to "media constellations" (Weich, 2020, 2023 and Weich et al. in this volume). This approach does not assume media to be distinct objects with "medial qualities" but sees mediality as a product of inter- and intrarelations (Barad, 2005) between (a) materialities, (b) knowledges and practices, (c) subject positions, and (d) contents. Orienting to media constellations in this way reminds analysts that there is no digital education but there are digital materialities and digitally processed contents that inter- and intrarelate with educational practices, knowledges, and subjectification processes. It is not education itself that is digital but education is related to and pervaded by digital materialities and contents. Fawns, for example, describes the conceptual aberrations that are produced in the context of the label "digital education" and concludes: "What is required, then, is a perspective that recognises that neither learning nor teaching are, themselves, digital. Instead, interactions with digital technology are simply an integrated part of wider teaching and learning activity. […] One possible way forward is to take a postdigital perspective on education" (Fawns, 2019, p. 141 f.). Key to this perspective is that it does not reduce media to tools for educational purposes or focus on individual critical competencies or literacies. Pushing this forward with the notion of media constellations, media can be seen as the foundation of education and *Bildung*, where the latter refers to the constitution and transformation of self- and world relations. There is no education, in this sense, without media. But if we consider media as a precondition of our realities, one goal of rendering postdigital constellations accessible is to reflect on them critically and to shape and reshape them within novel imaginations of what the future can hold. If these novel imaginations are thought out with the

dominant structures, ideologies, or discourse of contemporary society, the question is how participation unfolds in the postdigital condition.

But "participation" is also a tricky concept. In many parts of the world, people can, are invited to, and/or are supposed to want to participate in a variety of ways and contexts: in social and cultural activities (e.g. sports, museums, social media), the labor market and capitalist production (e.g. having a job, consuming goods), or political decision-making (e.g. parliamentary elections, neighborhood or parent-teacher associations). In recent decades, participation has become a kind of imperative across many fields of practice (Declercq et al., 2021). "The more participation, the better" seems to be an almost unquestioned consensus—or who would disagree?

On a more systematic level, we can differentiate between participation as (1) taking part in something and as (2) having a (more-or-less decisive) say in decision-making processes. In terms of the former (taking part in something), participation can be seen as a fundamental precondition of culture. On this level, it means being part of a culture by, for example, consuming and/or producing cultural products and generating shared meaning within cultural practices. According to Roose and Daenekindt (2015), building on Bourdieu's work, this could be framed as "cultural participation" that "ranges from high to low, from arts participation and consumption of highbrow cultural products (e.g., visiting museums, attending the opera, and reading books) to consumption of lowbrow products (e.g., listening to rock music or going to the movies)" (447). With regard to media and participation, this means to use media in consuming and perhaps also producing content, and it requires access to technology as well as the skills and willingness to engage in interaction (Carpentier, 2011, p. 69 and 129ff.).[1] A lack of access or interaction is frequently problematized in terms of a "participation gap," most prominently in regard to the "participatory culture" described by Jenkins (2006). Participatory culture focuses on the different ways in which people can contribute to media culture or digital culture via interactions and/or content (for an overview see Cuntz-Leng et al., 2015). The notion of

[1] Whereas Carpentier sees access and interaction as a part of participation in the earlier chapters of his book (which would be the first aspect in our differentiation: taking part in something), he comes to distinguish between them in later chapters, seeing participation as bound to decision-making (which would be the second aspect of our differentiation: having a say in decision-making processes).

closing the participation gap can be seen as both an empowering inclusion of formerly excluded people and an imperative that demands people join existing media economies of consumption and production. So although this understanding of participation is not linked to formalized or even institutionalized decision-making, it is still an inherently political concept as it raises the question of who can and who does participate in a given culture and who is excluded for which reasons. But the politics of participation also lie in the sense that everyday culture is inherently political: the choices around how to participate—and how to structure others' participation—in what kind of cultural practices by consuming and producing which kind of (material and symbolic) products matter.

In terms of the second sense of participation noted above (having a say in decision-making processes), participation can be seen in a more formal or institutionalized sense of the political. It concerns which role groups or individuals play in decision-making processes. A diagrammatic key concept for this is the "ladder of citizen participation" proposed by Arnstein (1969) more than fifty years ago, which has seen a vast number of iterations and variations since (see Fig. 1.1).

This diagram provides a clear and linear hierarchy from "nonparticipation" at the bottom to "citizen control" at the top, and reflects the tendency towards the "participation-imperative" mentioned above. As Christopher Kelty puts it: "Built into the form of the ladder is a normative claim about participation: the point is to go up the ladder, not down it, toward citizen power and away from manipulation" (2020, p. 173). Kelty notes that, despite the focus in Arnstein's writing on community participation, the image of the ladder suggests that it is (autonomous) individuals who climb the ladder, rather than groups or collectives. The idea of the "participation gap" mentioned above in terms of cultural participation can also be applied on the basis of this imperative: when (individual) citizens should or could be high up on the ladder but in fact are not, a gap appears that needs to be closed. A legitimate question is, however, who *should* even participate and *to what end*, or in Kelty's words: "Participation in what?" (ibid., p. 1). So we should not only take into account whether or not participation is actually being achieved but also which aims and values go along with it.

Another important issue is that, if taken seriously, participation is by no means guaranteed once the decision has been made to implement it. It is not a clean, well-organized, totally manageable, and "formatted" (ibid., 10) process as diagrams such as "The Ladder" might suggest, but a messy

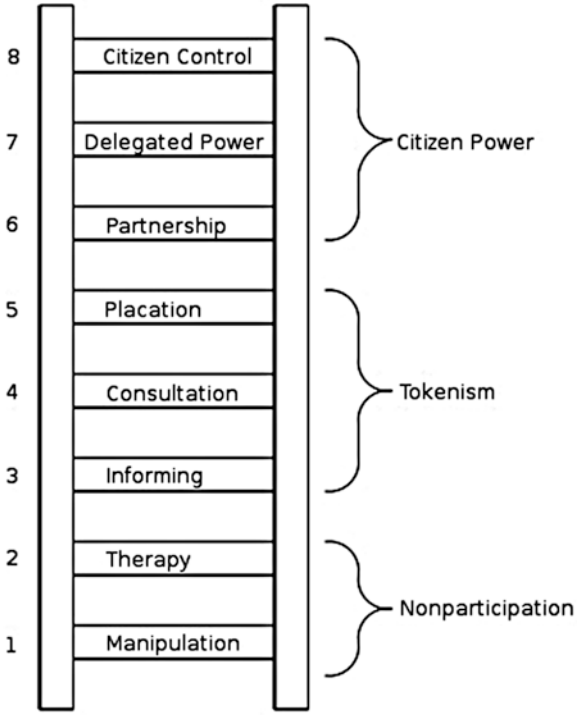

Fig. 1.1 The ladder (Source: Arnstein, 1969)

and fundamentally political process. According to Kelty, it is an "experience [that] differs from, and creates tensions or difficulties with, the instrumental and formatted expressions" of participation (ibid., 10). It can shatter hierarchies, question certainties, and lead to perplexities between different individual or collective actors within the participatory endeavor (Poltze et al., 2022).

Against this backdrop, this book understands postdigital participation in education as, first, participation in contemporary educational media practices that constitute our day-to-day realities and are connected within socio-technical constellations, and second, participation in processes that influence the preconditions of these educational realities. It has aimed to curate a set of contributions that address the postdigital condition and also take a critical analytical perspective on what is often called "digital education."

Structure of the Book

The book explores in depth a number of issues and levels of postdigital participation in education. Although the notion of postdigitality has already covered fruitful ground in education science and education philosophy (with the *Journal of Postdigital Science and Education* and Springer's associated book series *Postdigital Science and Education* as a kind of central institution), there is still (and will be in the years to come) a need for conceptual and analytical work at the nexus of the postdigital condition, postdigital perspectives, and specific issues, such as, in our case, participation and education. The first part of the book thus aims at *Mapping the Postdigital Condition in Education*. It begins with Nina Grünberger's "Participation as a Key Principle of Education for Sustainable Development in the Postdigital Era," which raises questions on the relationships between digital technology, sustainability, and education. The next chapter, "Social Participation in a Postdigital–Biodigital Age" by Petar Jandrić and Sarah Hayes, shows how the current focus on infopolitics must urgently be expanded to include biopolitics and related inequities following recent advances in the biosciences and in response to challenges posed by the COVID-19 pandemic.

Just as the postdigital condition and the media involved in it open up wide-reaching potential for certain people to participate, it also creates new barriers for others. The chapter "Postdigital *Bildung* as a Guiding Principle to Foster Inclusion in Educational Media" by Marlene Pieper, Till Neuhaus, and Michaela Vogt combines philosophical perspectives on the notions of postdigitality and *Bildung* focusing on Open Educational Resources in a project on inclusive learning materials. Anke Redecker's chapter "Distance Learning and the Question of Educational Justice: A Dialogic Approach to Digital Diversity in Schools" shows how drill-and-practice and e-portfolios have been widely promoted since the outbreak of the COVID-19 pandemic, reflecting on the challenges in terms of inclusion that the situation has brought. She argues that using video conferencing in a dialogical approach can diminish such obstacles.

Education and educational media are domains that *both* operate under the condition of postdigitality *and* generate knowledge about postdigitality. This is the focus of the second part of the book, *Performing and Reflecting on the Postdigital Condition with Learners.* In their chapter "Learning Academic Practices: Enabling Students to Participate in a Postdigital Society," Jennifer Grüntjens, Maike Altenrath, Sabrina Schaper, and Sandra Hofhues describe research-based teaching as a way to foster academic abilities in students that at the same time provide reflexive insights into the

postdigital condition in general. The chapter "Expanding the Pedagogical Space: Co-design and Participation in an Online Postgraduate Course" by Tim Fawns, Gill Aitken, Yathu Maheswaran and Kanastana Yasotharan, describes and reflects on a thematically open online course and the practices and power relations that go along with its co-creative approach. In "Let's Figure it Out: Participatory Methods for Reflecting on Educational Media in a Postdigital World," Andreas Weich, Ina Schiering, Michael Friedewald, Philipp Deny, and Marvin Priedigkeit describe and combine approaches and workshop concepts from media constellation analysis and data protection impact assessments, reflecting on postdigital educational media from a participatory perspective. Marko Teräs, Hanna Teräs, and Juha Suoranta show in their chapter "From Official Document Utopias to Collective Utopian Imagination" how an empathy-based stories approach can generate utopias that exceed the boundaries of hegemonic narratives. Finally, Eva Kleinlein's chapter "Asynchronous Narrative Audio-Messages: An Internet-Based Qualitative Method for Data Collection in International Research" outlines and discusses how the everyday practice of audio messaging can be used to generate rich research data.

The last chapter is a postscript that explores how the volume as a whole responds to its initial guiding question: "How do contemporary media constellations shape participation?"

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PART I

Mapping the Postdigital Condition in Education

CHAPTER 2

Participation as a Key Principle of Education for Sustainable Development in the Postdigital Era

Nina Grünberger

Introduction

We live in a time and a world that is thoroughly shaped by digital technologies and the structural properties of digitality (Stalder, 2019). Our everyday lives are deeply connected to digitality, algorithmicity, and changing forms of social communities and communication. The term postdigitality points to the inevitability and loss of alternatives to digital structures (Cramer, 2014, 2016). The variety of technological possibilities, and especially the Internet, invite people to actively participate in society; indeed, democracy, co-determination, and active design were the hopes of the early Internet, hopes that were also discussed within media education as an academic discipline. The ideas of participation, discursive exchange, and co-creation rarely refer to the structures and characteristics of

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postdigitality. Today, both the digital environment and corresponding media education are strongly shaped by monopolistic providers in digital capitalist structures (Daum & Nuss, 2021; Niesyto, 2017a; Staab, 2020). The ways in which digital infrastructures are curated and built do not promote creative forms of participation but rather prevent them. This also has far-reaching implications for media education and the education sector in the context of digital capitalist infrastructures.

In other words, the current structures of digital capitalism represent the results of the decisions of only a handful of people—mostly white men—following the narrative of innovation *for* solving social challenges, while at the same time ignoring or not listening to the voices of people outside the decision-making institutions of the tech industry. This raises the question as to what a participative, co-created, and democratic digital infrastructure might look like. And what is the key to development in this direction? One might be education, as postulated in the United Nations Sustainable Development Goals (SDGs) (United Nations, 2015a). The European Commission just recently published a framework for the main competencies toward more sustainable thinking, acting, and thus a sustainable development of our society: the so-called GreenComp-Competence Framework (Bianchi et al., 2022). This framework includes twelve main competencies, divided into four categories: "Embodying sustainability values," "Embracing complexity in sustainability," "Envisioning sustainable futures," and "Acting for sustainability." The category "Embracing complexity in sustainability" contains relevant aspects which, among others, provide the key elements for sustainable education and transformative learning processes central to Education for Sustainability (ESD) (Rieckmann, 2021): "system thinking," "critical thinking," and "problem framing" (Bianchi et al., 2022, p. 14f). To define oneself as an active and politically autonomous person—in both regional and international contexts—it is generally considered essential to follow a certain set of values and to understand systems, their dependencies and hegemonic power relations. This understanding must be established at a basic level and improved upon step by step over time, while recognizing that a full understanding of all complex relationships is impossible. According to this assumption, we can address the conditions and pedagogical principles of the teaching and learning settings needed to facilitate the necessary knowledge and competencies. Looking at existing media education programs and the digital infrastructure in which these are organized (Hug & Madritsch, 2021), we can see that students (as well as pre-service and

in-service teachers) are rarely introduced to diverse technological structures (such as open-source material or regional, socially fair providers) but are rather exposed to the offers of the monopolistic companies mentioned above. Consequently, they are not encouraged to question the "made" character and feasibility of digital structures; nor do they generally have the opportunity to actively participate in the design of digital structures. Furthermore, they are hardly ever given access to knowledge about how the structures of digital capitalism are undermining democratic structures (Srinivasan & Bloom, 2021; Staab, 2020).

Parallel to this, but not considered separately, research has examined and is examining the relationship between sustainable development, ESD, and digitality (Alessandro Barberi et al., 2020; Demmler & Schorb, 2021; Grünberger, 2021). In educational contexts, it seems to be a pedagogical principle of ESD and media education not to provide clear-cut answers but to enter into a mutual exploratory and co-creational process. The focus is on the joint exploration and critical consideration of the implications digital technologies have for sustainable development (Grünberger, 2022; Niesyto, 2017a; Rieckmann, 2021). The participatory exchange around these processes and relations allows the actors to understand the "made" character of digital technology and the general feasibility of postdigitality (as described below) and thus—at least to some extent—to perceive their roles in this complex development. But once again we can see that participatory and democratic approaches toward these issues in school contexts are rare. And once again we often hear and see an appeal to individual people to think and act more sustainably as the solution for a more sustainable development of our whole society. But how can we refer to the morality of individuals if they have no decision-making power at all and do not even have a realistic chance of understanding the system at least to some extent?

This chapter examines the notions of digitality, postdigitality, and sustainability, addressing the question of how structures of digital capitalism arise in the present day and how sustainable development can be conceived of within these structures. In the next step, I will discuss what the participation of learners in contexts combining ESD and media education might look like, and which opportunities and challenges are involved. This chapter is based on existing preliminary work (Grünberger, 2022; Grünberger et al., 2021) which will be extended to consider opening up general participation opportunities (both within and outside school) in the postdigital era. The text aims to clarify the complex relationship

between participation, media education, sustainability, and digital capitalism. While research articles are, traditionally, supposed to give answers rather than raise questions, we see, especially in the context of rapid changes in the EdTech sector, that some questions "are still only beginning to be asked" (Macgilchrist, 2021, p. 244). This chapter must therefore be considered a failure from a traditional perspective because it does not provide clear answers but rather reflections along the way to formulating questions. These questions appear in all sections of the chapter, are highlighted in italics, and will be discussed in the conclusion.

Digital-Capitalist Structures and Sustainability

To understand the terms digitality and postdigitality, it is not enough to look at past discourses around digitization (Grünberger et al., 2020). The culture of postdigitality is no longer in transition. Or, more specifically, the ongoing digital transition has become its unique characteristic (Stalder, 2019). The logic, rhythm, and forms of presentation, of representation and repetition, of inclusion and exclusion, and of possible and impossible forms of communication are predefined by binarity, algorithms, the design of hard- and software architectures, and the network of digital infrastructure covering our planet from deep under the soil (by exploitation of natural resources such as rare earths, see, e.g., Gramlich, 2021) and deep in the oceans (deep-sea fiber optic cable or microplastic from e-waste, see, e.g., Taffel, 2016), to up in the atmosphere and stratosphere (Crawford, 2021; Stalder, 2019), such as the *Starlink* project by Elon Musk or the *Loon* project by Google X.

The search for a definition of digitality or postdigitality can begin with Jean-François Lyotard (Lyotard, 1982), who classified postmodernity not as an era *after* modernity, but as an exaggeration of it. Postdigitality could thus represent an exaggeration of digitality in which digital technologies form the basis of all social processes. And, according to Lyotard, postmodernity is characterized by contingencies and contradiction, to which one can respond, for example, with "paralogy"—or "subversion"—thus allowing new structures to emerge. This already points to the structures of a culture of digitality and digital capitalism following a certain logic and being characterized by certain peculiarities, which at the same time are generally changeable. Digital structures are invented, developed, and built as well as workable, malleable, and changeable by humans.

Secondly, it is important to point out the high importance of capitalist and digital-capitalist structures for an understanding of the digital and postdigital era, which again is fundamental—in both a limiting and enabling way—for all forms of democracy and participation, especially in the context of education. To understand these digital-capitalist structures, a close look at the logic of digital capitalism as well as the narrative of innovation through technology is needed. Digital technologies have been understood as one large solution and opportunity for democratic structures in the past as well as today. Wendy Chun's book *Discriminating Data* begins on the first page with a devastating diagnosis of democratic conditions in digital structures:

> The Internet has become a nightmare, the source—it is claimed—of almost everything bad in this world. It has given rise to worldwide surveillance networks, coproduced by states and corporations; social media algorithms, powered by military-grade psychological operations (PSYOPs) that spread lies and conspiracy theories, polarize society, provoke violence, prolong pandemics, and foster planet-wrecking levels of consumption; and artificial intelligence (AI) programs that exacerbate existing inequalities and threaten humanity's future. The irony is that the Internet and artificial intelligence were promised to be and do the opposite. Cyberspace, the Internet of the late twentieth century, was to usher in a new era of global democracy, equality, and prosperity. (Chun, 2021, p. 1)

Digital technologies are "seen as a means of resolving the problems of society, yet never quite seem to deliver convincingly" (Srinivasan & Bloom, 2021, p. 23). And again, digital technologies and their developers are postulating the rules of how our society works, what is becoming possible, and what remains impossible or simply not representable within digital infrastructure. The digital-capitalist market seems to be a market of its own (Niesyto, 2017b; Staab, 2020), also laying out the rules for the whole capitalist business world by building on venture capital and thus inextricably linked to issues of risk, inequality, poverty, and exploitation. As Srinivasan and Bloom put it, digital technologies are the "loom on which we spin the myths" of a functioning free market, of more democratic structures and freedom on the Internet—and finally of a rescue "from the disasters of our own making." Digital technologies tend to discriminate against racial minorities, women, and the poor, thus perpetuating the colonializing tendencies that are generally attributed to media in the

context of the writing of history and the associated codification of the nation-state in a culture shaped by books and writing (on the importance of media history in colonial history, see for example Castro Varela & Dhawan, 2005; Werkmeister et al., 2016).

In particular, applications based on Artificial Intelligence (AI) often build on data sets in which basic discriminatory structures of the past are already mapped and thus teach the AI this bias as correct (Crawford, 2021). In addition, Chun (2021) shows that AI—and thus an essential basis for decision-making in our society—is firmly built on questionable correlations of social characteristics ("eugenic correlations"), and that we thus operate in a certain way between homogeneous filter bubbles ("homophily") and purposefully controlled controversial groups. However, it should not be ruled out that digital technologies can also contribute to a diverse and inclusive society. According to Melvin Kranzberg (1986), professor of the history of technology, "technology is neither good nor bad: nor is it neutral": technology does not necessarily lead to chaos and inhumanity. Nor is it as "innovative" and "forward-focused" or "accorded with great social, even pseudo-religious, respect and pomp" as some may assume. And yet again and again, politicians and developers "hop[e] to escape a supposedly unredeemable society and unsavable planet" by means of digital technology (Srinivasan & Bloom, 2021, p. 24f).

As already pointed out elsewhere, the relationship between digitality and sustainability is manifold and complex (e.g., Bieser & Hilty, 2018; Gramlich, 2021; Grünberger, 2021; Remy & Huang, 2014). Yet on its own, sustainability is a vague and frequently discussed issue. Sustainability refers to the requirement to manage resources and to meet one's own needs in a way that potentially preserves our average quality of life for future generations (Harper, 2001b). The verb to "sustain" means to "suffer" and "bear" *or* "keep up" (Harper, 2001a). As sustainability is geared towards three equivalent aspects—social, economic, and ecological sustainability—all aim to "keep up" our social life or "not to damage it too much" (Harper, 2001b; Huckle, 2012) in consultation with our Planet Earth and other living creatures. Such efforts in the context of digitality and sustainability, especially with a focus on political programs, are based on overarching documents, such as the EU's *Green Deal* (European Commission, 2019) with the associated *Circular Economy Action Plan* (European Commission, 2020a), as well as the *Paris Climate Agreement* (United Nations, 2015b) and the *Basel Convention* (Europäische Gemeinschaft, 1993) on the transfer of waste and

e-waste. More specifically, there are the *RoHs* (restriction of the use of certain hazardous substances in electrical and electronic equipment, European Parliament, 2021) as well as the *General Data Protection Regulation* (European Parliament, 2016). Finally, many hopes are pinned on the *Digital Services Act* (European Commission, 2020b) and *Digital Markets Act* (European Parliament, 2022).[1] For Germany, the German Advisory Council on Global Change (WBGU, 2019; WBGU, 2018) and its reports are of great relevance.

The global perspective is taken into consideration, for example, by the United Nations' (2015a) formulation of *Sustainable Development Goals* (SDG): SDG 9, for instance, aspires to "build resilient infrastructure, promote inclusive and sustainable industrialization and foster innovation." A sub-goal (9.c) aims to "significantly increase access to information and communications technology and strive to provide universal and affordable access to the Internet in least developed countries by 2020." As an initial result for 2019, they postulated that "almost all people around the world now live within range of a mobile-cellular network signal, with 90 per cent living within range of a 3G-quality or higher network […]" (United Nations, 2019). However, this can be interpreted differently: The formulation of the SDG 9 may be (ab)used by ICT companies from countries of the Global North to create new jobs installing their infrastructure in the Global South without taking heterogeneous cultures, natural environments, or social structures into consideration. It becomes clear that bringing ICT to "least developed countries" is not a good thing per se, but has to follow participative processes and consider the specific conditions of these countries (e.g. Castro Varela & Dhawan, 2005).

What becomes apparent is the necessity to "cope with complexities and uncertainties in our globalised world" (Abdalahin & Chang, 2020, p. 17) and, accordingly, new forms of learning, engagement, and participation are emerging and evolving, which need to be developed and improved upon in interdisciplinary collaboration. Some of them are discussed and collated in ESD discourses. The European Commission is trying to tackle this issue by means of the GreenComp-Competence Framework, which "responds to the growing need for people to improve and develop the knowledge, skills and attitudes to live, work and act in a sustainable

[1] Sy Taffel and I discussed some of these guidelines in more detail in the form of an interview (Taffel & Grünberger, 2022). Taffel emphasized the EU's pioneering role in this context.

manner." The aim of GreenComp is to "support education and training programmes for lifelong learning," to help all stakeholders in the field of "teaching sustainability," and to enable learners to "become systemic and critical thinkers, as well as develop agency" (Bianchi et al., 2022, p. 5). However, reading GreenComp shows that many of the formulations are vague, leaving the back door open for neoliberal alienation or adoption for stakeholders' own—less critical and sustainable—purposes.

As current discourses show, sustainability as well as a more sustainable development must be organized in close collaboration with social and environmental systems and with consideration for the "complexity of resulting interactions that make counterintuitive surprises the rule" (Kasemir et al., 2003, p. xvii). Otherwise, society will turn out to be once more in the status of "unsustainable sustainability," as Ingolfur Blühdorn et al. (2020) diagnose the current situation. However, the developers of large IT companies, or the so-called "tech barons," start from the "presumption that people and the planet itself are inconvenient, messy and in decline […] instead of doing everything we can to heal our planet and uplift our species." The answer has been to design technologies which are supposed to solve these issues but in fact tend to "reinforce doubt and pessimism" (Srinivasan & Bloom, 2021, p. 25).

Further, the development of digital technology by monopolistic IT companies tends to suffer from delusions of grandeur rather than being run *for and with the participation of society* in order to solve major societal challenges. *The question therefore arises as to how the currently entrenched structures of digital technologies, which are shaped by a few IT monopolies, can now be shaped by and for the public. What steps (*e.g. *acquisition of skills, insight into and criticism of existing structures, technological equipment) and what infrastructures are necessary for this?*

One example is Elon Musk, whose "literal and figurative moonshots" are described as an overriding heroic goal of technological innovation. These "moonshots," as well as satellites such as Musk's *Starlink*, visualize the expansion of digitality, developed and driven by humans, into all spheres; across the oceans, and from the Earth up into the atmosphere. Digitality thus spreads from the soil to the clouds and affects everything through its logic and structure (Parikka, 2015). Google took a similar approach by sending helium balloons into the stratosphere in its *Loon* project (https://x.company/projects/loon/#), which was supposed to guarantee Internet coverage in remote regions of the world (which is one primary goal of the SDGs, as mentioned above). The question is: Do

we—as representatives of the Global North—want to have Internet access in every corner of the world and/or—much more importantly—was the decision made in agreement with the ethnic groups on site in a participatory process? The slogan of the developer group "X" behind the *Loon* project boasted: "We create radical new technologies to solve some of the world's hardest problems." *But who defines what the "hardest" problems are, who has the right to think about and implement solutions, and what role do participatory processes play from a global perspective in the process toward a more sustainable culture of digitality?*

We, the rest of society, are almost forced to go along with these structures and have little chance of developing alternatives. Let us take the example of 5G. 5G was developed as the next step in the logic of Internet protocols and, among other things, significantly promotes the further development and spread of virtual and augmented reality applications for smartphones. But nobody knows exactly what 5G can be used for. On the one hand, this technology is already swallowing incredible amounts of venture capital. On the other, the volumes of electronic waste, energy consumption, and server services that are necessary for 5G technology are rarely discussed. Again, it is technology that "society" did not explicitly ask for, not having actively participated in the decision-making process. And again, despite "connecting the unconnected" or connecting the "last billion, [...] it seems evident that the initial users of new space-based and 5G networks will be commercial and tightly aligned with support of other infrastructures and services of global capital" (Srinivasan & Bloom, 2021, p. 32). These technologies are

> not democratic or cooperative […], but controlled by a small capitalist elite. We can assume that for many there is something unnerving about having the globe encircled by thousands of satellites, balloons and drones. Perhaps this is because, from a spatial perspective, there is no way to know what infrastructure you are actually connecting to, where it is or what it is doing. (Srinivasan & Bloom, 2021, p. 34)

In most cases, the digital infrastructures that are being developed and used do not generally have the superordinated goal of providing "better tech," benefiting humanity, or solving the great challenges the world is facing. The idea of today's IT monopolies is not primarily to save our planet. What we see is survivalism by a small tech-elite (Zuboff, 2019) that fails to take the rest of the world's population into account. Furthermore,

this whole concept is based on the funding of digital technology development. Thinking about new ways of digitality means considering questions such as: *Who profits from technology and who is objectified, instrumentalized, or threatened by it? What are the peculiarities of current digital capitalist structures? What alternatives are there and how can they be established?*

Politics and political decision-making processes can facilitate this development with regulations which strictly focus on creating value for people and the planet rather than for large oligarchic institutions. This calls for us to "close the distance—physically, socially and politically—between those that develop and roll out technology and those whose lives are subject to it" (Srinivasan & Bloom, 2021, p. 40). The further development of existing technological architectures and the development of new digital technologies can then be organized in a participatory negotiation process involving the world's population (see for example Piétron, 2021).

The WBGU (2019) calls as a top priority for the installation and organization of so-called discourse arenas (German: *Diskursarenen*) to prevent digital technologies from becoming an accelerant (German: *Brandbeschleuniger*) for environmental damage, unsustainable working conditions, and the exploitation of the Global South by the Global North. However, this appears to be extremely difficult as the structures of digital capitalism seem to stand in the way of a participatory, enlightened approach to media education and active, courageous participation in a culture of digitality.

Participation for Sustainable Development in the Postdigital Era?

ESD in digitality or the postdigital era always has to do with participatory learning at all levels of education. The goal is to introduce an exchange about sustainability values, to practice a critical perspective, and to take responsibility through action. The thematic connection between digital structures, media education, and sustainability can be seen in different policies. In the EU's *DigComp* concept, for example, a framework of skills for a digitalized world, which is often used as a basis for developing educational programs, contains the paragraph 4.4 "Protecting the environment. To be aware of the environmental impact of digital technologies and their use" (Carretero et al., 2017, p. 17). Another example is the German strategy by the Standing Conference of the Ministers of Education

and Cultural Affairs (KMK) called "Education in the Digital World," which claims to protect nature and the environment ("4.4. Natur und Umwelt schützen") (Deutsche Kultusministerkonferenz, 2016).

If all these visions are to be realized, how should educational settings in this context be designed? Participatory working spaces involve high requirements from all participants but are necessary for a sustainable implementation and negotiation for a sustainable future development, and are officially implemented in *Agenda 21*. As participation is so important, it has become a "buzzword" in the discussion around sustainability but lacks a more differentiated use and application as well as a holistic understanding, focusing primarily on environmental sustainability (Disterheft et al., 2015, p. 11).

First, it is essential to define the term "participation." Its etymological origins combine aspects of "being involved" and the act of "taking part." The adjectival form "participational" means "involving or requiring participation" (Skeat, 1995). Consequently, we can detect two main aspects of participatory working areas, the first concerning structures, architectures, didactical materials, leading persons, and invited persons, for example, in order to *allow* participation. *For this reason we can ask: How should structures from learning and working settings look in order to facilitate participation?* Secondly, participative working spaces need people who *want* to participate, who have the aim, the ability, and the resources to get involved in participatory and co-creative working processes. By *taking* part in a participatory work setting, participants will automatically change the structures and architectures of the social relationship, the project goals, and the project outcomes as well, for instance. Consequently, an additional question can be raised: *In what way or ways will the given structures and architectures of a project be changed by co-creative and collaborative processes?*

It also seems crucial that the logic of participatory processes in the field of sustainable development is confronted with the logic of evaluation in an economical manner, focusing on efficiency, conservation of resources, and ensuring outcomes (Nikel & Heinrich, 2016, p. 261). Nikel and Heinrich (2016) analyzed a number of documents concerning *Agenda 21* and the SDGs, as well as concepts and reports in the field of ESD, in which they examined the role of evaluating outcomes from educational programs and aims. However, this focus on evaluating and reviewing clearly identifiable competencies often ignores the *specific type of learning* ESD programs represent. Educational programs in the context of ESD can be distinguished into various types: on the one hand there is basic education (German:

Grundbildung), which legitimatizes an evaluation, and on the other, educational programs focusing on much deeper learning processes involving critical thinking and emancipatory aspects (Nikel & Heinrich, 2016, p. 262f). The second type of educational programs render evaluation in the typical, highly scalable, and comparable mode inappropriate. In key United Nations documents, Nikel and Heinrich (2016) found, for example, notes explicitly revolving around aspects of efficiency, while at the same time addressing intense and critical learning processes. This is the result of a lack of financial resources on the part of the United Nations. The realization of the UN *Sustainability Decade*, for instance, is based on the financial support of the different nations and the documents examined therefore seek to address the moral concerns and individual engagement of all participants. Paradoxically, participants of ESD programs are already supposed to bring along a minimum of skills and knowledge about education for sustainable development. We often see educational programs which are not or only partly voluntary but have to be monitored and evaluated (Nikel & Heinrich, 2016, p. 266f). All this restricts ESD as it is supposed to focus on social negotiation in order to address the people's responsibility. At the same time, educational online programs which try to pass on information and knowledge about sustainable development processes are still much too limited in their—mostly non-sustainable—design. All activities and all efforts in the context of sustainable development should thus primarily focus on the sustainability of the educational program itself (Nikel & Heinrich, 2016, p. 281). This is also relevant regarding the question of digital equipment in educational institutions, which often follow the paradigm of *more and more technology* instead of addressing a sufficient equipment strategy (see, for example, Selwyn, 2023). *What digital equipment is necessary for such learning and working environments, and which digital equipment can be dispensed with, also in terms of sufficient use?*

As the title of this chapter anticipates, participatory working spaces are typical of educational settings within the field of sustainability. According to Garmendia and Stagl (2010, p. 1712), the complex, contingent, uncertain, conflicting, and fast-changing field of sustainability in our society needs "methods, which open up dialogue and options before closing down and making suggestions" and therefore enable "[social] learning opportunities which are seen as ways for addressing complexity and uncertainty." These social learning processes are essential in the initiation of transformational processes for a more sustainable development of our

society. It would appear that this also requires some kind of subversive, transformational shift. After all, we have sufficient knowledge about climate change and postcolonial structures, but for decades have not changed our behavior accordingly (Blühdorn et al., 2020).

There is an ongoing discourse in society about how to handle this "need to be substantiated by democratic mechanisms which can deal with inherent problems of continuous change, uncertainty and multiple legitimate perspectives of the systems." There is, therefore, a clear shift from focusing on outcomes to focusing on processes and from "pure expert judgement to using society as extended [*sic*] peer community" (Garmendia & Stagl, 2010, p. 1712). Research and researchers as individuals play diverse roles in this process. First, they are the ones who can open up discursive spaces with colleagues from various disciplines. Second, they can provide society with information about their research, which is one of their duties as part of the "third mission" of higher education institutions (Henke et al., 2016). Third, and for participatory processes most importantly, researchers can arrange participatory working spaces with various partners from society, provide them with information during the process, and support them with scientific knowledge. And fourth, we see that researchers increasingly take on an activist role or support activists with their skills and knowledge, giving rise to a discussion within the academy around the normativity and objectivity of research.

Discussing a possible future is a process in which all participants can learn from each other. For institutions this means putting a clear focus on the quality of participatory and decision-making processes ("procedural rationality") rather than on the "search for optimal solutions (substantive rationality)." All this "requires the ability [from the participants] to cope with, adapt to and shape change without losing promising options for future development" (Garmendia & Stagl, 2010, p. 1712). Some would say that this eventually leads to the formulation of "future literacy" (OECD, 2019) or "futures literacies," about which a critical discourse from an educational perspective is under way (Häggström & Schmidt, 2021; Hug, 2022). However, as described above, participants also need a strategy to deal with the fact that participation in postdigitality is not only hardly possible, but explicitly restricted and prevented, and that relevant and global decisions are made by a tech-elite with the necessary power, knowledge, and money. *How can participatory processes be planned and carried out despite this knowledge of the limited scope for decision-making*

and action, without participants feeling that they are taking part in a farce doomed to failure right from the beginning?

According to John Dewey, democratic structures are endangered by systems of industrial society such as capitalism, which consequently leads to a "democratic crisis" and a loss of community. On the other hand, participatory discourse arenas, as described above, can facilitate concepts of democracy, keeping communities in an ongoing discourse and public institutions accountable (Disterheft et al., 2015, p. 12). And again: academics are the ones who can enable participation and democratic exchange by "abandoning technocratic and dominant positions" (Garmendia & Stagl, 2010, p. 1713). As Garmendia and Stagl (p. 1714) emphasize, this also goes along with Dewey's view of nature as a socially constructed phenomenon. As Chun (2015) points out, our picture of nature and specific natural phenomena such as climate change is, on the one hand, a cultural construct which, on the other, is constructed by means of scientific technologies and in modern society by means of *digital* technologies. This leads to the fact that the participatory conversation and exchange about sustainability must consider the importance of digital technology and technological development. This must lead to a "new vision of our knowledge system as an open and diverse system" and a new aim of science as there are no clear predictions of consequences of one's individual action in this "indeterminacy" of modern society in transition. In other words, we live in a time of bounded rationality, limited certainty, limited predictability, indeterminate causality, and evolutionary change (Garmendia & Stagl, 2010, p. 1714).

The concept of participation is directly associated with that of democracy, as politicians represent the public and/or the public can make their own decisions. In both kinds of democracies, participation is essential for the legitimization of governance processes. Public participation thus "refers to the practice of consulting and involving members of the public" in "agenda settings, decision- and policy making of organisations or institutions" (Disterheft et al., 2015, p. 12). Apart from democratic participation, we find individual as well as social participation. Individual decision-making as well as individual actions leading to a possible future world worth living in account for individual participation. Social participation, on the other hand, means collective activities on a regular basis in one's community (ibid.). Based on this distinction, we can, at least to some extent, refer to social participation in the context of postdigitality. While we must be aware of the current limitations of this participation as

described above, educational programs and efforts must nevertheless strive for encouragement and empowerment in order to develop solutions for more co-decision-making apart from existing structures. *But how can educational programs be designed to encourage and promote the development of problem-solving strategies? And how do they fit in with existing education programs that promote a narrow understanding of competencies and their evaluation?*

As Disterheft et al. (2015, p. 17) discovered in an empirical study, there are a few preliminary criteria for a more effective participation in participatory processes: communication, a transparent strategy, a clear goal, and "starting on time." While this would seem to make sense, on the other hand this is precisely what is impossible in the context of media education, sustainability, and postdigitality: *How can we define a clear goal for participatory settings in our time of constant contingency? How can we define a starting point for participative processes when we are always already too late? And how can we have a transparent strategy when we have only minimal insight into the digital capitalist market?*

According to Disterheft et al. (ibid.), the facilitators of a participatory program as well as the participants themselves should have "specific dispositions, skills and participatory competencies." These participatory competencies are described as "communication skills, […] intuition, personal strength and persistence, flexibility, and appreciation, […] authentic interest and credibility from all parties involved." Further, these skills "need to be trained and developed, not only by the participants but as well by those who aim to lead through participatory processes." However, all this should not distract from the fact that certain structural conditions are essential for success. The latter may include having enough time and availability, as provided, ideally, by the management or structures of an educational institution (Disterheft et al., 2015, p. 19).

Conclusion: More Questions Than Answers

This chapter took as its point of departure the assumption that participation could be *the* central key for ESD with a special focus on sustainability in postdigitality. But it has found that difficulties arise when the framework conditions formulated in education institutions are not, or are only partially, compatible with the conditions of a postdigital society. In times of high contingency, clear and unambiguous goals can only be set to a limited extent, and processes need to be constantly adapted. Finally, and

most importantly, even academics have limited insight into the developments, structures, and logic of today's tech giants. Considering all these challenges, the study of sustainable digital development in the context of education is further complicated by the fact that educational policy frameworks often require clear reporting, evaluation of clearly defined learning outcomes, and conservation of resources while maximizing these outcomes. In addition, there are limited or no approaches to opening up digital architectures in educational contexts beyond existing and well-known proprietary providers. In many situations, the focus of educational programs is still too much on the morality of the individual, who is assumed to be able to make their own actions more sustainable. However, as we have seen, acting more sustainably is not so easy, especially in the post-digital age.

While this chapter has hardly produced clear answers, its reflections have raised the following instructive points moving forward:

1. *Creating opportunities for co-design and participation despite limited scope for action:* Participatory development of digital infrastructures also means designing digital technologies *for* and *with* the participation of society. The question remains how to make the leap to this participatory approach despite all digital-capitalist adversities and resistance without its degenerating into a farce What steps, pedagogical approaches, and what infrastructures are necessary for this?
2. *Futures, participation, and combating inequality and discrimination*: It seems as if the sovereignty of interpretation over the present and the foreseeable future is in the hands of a few IT monopolies. The question is, how can we ensure that society sees itself as responsible for shaping the digital future and as actively participating in this development? Who has sovereignty over the development of visions and development for the future? Perhaps one of the hardest and most key questions here is how to end the long tradition of post- and neo-colonial inequality, which has also been fostered by the development stages of media. In addition, how can all this be made possible despite increased uncertainties and contingencies? How can we define a starting point for participative processes when we are always already too late? And how can we develop a transparent strategy when we have only minimal insight into the digital capitalist market?

3. *Designing participatory learning and working environments for critical thinking and problem solving*: How should learning and working environments look in order to facilitate participation? How can learning and working environments foster the ability and motivation of participants to *take part*? How can educational programs be designed to encourage and promote the development of problem-solving strategies? And how do they fit in with existing education programs? How will the given structures and architectures of learning and working environments be changed by co-creative and collaborative processes? What digital equipment is necessary for such learning and working environments, and which digital equipment can be dispensed with, also in terms of sufficient use?

It has become clear that the issue of sustainability is extremely relevant in a postdigital and capitalist era, that education should focus more on processes than on outcomes, and that in order to meet the current challenges, everyone—teachers as well as learners—needs knowledge, skills, and competences at all levels of education.

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CHAPTER 3

Social Participation in a Postdigital–Biodigital Age

Petar Jandrić and Sarah Hayes

Introduction

Social participation, also known under the various names like social engagement, social involvement, social inclusion, and others, is a key aspect of human life. Questions pertaining to social participation appear in various academic and professional fields, including philosophy, sociology, economy, and political science; are permanently present in local, national, and global politics; are at the heart of various grassroots and activist movements; and are central to educational theory and practice.

> In general terms, social inclusion is concerned with communities, groups, and individuals—with a primary focus on those that are marginalized—and with access to a level and quality of participation and integration in the rudi-

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> mentary and fundamental functions and relations of society. As such, it has personal, institutional, societal, and global dimensions. (Fudge Schormans, 2014, p. 6082)

In our postdigital age, indeed since the beginning of human life, social participation has never been merely about people. Media in the widest sense, technologies, and their socio-material affordances, strongly impact upon who, and in which ways, can participate in certain social activities. For instance, scholarly research cannot be conducted without access to books and articles listed in academic databases; human knowledge is incremental, and all researchers stand on the shoulders of their predecessors. Yet in the current political economy of academic publishing, access to academic databases is prohibitively expensive to anyone outside the narrow circle of rich (usually Western) universities and research centers. In consequence, participation in knowledge-making—which is an activity relevant for all people—is restricted to an elite group who shape research, related ethics, and policy according to its own agendas and interests.

This profoundly influences education, as the knowledge-making and sense-making of the present are intertwined with the knowledge-making and sense-making of the future. Educational inequalities run much deeper than traditional (post)colonial divides between East and West, Global North and Global South, and are intertwined with questions around class, race, and other political and social stratifications.

However, the mainstream political economy of academic publishing is not cast in stone; it is a site of ongoing struggle between hacker-activists who provide free access to copyrighted material and mainstream publishers who use various technical and legal means to protect their copyrights. As "the complex interplay between academics, academic publishers, hacker-activists, producers and users of academic content, actively co-creates the contemporary landscape of academic publishing … [t]raditional relationships between centres and margins of academic publishing have substantially reshifted." (Jandrić & Hayes, 2019) This reshifting profoundly impacts educational opportunities and contributes to new reconfigurations of associated social relationships such as social mobility.

Academic publishing is just one of many examples of deep postdigital entanglement between participation and technology. Some examples are fairly trivial: someone living in a Californian suburb needs a car to get to work, and we would not be able to write this paper without our computers

and Internet connection. Other examples are more complex: during the COVID-19 pandemic lockdowns, we witnessed various reconfigurations of participation in work and education related to access to technology, available workspace at home, family obligations, and so on (Jandrić et al., 2020). It is now commonplace that the relationship between technology and participation cannot be reduced to the availability of technology (e.g., digital haves vs digital have-nots) or technological affordances (e.g., database access). Participation runs much deeper than economy and encompasses a wide spectrum of psychological, social, economic, and other factors (Fudge Schormans, 2014). As witnessed by the collection of testimonies about teaching and learning during the COVID-19 pandemic lockdowns (Jandrić et al., 2020), education is one of the most prominent sites of the postdigital entanglement between participation and technology.

The pandemic has also turned our attention to biopolitics. From the availability of medicines and vaccines, through to the decision on whether to get jabbed, to associated legislation and practice (restriction of movement, COVID passports, etc.), biology has become an increasingly important aspect of social participation. The concept of biopolitics is far from new; it first appeared at the beginning of the twentieth century in the works of Rudolf Kjellén and was championed in the late twentieth century by Michel Foucault and his successors. Foucault's concept of biopower offers much to our postdigital moment; nevertheless, the biopolitics of the late twentieth century significantly differs from that of the 2020s (Peters, 2020). These developments profoundly impact all aspects of human life including but far from limited to education (Williamson, 2019a, 2019b).

Around the turn of the millennium, scholarly fields that had developed independently for the most part of human history—biology and physics—underwent significant convergence. The development of medicines and vaccines, gene editing, and other important breakthroughs in biology would not have been possible without the computer. "Bioinformatics has not arrived from a sudden or artificial blend of the 'soft' or 'moist' *bios* and the 'hard' or 'cold' *technē*; instead, the *technē* is an inherent feature of the *bios*. To various extents, biology is digital information and digital information is biology; one cannot be divorced from the other" (Peters et al., 2021a). This convergence has an important practical consequence, as "[t]he ability to turn biology into digital code, and then to return digital code back into biology, offers much more than new theoretical insights"

and enables "tinkering with and actively transforming living organisms" (Peters et al., 2021a).[1] Consequently, Dyson argues that

> [i]t has become part of the accepted wisdom to say that the twentieth century was the century of physics and the twenty-first century will be the century of biology. Two facts about the coming century are agreed on by almost everyone. Biology is now bigger than physics, as measured by the size of budgets, by the size of the workforce, or by the output of major discoveries; and biology is likely to remain the biggest part of science through the twenty-first century. Biology is also more important than physics, as measured by its economic consequences, by its ethical implications, or by its effects on human welfare. (Dyson, 2007)

During the "information revolutions" of the late twentieth century, studies of technology and social participation followed the technological achievements of their day. During the past decades, and continuing with the arrival of the COVID-19 pandemic, institutions such as the United Nations, World Health Organization, European Union, and national governments, have spent a lot of money and effort in relation to digital participation. Concepts such as digital citizenship, digital literacy, digital inclusion, data poverty and so on are a natural extension of the "information revolution" and "knowledge society" paradigm but are not experienced equally in terms of participation (Hayes et al., 2021). In this context, biopolitics has remained under the shadow of infopolitics. Following recent advances in the biosciences, and in order to respond to challenges brought by the COVID-19 pandemic, we urgently need to expand the current focus on infopolitics towards a more balanced approach which considers its deep entanglement with biopolitics and related inequities in improving possibilities for some groups and individuals and not others (Koopman, 2020). This chapter meets that need and explores reconfigurations of social participation and related policymaking in our postdigital–biodigital age.

Biodigital (in)Equality and Communication

In *The Genetic Lottery: Why DNA Matters for Social Equality*, geneticist Kathryn Paige Harden (2021) distinguishes between two fundamentally different yet dialectically intertwined "lotteries" that impact every

[1] This Great Convergence is a complex topic explored in detail in our recent book *Bioinformational Philosophy and Postdigital Knowledge Ecologies* (Peters et al., 2022).

individual. The "natural lottery" consists of every person's inherited genetic makeup, which heavily influences one's (dis)ability in various activities. The "social lottery" depends on conditions such as parental involvement and income. Harden writes: "Your genotype, like the social class of your family, is an accident of birth over which you had no control … a type of luck in your life … together, the natural and social lotteries are powerful predictors of someone's social position in adulthood, particularly their educational attainment" (Harden, 2021, p. 204).

Historically, the concepts of natural and social lottery have been strongly linked to the notion of eugenics. Since Nazi experiments in the Second World War, eugenics has entered the spotlight as an immoral theory and a criminal activity. Yet up until relatively recently, eugenic practices continued in many democratic countries. In the US, for instance, routine involuntary sterilization of Native American people took place as recently as in the mid-1970s (Amy & Rowlands, 2018). Outside of health "care," eugenic practices have been particularly prominent in education, where strong traces of eugenic reasoning have remained up to today (Gershon, 2020). Much has been written about countering eugenics in various contexts, yet Harden captures the essence of these efforts:

> The anti-eugenic project, then, is to (1) understand the role that genetic luck plays in shaping our bodies and brains, (2) document how our current educational systems and labor markets and financial markets reward people with certain types of bodies and brains (but not other types of brains and bodies), and (3) reimagine how those systems could be transformed to the inclusion of everyone, regardless of the outcome of the genetic lottery. (Harden, 2021, p. 20)

In a biodigital reality, Harden's anti-eugenic project is a key aspect of social participation. Another is communication, which has now become fully postdigital.

In "Revisiting digital technologies: envisioning biodigital bodies," Kate O'Riordan argues that traditional communication based on the exchange of information is significantly different from emerging forms of biodigital communication.

> [The] representational media presence is a communicative node, which is overwhelmingly used to communicate with others and one in which people have some control and oversight. Biodigital communication further dislo-

> cates some of this control and oversight. To have a biodigital presence is to give something up, to take a substance from the body and put it into the circuit of production. … Giving up a tissue sample and having it returned as genomic data and annotated through a browser as part of an online presence reinserts a form of production that decouples participation. People do not have much control or oversight about what their genome communicates, what it means, or how it is communicated to them. The biodigital quality of this communication means that the online presence as a mode of communication speaks back to the producer in ways that the producer cannot control or oversee. (O'Riordan, 2011, p. 307)

This removal of control can be seen in numerous real-life examples, such as in compulsory COVID-19 tests, where results are automatically known to various institutions (such as health service providers) and private companies (such as airlines) beyond the test-taker's control (see Jandrić et al., 2020); or for students participating in educational neurotechnology projects, where their essentially uncontrollable brain data is used by teachers, schools, and private EdTech companies to enhance learning (see Williamson, 2019a). The loss of control over communication in these examples varies; for instance, those taking a home COVID-19 test may freely choose whom they will share the results with, while those taking a COVID-19 test at the airport automatically subscribe to sharing their results with the airline. In most real-life situations, however, engagement in biodigital communication usually implies at least some, if not significant, loss of the communicators' agency. This is especially prominent in recent educational developments such as attempts at sculpting the plastic learning brain through neurotechnology (see Williamson, 2019a), where the learner becomes a passive (and, more disturbingly, possibly unwilling) participant in their own learning.

Given that communication is a prerequisite for social participation, this loss of agency should be taken seriously. How, and under which circumstances, should we engage in biodigital communication? How should biodigital communication be regulated? Which level of control should the subject of biodigital communication, for example, the COVID-19 test-taker, have over their own biodigital information? Who, and under which circumstances, should have access to personal biodigital data?

Questions like this have become increasingly ubiquitous. Governments, international regulatory boards, and similar bodies usually resolve them on a case-to-case basis. For instance, COVID-19 patients can easily infect

others; to avoid the spread of infection, compulsory tests are enforced by governments and their results are made available to all relevant bodies. This is why most countries in the world readily introduced compulsory COVID-19 testing during times of lockdown despite the strong backlash from the antivaccination movement. However, Williamson's (2019a) study of students participating in educational neurotechnology projects is different. Students who refuse to share their brain data with the teacher, the school, and the EdTech company working for them will not harm anyone; at most themselves, as the only thing they lose from opting out of educational neurotechnology approaches is, probably, support in their teaching and learning—and this support is of questionable value.

There are many shades of gray between the extremes of using biodigital data to protect others (COVID-19 testing) and using them to compromise an individual's bodily integrity. Yet to an extent, the two are always connected, and even the most individual biodigital technologies may have profound consequences for others. For instance, while many people would argue that parents may find it useful to learn their child's gender before birth, the simple procedure of ultrasound, which is harmlessly conducted between weeks 18 and 20 of pregnancy, has in some cultures resulted in the terrible yet widespread practice of female infanticide (Smithey, 2019). In this case, bioinformation, which is convenient to some, is literally deadly to others; to further complicate things, ultrasound is a cheap and omnipresent technology that cannot be easily banned. So how should lawmakers go about addressing this problem?

Biology is indeed digital information and digital information is indeed biology. In the starkest examples, biodigital communication has power over people's lives and health (female infanticide, COVID-19 tests). "Lighter" examples of this relationship, such as the practice of doing genetic tests before purchasing life insurance and determining the price of insurance accordingly, are complex issues in their own right. Even "the lightest" example, such as whether students agree to share their brain data in order to improve their own learning (Williamson, 2019a), opens up a plethora of philosophical, ethical, and legislative questions. The omnipresent loss of control over our own communication can benefit some people (e.g. those with a genetic "clearance" for low insurance rates) and kill others (e.g. foetuses). As biodigital technology (from ultrasound to complex brain scanning techniques) has become cheap and omnipresent, biodigital communication—and its regulation—raises some of the key questions of social participation in a postdigital–biodigital age.

Biopolitics and Social Participation

Recent postdigital–biodigital developments significantly shift power relationships between individuals, individuals and their communities, and individuals, their communities, and (bio)technology. Foucault's biopower, exercised by administrative bodies on individuals and populations as "power over life" (Foucault, 2008, pp. 304–308), now needs to be expanded. Administrative bodies can be (and often are) automated, and individual control over information shared by individuals' own bodies has diminished. New biodigital forms of social participation urgently call for the development of new (theories of) biopolitics that take these developments into account.

The new biodigital vehicles that channel power in postdigital society are manifesting in multiple diverse ways, depending on the complexities of people's individual "postdigital positionalities" (Hayes, 2021). For some people, choices can be made to monitor their own bodies via digital devices. These "onto-platforms" know us and our "hourly fluctuations of the self—better than we can know ourselves" (Peters, 2019). However, in other cases, the verification of bodily activity is required by systems where questions such as: "Do you plan to sell my data?" or "What commercial interests and economic partnerships lie behind this system into which I am entering my most intimate details?" cannot easily be asked. The imperative to verify our human identity effects a shift where the central point of reference is now "the algorithmic culture of computational networks—not the human" (Braidotti, 2019, p. 1).

Human interactions with new forms of biodigital data are a pressing area for (social) scientific research. There is a fundamental shift of focus as biopolitics meets social participation, which has implications for governmentality. Just as Foucault (2008) argued that studying the technologies of power requires an analysis of the underpinning political rationality, we argue for the need to examine how humans are rationally represented as they interact with biodigital data. Extending Foucault's arguments concerning the reciprocal constitution of power techniques and forms of knowledge in our postdigital–biodigital era require a close analysis of two interrelated aspects that impact on social participation: the varying levels of participation that different individuals have and associated political rationalities.

Examining our new human biodigital data interactions and the varying levels of participation that different individuals have can be considered

through *postdigital–biodigital positionality* (Hayes, 2021). If humans are evolving into "biodigital beings" and "new forms of synthetic life" may also be part of humans, then how might this alter different people's positionalities in postdigital society? For example, what needs to change with regard to Equality, Diversity and Inclusivity (EDI) policies and related educational programs? "Reforms to inclusivity policies focused on human-to-human discriminatory practices alone, need to now be more inclusive of all kinds of hybrid reshaped humans and computers" (Hayes, 2021, p. 258). As such, the former political rationalities underpinning arguments concerning human-to-human inequalities, data, and social participation need to be fundamentally reviewed. There are new questions of who, or what exactly, is being represented and how, as matters of social justice arrive at multiple intersections with each of our postdigital–biodigital positionalities. We therefore need to continually question "the point at which numerous disadvantages cluster together to compound existing inequalities for individual citizens" (Hayes, 2021, p, 260).

There are questions too on "how disciplines may converge differently under, or across, new bioinformational and biodigital paradigms" (Peters et al., 2021b, p. 3) to address such challenges. Nikolas Rose (2013, p. 3) pointed out the need to "understand ourselves in radically new ways as the insights of genomics and neuroscience have opened up the workings of our bodies and our minds to new kinds of knowledge and intervention." Questioning the consequences of this for the politics of life today, Rose raised the implications of new relations being formed between the social, cultural, and human life sciences. The political rationality that underpins these interactions and how related policy is communicated impacts on our intellectual processing of these realities. This has implications, too, for how much power individuals believe they do or do not have to participate in a postdigital–biodigital society. Neoliberal forms of infopolitics have maintained inequalities in relation to the participation of so-called digital citizens. As biopolitics becomes ever more closely entangled with the rationalities of infopolitics, human participation continues to be compromised. How current infopolicy and biopolicy might, therefore, be reimagined as postdigital–biodigital policymaking is a key question for social participation.

To unpack some of these arguments, and indeed to invite other researchers to participate in critiquing and extending these, we will now discuss the "human face" of the biodigital "data-driven society" in the example of Human Data Interaction (HDI) (Mortier et al., 2014). In this

field of study, the focus is on the complex ecosystem of personal data that is now collected and generated around individuals and companies. Sitting at the "intersection of various disciplines, including computer science, statistics, sociology, psychology and behavioural economics," HDI refers to the three core themes of *legibility, agency* and *negotiability* in order to further dialogue across "interested parties in the personal and big data ecosystems" (Mortier et al., 2014).

Extending from work in Human Computer Interaction (HCI), HDI deliberately places the *human* at the center of data flows in order to provide mechanisms for citizens to interact more explicitly with their data. Whilst the three themes of HDI were initially concerned with the opacity of data involved in algorithmic exchanges of information and the lack of control people have over what this means and how such online communications take place, extending these issues to emerging forms of biodigital communication is now a pressing matter. There are problems of *legibility, agency,* and *negotiability* whenever "the online presence as a mode of communication speaks back to the producer in ways that the producer cannot control or oversee" (O'Riordan, 2011, p. 307).

In an Engineering and Physical Sciences Research Council (EPSRC)-funded edited book, *Human Data Interaction, Disadvantage and Skills in the Community: Enabling Cross-Sector Environments for Postdigital Inclusion*, new concerns for HDI are explored from many diverse contexts in order to invite widely inclusive cross-sector and interdisciplinary participation, partnership, and collaboration (Hayes et al., 2023). In examining HDI across these different sectors and disciplines, the intention is to surface just how entangled our human bodies are now with digital and biological data and data-driven platforms. In their introduction to the book, Hayes et al. (2023) write that "[t]he commercial and political drivers that structure these human data interactions now also structure and intersect with many aspects of how education is organised." Looking at various aspects of education through the lens of legibility, agency, and negotiability, they explore ways in which "[i]n the UK, local agencies, councils, combined authorities, and educational institutions have sought to address this complex issue [of digital participation and inclusion] through regional coalitions to encourage dialogue and initiatives" (Hayes et al., 2023). While we don't have enough room to explore all these ways in detail, we would like to stress the HDI approach as a valuable way of looking at postdigital participation.

In a recent Human Rights Watch report, "*How Dare They Peep into My Private Life?": Children's Rights Violations by Governments that Endorsed Online Learning during the Covid-19 Pandemic* (2021), breaches of children's rights included EdTech products that targeted children and their data extracted from educational settings with behavioral advertising. This enabled companies to target them with personalized content and advertisements and to follow them across the Internet. As, across the globe, governments and educational institutions have permitted such invasions of child privacy under the guise of "participation" during the pandemic, such practices simply merge with the many shades of gray in the extremes of biodigital data that are also aimed at protecting children.

Postdigital–Biodigital Policymaking

The idea of digital citizenship has been closely linked with forms of participation, effective access to, and use of, the Internet and related public policy (Mossberger et al., 2007). The idea that technology facilitates civic participation and contributes to community engagement and democracy in an "information revolution" and "knowledge society" is at play here. McCosker et al. (2016), on the other hand, examine digital citizenship as highly contested, a negotiation, involving control and culture. They explore the intimacies of digital citizenship as a "fluid interface" where there are tensions between "the promises of new modes of civic participation, inclusion and creativity, and the threat of misuse and misappropriation" (McCosker et al., 2016, p. 1). Carr et al. (2022) link these to eco-global citizenship, democracy, and transformative education. In short, social participation is the deep foundation of our society.

The Problem of Control

However, meaningful social participation should not arise from coercion. This is, for instance, why most of the world's countries do not enforce compulsory voting in elections, and in 21 countries that exercised compulsory voting in December 2021, fines for abstinence were comparable in magnitude to a parking ticket (CIA, 2022). Compulsory or not, voting is effectively treated as a citizen's moral obligation. In a postdigital–biodigital age, however, the citizen often "participates" in various activities whether they like it or not. While compulsory COVID-19 testing can be implemented as a means of protecting co-citizens, other forms of

biodigital participation are less easily justified. For instance, are there really no other, less intrusive, options that could replace biometric passports while maintaining a high level of security?

Where once traditional communication was based on an exchange of information, emerging forms of biodigital communication involve the removal of control over all aspects of our bodies. An analysis of such processes from the point of view of HDI theory would suggest individuals repeatedly lose *legibility*, or the power to read and understand what has been taken. They also lose their *agency* to intervene and are denied any *negotiability* to change this situation. Some of the most prominent examples of this are found in the field of education. We therefore ask: Where do participation and protection end, and where do coercion and injustice begin for postdigital–biodigital citizens and, by extension, postdigital learners?

New Understandings of (Education) Politics

This question reaches beyond individual freedom and reflects deep transformations in our understanding of politics. In *The Politics of Life Itself: Biomedicine, Power, and Subjectivity in the Twenty-First Century*, Rose argues that

> the vital politics of our own century … is neither delimited by the poles of illness and health, nor focused on eliminating pathology to protect the destiny of the nation. Rather, it is concerned with our growing capacities to control, manage, engineer, reshape, and modulate the very vital capacities of human beings as living creatures. It is, I suggest, a politics of "life itself." (Rose, 2007, p. 3)

While we do not wish to overly emphasize the role of education in social participation, we do need to focus our discussion on postdigital–biodigital policymaking. Education science provides a good focal point for our inquiry, offering a small but rapidly growing body of research on the politics of "life itself" (ibid.). According to Ben Williamson,

> [a] new interdisciplinary educational science focused on the quantification of students' affects, bodies and brains, captured in the term "precision education," has emerged as a priority among scientists, foundation funders, philanthropic donors, and commercial entities. Set in the context of inten-

> sive scientific advances in the biological sciences, including psychophysiology and biometrics, neuroscience and genomics, precision education raises fresh questions about the intersections of biology with society, politics and governance. (Williamson, 2019b)

This body of research, which can be found under names other than precision education, branches in many important directions. Harden expands her critique of genetic inequality to ways of doing genetics research, saying that "genetics research does not just disproportionately study White people. It also is disproportionately conducted by White people" (Harden, 2021, p. 85). Other researchers reach towards other aspects such as income, gender, and so on. Consequently, "[w]ithout conducting genetic research with the entire global population, there is a danger that genetic knowledge will only benefit people who are already advantaged" (ibid.). Summarizing this body of research, Kalervo N. Gulson and P. Taylor Webb (2018) note that "[t]he introduction of new knowledge in education may lead to a narrowing not only of what type of knowledge counts as policy knowledge, but also what techniques and expertise are legitimate" and identify biohacking and augmentation as "new areas of performance enhancement and possible reconfiguration of equity" (Gulson & Webb, 2018).

The Infopolitics–Biopolitics Continuum

This dichotomy between various forms of new postdigital–biodigital knowledges is reminiscent of the eternal dichotomy between centers and margins of power and brings our discussion to the familiar terrain of political struggle. Writing for the Special Issue of *Learning, Media and Technology* titled *Global Technologies, Local Practices* (Gallagher & Knox, 2019), we examined the shifting relationships between knowledge production and academic publication and concluded that "the current political economy of mainstream academic publishing has resulted from a complex interplay between large academic publishers, academics, and hacker-activists." Our research led us to a larger conclusion that "[i]n the postdigital age, the concept of the margins has not disappeared, but it has become somewhat marginal in its own right" (Jandrić & Hayes, 2019). We thus called for the development of "a new language of describing what we mean by 'marginal voices"' and "new strategies for cohabitation of, and collaboration between, various socio-technological actors."

Developed in the context of infopolitics, these conclusions bear deep resonance with biopolitics. Infopolitics is concerned with whole new classes of actors such as algorithms, whose agency can reach as far as achieving a status of (something comparable to) "humanity." Ray Kurzweil's (2005) dreams of re-creating his own father's mind and Maggi Savin-Baden's (2022) discussions of the digital afterlife are typical cases in point. Biopolitics also has its new classes of actors, such as Savin-Baden's postdigital humans (2021). The new infopolitical and biopolitical actors have a different material base: infopolitics is about entities made of dead silicon-based microchips while biopolitics is about entities made of carbon-based living cells. However, the postdigital–biodigital "Great Convergence" between *bios* and *technē* significantly complicates matters. Infopolitics is (still) driven by biological actors, and biopolitics requires the powers of digital data storage and computing. This is why the biodigital human is neither digital not analog but *postdigital*, and this is why infopolitics and biopolitics are mutually constitutive.

Infopolitics and Biopolitics in Education

Postdigital–biodigital politics consists of traditional education, sociology, genetics research, and other fields of human inquiry that struggle to uphold their dominance on their turfs. It also includes, and quite prominently, emerging infopolitical/biopolitical actors that struggle for their own space, place, and agency. The struggle always begins with naming, and new phrases such as "precision education" and "digital policy sociology" (Williamson, 2019b) compete for power over the recognized concept. This struggle is linked to (but far from exclusively about) money. In the realm of infopolitics, EdTech companies are biting off increasingly large chunks of governmental education expenditure (Teräs et al., 2020). Similarly, in the realm of biopolitics, pharmaceutical companies are consuming increasingly large portions of governmental healthcare budgets. Many of these trends have been going on for years and are well documented. What has remained under the radar, and is now seizing our attention with increasing impact, is the convergence between the two (see Peters et al., 2022).

Some links between infopolitics and biopolitics are well documented. For instance, it is well known that the public resistance to COVID-19 vaccination (biopolitics) due to fake news and the post-truth infoscape

(infopolitics) has resulted in immeasurable numbers of deaths. Consequently, evaluation of our efforts to provide correct information to citizens can be poignantly summed up in a question: "How many deaths make a good outcome?" (Fuller, 2020, p. 552). Thanks to this line of research, we can now trace the money and identify "winners" and "losers" in relation to specific technologies. It is hugely important to know these things: understanding the world is just a first step towards changing it.

We urgently need to understand subtler and longer-term consequences of the marriage between infopolitics and biopolitics. During the pandemic, numerous new data-driven platforms and systems "crept" into our lives under the guise of improving education or work. Some, like Microsoft Viva[2] as an employee experience platform, claim to help people to put knowledge to work and increase their engagement, learning, and wellbeing. However, who is the data being gathered on individual employees really benefiting? Indeed, is it reassuring or stressful to be informed about the hours of screen time that have interrupted sleep? What happens to education in this context? These subtle intrusions at the intersections of infopolitics and biopolitics still intrude on deeply personal and positional aspects of our lives (Hayes, 2021).

As we slowly paint a very clear (and somewhat unfortunate) picture of what is, we need to dare to imagine what kind of educational technology we want to develop and what kind of a world we would like to live in. In order to develop related policies we need to ask: Who are "we"? How shall we do all these things? In order to begin answering these questions, we offer our concluding remarks structured according to the five W's of journalism: who, what, when, where, and why.

Conclusion

Who Participates in Education?

Social participation in a postdigital–biodigital age involves a wide range of human and non-human actors. These actors are based on carbon, silicon, and possibly other materials; depending on different theories, they are granted various levels of rights and duties associated with "humanity."

[2] See https://www.microsoft.com/en-us/microsoft-viva/employee-experience-platform. Accessed 17 October 2022.

While we do not subscribe to a radical equality between various types of actors (human-nonhuman, carbon-based, silicon based, etc.), we do recognize that they are all important in their own ways. Regardless of their theoretical status, all actors in our postdigital–biodigital reality need to be acknowledged and their agencies need to be understood in relation to other actors and their respective agencies. This requires moving away from monopolies by elite groups who shape research, related ethics, publishing, and policy according to their own agendas and interests. It requires many more studies to be undertaken in which experts from different cultural communities across the globe contribute diverse insights to biodigital dilemmas informed by

> [r]esearch, learners, and those who have practical experience of the context, operations for example, "people from the inside." In addition, there is a need for buy-in of the community. Participatory design requires socio-cultural considerations, thorough understanding of the problem, getting rid of assumptions … . there is a risk of neo-colonisation in the implementation of technological solutions as technology is not neutral. (Traxler et al., 2020, p. 9)

What Is to Be Done?

To begin with, we need to analyze transformations that take place in existing actors and to develop our understanding of the new actors. We need to follow the money and see who profits from new biodigital technologies. We need to follow other, less visible power lines and see who benefits in more subtle ways: directly and indirectly, advertently and inadvertently. We need to create new areas of inquiry, such as precision education and digital policy sociology (Williamson, 2019a, 2019b), to find the common ground between such new fields and work already undertaken in HDI, and we need to develop new, inclusive communities of inquiry.

This knowledge should transfer into educational practice and into policy. Above all, we need to develop new visions for the future, new ways of changing these visions, and new ways of implementing these visions in practice. Policies for today and visions of tomorrow can only be developed collectively, so we need to develop new forms of social participation and education suitable for our biodigital–postdigital reality.

When?

EdTech and BioTech companies already have one foot in the door of various social systems including schools (Williamson, 2019a, 2019b) and other public services (Eubanks, 2018). Some struggles, such as the debate around the extraction of public money towards global corporations, are painfully obvious. Others, such as the directions of future technology development, are more obscure and therefore require additional examples of postdigital interdisciplinary dialogues "covering aspects of life that have come to the fore with recent events and concerns" (Traxler et al., 2021).

Scientific research is strongly shaped by political economy; blue-skies research of today translates into the technologies of tomorrow (Peters et al., 2020). The struggle for social participation, and indeed social equality and justice, therefore needs to be historicized. We need to look backwards in order to understand what has contributed to our present condition, and we need to look forward in order to try and predict future consequences of our present actions. This work needs to be critical yet hopeful.

For instance, Shandell Houlden and George Veletsianos (2022) write that, during the COVID-19 pandemic, researchers responded to the rise of insecurity with the "use of speculative education fiction in critical education studies, a method which has the potential for radical imagination." After a careful examination of a large number of sources, they found that the dominant discourse was largely pessimistic. They "demonstrate the limits of these thematic visions by tracing the relationship between the ways in which pessimistic storytelling, related as it is to apocalyptic storytelling, risks reinforcing inequality" and propose more hopeful speculative research methods.

Where?

Predigital struggles over power and meaning have taken place in schools, universities, research institutes, political bodies, streets, and marketplaces. The postdigital age has shifted some of these struggles online, creating new spaces for the making and dissemination of knowledge that are distinct and dialectically interlinked with traditional spaces. The biodigital age has added another spatial layer and some of these struggles have now moved to biological bodies. A proverbial case in point are the struggles over COVID-19 vaccination, which take place in schools, universities,

hospitals, social networks, and human bodies. In a biodigital–postdigital reality, no aspect of human existence has remained untouched, and the biodigital–postdigital inclusion of all individual positionalities (Hayes, 2021) is therefore key to addressing the inequalities of social participation.

While it can be argued (via e.g., Foucault, 2008) that things have always been this way and that, for instance, the three historical waves of the plague in Europe also impacted people on all these levels, today is a little different. Unlike medieval Europeans, who had no choice but to explain the plague in religious terms, we now have the techno-scientific power with which to interfere with, and actively shape, our postdigital–biodigital reality. Today's struggles for power and meaning take place literally everywhere. For practical reasons, our research will always focus on some aspects of these struggles (e.g., genomics research, educational policy, and so on). Yet as we examine the places of our immediate interest, we should always keep an eye on the whole. In terms of research, this implies a move towards transdisciplinarity (MacKenzie, 2022) as well as the connection of cross-sector community voices on matters concerning data, disadvantage, and postdigital–biodigital inclusion (Hayes et al., 2021).

Why? Postscript

It goes without saying that social participation is a prerequisite for social equality, justice, democracy, and so on. It is also generally acknowledged that the technological transformations of the late twentieth century, leading to a postdigital mashup of the analog and the digital, have radically transformed our informational ecologies and created new forms of infopolitics. In areas such as post-truth and fake news, policymakers have only just started to get to grips with the informational challenge (MacKenzie et al., 2021). What has remained under the radar, yet hidden in plain sight, are the biological consequences of these trends, the techno-scientific development of biotechnology, and biopolitics.

In the blink of an eye, the COVID-19 pandemic has turned our attention to biopolitics and biopractices. Seemingly disconnected research areas have started to converge from a puzzle into a much larger image. Discoveries and theories as diverse as nanotechnology, ecopedagogy, cloning, genetic engineering, biodigital philosophy, and Human Data Interaction have begun to recombine and complement each other in new ways. While our collective attention has shifted to biopolitics, this need

not imply that we should abandon infopolitics. Probably the key takeaway of postdigital theory, repeated and tested in numerous situations, is that "postdigital really useful knowledge lies at the intersections between biology, information, and society" (Jandrić, 2021, p. 264). Biopolitics and infopolitics are therefore dialectically intertwined and one cannot be thought of without the other.

Then there are different interpretations to consider in relation to the tenets or core themes of HDI theory: *legibility, agency,* and *negotiability*. For example, the "postdigital positionality" (Hayes, 2021) of individuals in different cultural groups and communities can mean that these tenets are understood in rather different ways. Taking the concept of *agency* as one example, in Williams and Brant's (2022, p. 211) biodigital discussion of different Indigenous worldviews, they point out that

> [t]he Haudenosaunee worldview does not figure objects or individuals as static. For example, a wooden table is in a constant state of flux or transformation. It is composed of all the interactions it had as a tree in the forest; as wood in the workshop; as a table used for eating or other purposes; and as food for insects, fungi, and other decomposers when it eventually breaks down and returns to the ecosystem. This vibrant dynamism extends to humans, medicine plants, rivers, animals, and the rest of Creation. (Williams & Brant, 2022, p. 211)

The Haudenosaunee perspective is said to be similar to Rose's (2013, p. 14) assertion that "the envelope of the skin does not, by rights, delineate an enclosed, autonomous zone," meaning that the human self is understood as extending beyond the boundaries of our physical bodies. Thus, *agency* is not simply about a human will to act but refers to a more dynamic entanglement or becoming.

In 2023, therefore, social participation once again needs to be re-examined, re-analyzed, and reimagined in, and for, a biodigital age. Postdigital theory offers the theoretical underpinnings and practical tools with which to approach this task. Furthermore, the community of global scholars who are collectively developing postdigital theory is ever-growing and expanding. While it is hard to swim against the prevalent tide of Western domination in knowledge work, we need to ensure that the ethical dimensions of biodigital technologies and human data interactions are not only analyzed from a Global North-dominated standpoint. Human–technology relationships are always changing, always in flux, and today's

theories and practices will inevitably shape humanity's collective future. This future is everyone's concern, and everyone needs to take an active part in its shaping. Postdigital–biodigital social participation, and especially its educational aspects, are a key area of research, policy, and practice that can turn this vision into reality.

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CHAPTER 4

Postdigital *Bildung* as a Guiding Principle to Foster Inclusion in Educational Media

Marlene Pieper, Till Neuhaus, and Michaela Vogt

Introduction

This chapter begins with the axiomatic presupposition that the discourse around (post)digitality could greatly benefit from looking back on the past of education science. More specifically, we propose that the German concept of *Bildung*—considered the "god-term" of education science by Luhmann and Schorr (1988)—can enrich existing debates around learning, self-formation, and personal as well as collective improvement in the digital realm. This beneficial coupling is suspected to work both ways, just as the existing scholarship on Bildung could move forward by considering works from outside its classic domains. This unlikely match requires further explanatory work, however, which will be sketched in the paragraphs below. Having clarified central points of reference regarding Bildung and its suspected overlapping with (post)digitality, this chapter will address existing understandings of (post)digitality as well as its implications for

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teaching and learning, seeking to connect the dimension of learning with teaching and learning materials. Special focus will be dedicated to (the promises of) Open Educational Resources (OER), which will be discussed regarding their potentials and limitations in terms of inclusion-sensitivity. Secondly, the possibilities of postdigital Bildung in guiding conversations about inclusion and participation in the realm of educational media will be explored. The Inclusive Teaching Materials Project (ITM project, 2018–2021) will be presented as an example in which participatory methods are employed to evaluate and design learning materials that suit multiple needs. The aims and approaches as well as preliminary results of the project will be presented, to be read as impulses toward a reflection on the status quo regarding the production of inclusion-sensitive teaching and learning materials in general and OER in particular. The chapter will close with final reflections on the interplay between learning materials and postdigital Bildung, the latter being identified as a potential guidepost for future education. We will begin with an abbreviated discussion of one of Germany's messiest concepts, the idea of Bildung as well as its suspected points of contact to the discourse around (post)digitality.

Throughout the times, Bildung has undergone tremendous change (cf. Vogt & Neuhaus, 2021a), yet it has served as a unifying platform to bring together different sets of discourses and ideas. Contrary to the international discourse on education and competences (cf. Grigat, 2012), Bildung's least common denominator is that it is a holistic endeavor which combines aspects of learning (i.e. specific skills) with moral improvement and self-cultivation and is thereby distinctively different from what is understood internationally as education (cf. Oelkers, 1999). As such, this endeavor can be traced back to humankind's earliest philosophical as well as religious efforts (cf. Neuhaus et al., 2023; Neuhaus & Vogt, 2022). The concept's messiness also manifests itself in the lesser defined goals of Bildung, which differ tremendously from one scholar to another. Yet most philosophers and scholars discussing Bildung reference, to diverging degrees, the ideas and ideals of freedom, autonomy, critical thinking, and insight (into oneself as well as the world) as its goals (cf. e.g., Von Humboldt, 1792/2002; Kant, 1784/1983). While being more holistically oriented, Bildung is simultaneously a messy concept as it intersects in rhizomatic fashion (cf. Deleuze & Guattari, 1974) with—among other entities—institutions and institutional alignment (cf. Neuhaus et al., 2021); processes of inclusion, exclusion, and (social) demarcation (cf. Vogt & Neuhaus, 2021b; Neuhaus, 2021); as well as struggles for

participation (cf. Boger et al., 2021). As such, questions of Bildung are negotiated in neighboring discourses,[1] such as (but not limited to) inclusion/inclusivity, participation, and—due to their strong ties to the idea(l) of autonomy—in political and economic discussions (cf. Taleb, 2018).

The ambiguity indicated above has led many scholars to abandon the concept of Bildung, yet newly emerging research on as well as re-perspectivations of the topic suggest that Bildung covers or at least touches upon many areas of tremendous importance for the twenty-first century, such as the nation and nationalism (cf. Stieger, 2020), meaning-making and well-being (cf. D'Olimpio & Teschers, 2017; Neuhaus & Vogt, 2022), as well as digitality/digital education (cf. Kergel, 2022; Neuhaus et al., 2023). The concept of Bildung—despite its blurriness and complexity—thus has great potential to help guide the role of education within (post)digitality. This is not the first instance of bringing Bildung into the conversation around digital education (c.f. Kergel et al., 2022; Peters & Jandrić, 2018). Although it has been repeatedly pointed out how the term with its theoretical richness and specific cultural anchoring in the German context is particularly interesting, it can also be highly instructive as the basis for thinking about the interplay between education and digitality. If Bildung is recognized as a rich and historically as well as theoretically anchored concept, ways of thinking about Bildung (and its aims) can be structured by treating it the same way as concepts with a similar broadness, such as the concept of religion (cf. Neuhaus et al., 2023). Both have in common—when following one central aspect shared by many long-lasting interpretations of Bildung—that they strive for the *right*[2] way to conduct oneself in the world, an endeavor linked to the search for truth as well as similar goals. Such a search for truth—also translated as the right, the beautiful, or the good (cf. Vogt & Neuhaus, 2021b)—can be

[1] This tendency can primarily be observed from the nineteenth century onwards and can partially be explained by the emergence of the nation-state and the nationally organized education system. As education gradually became organized and formalized by nation-states (cf. Meyer & Ramirez, 2000), it gained in importance and partially organized (and thereby legitimized) societal structures (cf. Neuhaus, 2021). This importance, in turn, can be explained by the fact that schools were seen as the state's key institutions (cf. Meyer, 1996, p. 23), shaping future citizens (cf. Tröhler & Horlacher, 2019) and thus holding a strong potential to protect and conserve the system as a whole (cf. Tröhler, 2006).

[2] These notions of Bildung can be traced back to Humboldt as well as his contemporaries and, in turn, the Ancient Greeks, who assumed that a state of personal excellence exists, in terms of both morality and skills; in Antiquity, this state was referred to as eudaimonia (cf. Neuhaus, 2021).

oriented towards external feedback or internal coherency as markers of truth.[3] As soon as Bildung is primarily geared to external feedback, it becomes an arbitrary, interchangeable, and profane concept (Neuhaus et al., 2023), which can be moved in all directions; the usage of proxies, such as effectivity, learning management, or learning outcomes can be read as a manifestation of such a profanation. The constant oscillation between abstract (higher level) ideals and concrete realizations, therefore, protects Bildung from becoming too one-sided and, thus, (morally) corrupt (cf. Neuhaus, 2021). Its self-proclaimed aim to search for truth as well as sensitivity towards one-sided arrangements are reasons why we suggest that conversations about digitality and education could largely benefit from this intellectual cross-fertilization.

In fact, Bildung and postdigitality already share a plethora of assumptions: Bildung renders visible the interweaving of the subject with social, political, and economic conditions and contextualizes the self within the world. An actively engaged subject[4] and its participation is considered a prerequisite for Bildung (Hansen et al., 2006). It is this idea of Bildung that acknowledges the self's constant entanglement with the world, counterbalancing deterministic framings of digital education as an uncritical and decontextualized approach to effective and efficient learning (Emejulu & Mcgregor, 2019), which simultaneously disregards the "social nature of digital technology" (Selwyn, 2012). This highlights the potential of the term to be used as a basis for thinking about postdigital participation. Conceptually, in this sense, postdigital *Bildung* firstly recognizes the

[3] This debate has also taken place in other disciplines, such as philosophy. Depending on the discipline consulted, approaches to and markers of what truth is differ in terms of naming. For the philosophical context, the primarily externalized position (truth is perceived as the ability to move the world into one's preferred direction) is known as the correspondence approach, and the internal approach is known as the coherency approach (cf. Hepfer, 2021, p. 63) as truth is primarily proven by internal coherency (i.e. of a theory). For the pedagogical context, Böhm (2010, p. 15) suggests the terminology of ethical utilitarianism (for the correspondence approach) and epistemic relativism (for the internal perspective).

[4] It is noteworthy that the understanding of the individual or, later, subject differs according to the school of thought consulted. It is this chapter's hope that old ideas of Bildung—assuming a strong, self-reliant, and mature individual as its goal—cannot just create a counterbalance to deterministic assumptions of digital education but, beyond that, also to postmodern tendencies which assume that the individual (or subject) is rather created by existing (power) structures (cf. i.e., Dunn & Castro, 2012). As the postmodern school of thought currently dominates large parts of academia and beyond, the axiomatic presuppositions of Bildung could also serve to set a counterbalance in this regard.

multiple entanglements of the subject with the social, economic, and political conditions of an equally multiply entangled digitality. In accordance with the concept of Bildung and its connection between learning, moral improvement, and self-cultivation, *postdigital Bildung* can be grounded in the idea of an active and participating as well as critical subject. Bildung as a concept contrasts uncritical, technocratic (e.g. Tröhler, 2013), technodeterministic, and solutionist notions of education in the digital condition (e.g. Sharma, 2022) with theoretical and historical depth. If this notion is paralleled with nuanced perspectives along the lines of postdigitality, postdigital *Bildung* can be understood as a counter to the often undercomplex and inadequate notions of "digital education" that overlook these entanglements. Due to the complexity and lack of clear definitions of both terms, postdigital *Bildung* cannot be defined conclusively. Rather, the term can be approached like a guiding principle which leads the pressing negotiations in the current interplay of education and (post)digitality. Bildung and postdigitality thus step into a reciprocal relationship whose synergies should be explored as potentially they inform critical educational practices for digital futures. This chapter sketches out postdigital *Bildung* as a variant of education in the digital condition that embraces its messiness and sociopolitical, cultural, and economic entanglements by exploring how to overcome essentialist and instrumentalist applications and co-constituting education in the (post)digital condition in terms of both participation and critical thinking.

Learning Materials in the Postdigital Condition

New Paths for Teaching and Learning (Materials) in the Postdigital Condition

The shaping of education under conditions of digitality has been marked by a sense of urgency, not least since the COVID-19 pandemic: digital transformations made "rethinking education" (European Parliament, 2020) necessary in order to meet the challenges of tomorrow. In Germany, the Standing Conference of Ministers of Education and Cultural Affairs speaks of a re-organization of school and teaching (Ministerpräsidentenkonferenz, 2021) that needs to be undertaken. Simultaneously, connoted terminology such as "disruption" and "innovation" captivates the "collective imagination" (Daub, 2020), whereby criticism of this optimism is automatically tied to positions of stagnation. Along neoliberal and technocentric lines,

> technology evolves too quickly and schools adapt too slowly; the labour market demands new skills and competences but the teachers are too incapable or unwilling to adapt their competences and methods to the new "learning environment"; the global economy set [*sic*] conditions based on "hard" facts but educational institutions are still too attached to "soft" social and cultural factors, and so on. (Stocchetti, 2014, p. 32f.)

a striking juxtaposition shaping public debates about the interplay of educational institutions and digital technology. In this context, it is also important to consider how the focus of digital education discourses has shifted from teaching to learning, and thus the goals of education have once again been relegated to the wings, while efficiency and effectiveness have moved to the fore (Bayne, 2015).

Within this framework, teachers would serve as nothing more than a "delivery system" (Ferneding, 2003, p. 83) enabling mere knowledge transfer. At the same time, a purely technology- and output-centered dimension of digital education implies thinking about technologies separately from their inherent social practices (Bayne, 2015). Stocchetti contrasts this with democratic education, which should be understood as a "fundamental resource to pursue the egalitarian ideals through the broadening of participation" (2014, p. 22). Here again, the significance and impact of technologies should not be uncritically affirmed or utterly dismissed, but rather critically assessed: "uncritical approval is dangerous because it misconstrues the social meaning of the information age and ignores the ideological implications of technocentric discourse" (Stocchetti, 2014, p. 26). Even more *culturally* embedded perspectives on digitality (c.f. Stalder, 2018)—often presented as contrastive to instrumental and technocentric positions—can be considered abbreviated when approaching the interplay of education and digital technologies in an overly optimistic and consequently insufficiently critical fashion.

Postdigital perspectives now offer "an alternative view on human-technology relationships" (Knox, 2019, p. 359), aiming to mix up assumptions about the digital as either "the zenith of technical process […] or as a dehumanising force" (ibid.). Postdigital approaches highlight the idea that digital technology is to be understood as "embedded in, and entangled with, existing social practices and economic and political systems" (Knox, 2019, p. 358), which demands "a much more nuanced and critical view of human-technology relations" (Knox, 2019, p. 359). When looking at teaching and learning within these conditions, it was pivotal for

teachers to see the possibilities generated by educational technologies. However, it needed to be acknowledged that these possibilities are "socially, and materially situated and relate to the traditions, practices, culture, policy, and infrastructure in which they are embedded" (Fawns, 2022). The postdigital holds the potential to make this embeddedness visible. If postdigitality challenges existent ideas about how to think of technology and digitality, postdigital Bildung can now guide explorations in the field of education within the digital condition. Perspectives and practices of teachers and learners alike can be centered when (co-)creating postdigital education.

Contesting Openness: Potentials and Limitations of OER with Regards to Participation and Inclusion

It is pivotal to reflect on the factors that shape the handling of teaching and learning materials in the digital condition. Of particular significance are postulates of openness in education and Open Educational Resources (OER). Openness as a concept was "bound up with the philosophical foundations of modern education with its commitments to freedom, citizenship, knowledge for all, social progress and individual transformation" (Peters & Britez, 2008, p. xvii), which characterizes knowledge and communication systems, epistemologies, society and politics, institutions or organizations, and individual personalities. Openness claims to promote "accessibility of knowledge, technology and other resources; the transparency of action; the permeability of organizational structures; and the inclusiveness of participation" (Schlagwein et al., 2017). According to this line of thought, it is being contextualized with democracy (Peters & Britez, 2008) as well as, in the context of the MOOC model, a contribution to "participatory citizenship" (McAuley et al., 2010). The present decade can be described as "the 'open' decade" (Peters, 2008, p. 4) but should, beyond that, be considered "a change in philosophy and ethos, a set of interrelated and complex changes that transforms markets and the mode of production, ushering in a new collection of values based on openness, the ethic of participation and peer-to-peer collaboration" (ibid.).

Associated with the idea of sharing and the removal of barriers, openness is considered a "remedy to educational inequality" (Deimann, 2019, p. 39) and can thus undoubtedly be described as a "social and political project" (Peters, 2008, p. 4) or "political agenda" (Otto & Kerres, 2022). Within the realm of educational media, this approach is specifically

associated with Open Educational Resources. Despite the lack of a universally established definition (Geser, 2007), OER can be described as

> teaching, learning, and research resources that reside in the public domain or have been released under an intellectual property license that permits their free use or re-purposing by others. Open educational resources include full courses, course materials, modules, text books, streaming videos, tests, software, and any other tools, materials, or techniques used to support access to knowledge. (Atkins et al., 2007, p. 4)

Thus it is claimed that OER, being free of cost and generally accessible online, "remove restrictions for learners and educators" (Deimann & Farrow, 2013). Here, openness is "built on the belief that everyone should have the freedom to use, customize, improve and redistribute educational resources without constraint," making education more accessible and effective (Peters, 2008, p. 10). OER is assumed to support "quality education that is equitable, inclusive, open and participatory as well as enhance academic freedom and professional autonomy of teachers by widening the scope of materials available for teaching and learning" (UNESCO, 2019). Thus, a democratizing and even an "anti-hierarchical [and] countercultural" (Gourlay, 2015) effect is attributed to OER while traditional forms and institutions of learning are being positioned as "representative of elitism, reproductive of privilege, exclusionary, hierarchical and therefore antithetical" (ibid.) to values connected with the OER movement—the term "movement" indicating that "participants themselves see the desirability of openness as ideology," demanding that participants comply with the proposed beliefs of openness (Funes & Mackness, 2018).

This ideology, however, was "in need of a counter narrative" (ibid.)—an indicator of how framing openness as an intrinsic key to inclusivity and participation is also met with criticism. First of all, an inherent lack of philosophical and theoretical foundation was ascribed to openness as a concept (Deimann & Farrow, 2013), which subsequently has been criticized as "under-theorised" (Knox, 2013). The wider history of and literature on the development of open systems is often disregarded in accounts promoting OER, obscuring the fact that today's open education has a history providing context and underlying values (Peters, 2008, p. 14). This criticism of weak foundations and oversimplifications can be traced back by highlighting the fact that education science long ago recognized the limitations of claims along the lines of "education for all,"

acknowledging the manifold and complex mechanisms of exclusion and segregation hindering social participation (Kerres, 2019). In this sense, it remains to be examined whether and to what extent mere access to OER actually leads to more participation in educational processes (Kerres, 2019, p. 5). Moreover, evidence for claims of OER fostering practices of egalitarianism, equality and higher order learning has proved insufficient (Gourlay, 2015). As such, the simple equation "the more open, the better" (Deimann, 2019, p. 40) cannot be taken at face value. Otto and Kerres conclude that "the availability of a resource is not the same as education" (2022) since access to education at the societal level is controlled by different mechanisms and does not necessarily mean a reduction in educational inequities. While these perspectives identify the *limitations* of openness as inherently democratizing, Funes and Mackness point out how the utopian narrative of openness creates aspirational norms "whilst intending to include and encourage diversity, [norms that] can lead to exclusion and homogeneity" (2018). By identifying a set of actual operational norms "that can be hidden in the current open online education context" (ibid.), they show how the more prevalent aspirational norms "create a buffer that enables people to ignore what actually happens in favor of collaboratively 'creating a desired future'" (Chun, 2016). Gourlay (2015) characterizes the claims surrounding Open Education and OER as a Foucauldian "heterotopia of desire"—"a necessary construct in order to maintain a particular world view and set of identity positions" (ibid.). This way, "opening imperatives in education can create illusions that obscure the view of social inequalities" (Otto & Kerres, 2022). This refers to the fact that academic research must continue to critically accompany the political demand for openness and its ongoing tension with closedness as well as "the contribution of OER to Open Education with regard to broad participation in education, social development and open discourse" (Otto & Kerres, 2022).

These general limitations in the concepts of openness and OER need to be decisively correlated with their potential for participation and inclusion. Inclusion in the broader sense (e.g. Werning & Lütje-Klose, 2012; UNESCO Salamanca Statement and Framework for Action on Special Needs Education, 1994) can be used here as a touchstone for these claims and accounts. In the context of OER, it is primarily openness in the sense of technical, legal, and structural aspects as well as accessibility (*technische, rechtliche und strukturelle Offenheit* and *Offenheit im Sinne von Barrierefreiheit* (Muuß-Merholz, 2018)) that is at issue. The fact that

inclusive teaching materials play a central role in the design of learning spaces (Vogt & Krenig, 2017, 2019) is thus generally acknowledged. However, openness and adaptability or enabling access alone neglect the fact that content analysis of inclusive teaching materials remains a research desideratum (Vogt & Krenig, 2017). It is also questionable to what extent models of inclusive didactics (Feuser, 2011; Reich, 2014) are referenced in the context of OER. The didactically meaningful adaptation of materials to different needs for use in heterogeneous teaching and learning contexts is technically possible but tends not to be addressed in further detail, with the result that it cannot be problematized in view of the high workload and time constraints of teachers in everyday teaching practice. Overall, the matter of inclusion is not at the center of discourses about OER. This leaves teachers on their own in the actual implementation of the requirements; the responsibility for creating inclusive teaching–learning contexts is thus redirected towards them as individuals. Here, a shift in accountability and responsibility occurs: if inclusion and participation in education are marked as attainable via the modification of learning materials by teachers, the complexity and challenges regarding inclusion and participation in the context of OER need to be addressed no further. The necessary social dialogue around inclusion as a social issue and the far-reaching processing of structures and mechanisms of exclusion (Zorn et al., 2019, p. 17) is limited and abridged within the OER movement. In the course of these abbreviations and lack of linkage to inclusion research, OER discourse refers to an ailing understanding of inclusion and participation that obscures the complexity of the challenges around inclusion and exclusion as social constructs. Inclusive and participatory potentials are proclaimed, but discussed solely in a framework that disregards the complex tensions between inclusion and exclusion and the limitations of OER or even the conceptual frame of "education for all." In the context of OER and openness, inclusion tends to appear as an "empty signifier" (Laclau, 1996)—as an underdefined and at the same time overdetermined term (Boger et al., 2021) in which relations of (hegemonic) power dictate the definition and thus solution of a problem. This repeats a pattern that Selwyn (2015) identifies in communication about digital technologies:

> [T]he ways that digital technology is talked about within educational circles certainly extenuate superficial, ephemeral and often banal aspects of the topic at the expense of any sustained engagement with its messy politics. This is also language that routinely normalises matters of oppression,

> inequality and injustice. There is little—if any—acknowledgement of differences of class, race, gender, disability or other social ascription. (p. 5)

Such ideologically framed discourses around digitality and education fail to recognize the inherent messiness and "entangled relationships" (Knox, 2019, p. 360) of digital technologies with the social, economic, and political. The self-image of EdTech as "forward-looking optimistic areas of practice" that "can be 'harnessed' to improve learning, teaching and other aspects of education" (Selwyn, 2021) falls short. It is now the postdigital perspectives that make these abridgements visible and nameable. The postdigital looks "beyond the promises of instrumental efficiencies, not to call for their end, but rather to establish a critical understanding of the very real influence of these technologies as they increasingly pervade social life" (Jandrić et al., 2018, p. 895).

In this context, thinking along the lines of postdigital logics makes it possible to question the claims and postulates of OER and, moreover, to open them up to constructive criticism. By being centered around the digital condition *sui generis*, however, this critique remains without a clear indication of how to approach the interplay of education and digitality with regard to their inclusive and participatory potential. We suggest that the broader critical approach of postdigital *Bildung* can be of guidance here, entering into an active, engaged, and possibly inclusion-oriented as well as participatory discourse around the ideals, potentials, and limitations of education in general and educational media and resources, specifically.

Postdigital *Bildung* in the Context of Educational Media: Project "Inclusive Teaching Material (ITM)"

Touching on the introductory reflections on the term Bildung as a theoretically and historically rich framework, the discourse on education and digitality can be provided with a holistic understanding of learning (combined with moral improvement and self-cultivation) aligned with ideals of freedom, autonomy, and critical thinking. Bildung implies the active engagement of the subject with the world and thus renders the interweaving of the subject with social, political, and economic conditions visible. Postdigital Bildung as a guiding principle anchored in these insights not only balances out overtly optimistic accounts of EdTech but surpasses a

de-contextualized understanding of digital education as a matter of effective "learnification" (Biesta, 2010). Ultimately, there is a potential for it to center the learner's *self* in respective discourses and, potentially, to foster participation and broader inclusion as a consequence. With regard to educational media, postdigital Bildung recognizes with Fuchs (2021) how they are entangled with people, technology, and society. Only then can participation in the realm of educational media be linked to a wider discourse around inclusion as well as Bildung. With regard to the limitations of Open Educational Resources, postdigital Bildung could allow for a far more contextualized and nuanced understanding of participation and inclusion in the context of educational resources to be developed. The ITM project serves as an example of how the needs of the learner can be anchored in the handling of materials.

Inclusive Teaching Material (ITM) Project: Approaches and Methods

This project (with the full title *Comparing Teaching Materials for Inclusive Learning in Europe—Criteria for their Development and Evaluation*) was carried out from 2018 to 2021 in an international cooperation between the universities of Bielefeld (Germany), Luxembourg, Örebro (Sweden), and Bolzano (Italy). The project addressed the lack of criteria for inclusive learning materials in the participating countries within the framework of international comparative research (e.g. Vogt et al., 2021). This lack goes hand-in-hand with an insufficient theoretical understanding of inclusion in the educational media on the market. The result is often low-quality materials that are not suitable for needs-based work in heterogeneous teaching and learning contexts. The project was based on experiences and insights into the daily practice of teachers (e.g. Saunders & Somekh, 2009; Cornwall & Jewkes, 1995), and aimed to interweave teaching practice with academic perspectives; for example, teachers were invited to share their perspectives by developing their own teaching material. Their experiences with and understandings of inclusion in everyday pedagogical practice were the basis for the development of a criteria catalogue for the evaluation of inclusion-sensitive teaching material, which (in contrast to many other scientifically based rubrics for evaluating educational resources) is designed for everyday, low-threshold use. A process model for the development of learning materials as well as training modules were also

developed. The participatory observations were carried out at primary schools, and group interviews were conducted with a total of 32 teachers in order to uncover shared and divergent knowledge and opinions. A standardized interview guideline to elicit their understanding of inclusion and inclusive teaching materials ensured the comparability of the interviews in different languages. It became evident that experiences with and expectations of materials depend on (1) how inclusion is generally anchored in the education system, (2) how heterogeneity and demographic characteristics are dealt with by the teachers, and (3) which freedoms/liberties teachers generally have in designing their lessons/materials, or how their work with and on educational media has been shaped by their understanding of, and attitude towards, inclusion.

ITM Results: Criteria for Inclusive Teaching and Learning Material

The insights gathered from the project show variances as well as similarities between learning materials from different countries. Overall, learning materials often emphasize the necessity of *individual-related adaptivity* while at the same time generally adapting to different learning levels without referring to other aspects of diverse needs (culture- or gender-related for example). Similarly, the materials mostly show no awareness of *environment-related adaptivity*, but are set up for typical learning situations in classrooms with a teacher present in the room. Regarding the *assessment of learning processes*, there is often a gap between testing instruments, test results, and conclusions about further learning options. Test results can therefore often not be transferred into helpful learning paths—neither by the teachers nor by the students. A*gency and self-efficacy* are also undervalued aspects in the learning materials. To be inclusion-oriented would imply giving the children an active voice in their own learning process and taking them seriously as experts on their own learning paths. This could be achieved, for example, by letting them participate in the development of their own learning materials or by asking them for their views on the materials they are given. They should also feel that they can refuse to work with a certain material if they can produce an argument as to why it is not helpful for them due to their current state of learning and learning needs. Awareness with regard to learning processes and learning procedures should also be fostered by learning materials as an element of

meta-cognition, but this was lacking in most inclusion-oriented learning materials. The last criterion in the catalogue is that of transparency regarding their references, their limitations, their structural ideas, and their overall understanding of inclusion; such transparency can be conveyed, for example, in *conceptual explanations* for both teachers and students. Given this frequent shortcoming, students are kept in the dark about the benefits of dealing with a certain learning task.

Based on the criteria mentioned above, the most important results from the analysis of learning materials from different countries can be concluded as follows: in terms of participation and agency, students mostly participate in processes neither of shaping nor improving their learning instruments, nor are they asked whether the materials suit their needs. At the same time, the adaptivity of the materials is narrow and ignores the variety of diversity dimensions. Using learning materials can thus turn into a more exclusive and anti-participatory measurement even though the materials themselves might claim and look different at first glance or—in the case of OER—enable modifications and remixing. The criteria catalog and the process model of the ITM project represent an important extension in thinking about the triangulation between learning materials, inclusivity, and digitality. By providing these instruments and engaging in discourse around inclusivity in learning materials, the ITM project recognizes the interconnectedness of learning materials with "contemporary cultural, social and political processes" (Fuchs, 2021) and overcomes technical questions of functionalities, distribution, and effectivity. Centering the learners' agency and providing anchors for critical engagement with teaching and learning materials, the ITM project is aligned with postdigital Bildung, the logic of which functions as a guide through the prevalent deliberation and negotiation processes of the digital condition.

Concluding Reflections

Lastly, we will see how the principle of postdigital Bildung becomes visible within the ITM project. Looking at the learners, it becomes evident how their multi-layered needs (which go beyond the mere issue of efficient learning) are brought into the center of attention. As the criteria show, the learner's self becomes the cornerstone of teaching material and educational resources. Space is made for the learners' agency when they are enabled to relate critically to the resources available to them. These are

aspects anchored in the concept of Bildung. While teachers continue to be responsible for designing inclusive learning situations, they receive support in the form of tools that can be used in everyday teaching life. Along the explicit centrality of an active and visible learning subject, teachers are also enabled to facilitate comprehensive and far-reaching educational processes in the sense of Bildung. In line with the postdigital perspective, the ITM project does not misrecognize materials, their creation, and application nor the platforms and technical assets as neutral entities. Nor is the critical learner a result of learning processes for which learning materials are mere transmitters. Rather, the very engagement with digital materials—including relevant digital platforms and so on—is potentially part of a process in the sense of postdigital Bildung. This again underlines the extent to which materials and educational media as a whole are a central aspect in the design of critical educational practices and futures. With regard to materials and their influence on the inclusivity or exclusivity of learning contexts, higher awareness of the centrality of learning materials for the postdigital condition is advisable. At the same time, a more complex understanding of inclusivity, which goes beyond the recording of different learning levels, needs to be anchored in the field of learning materials. In particular, the movements around openness in education and Open Educational Resources must be responsive to critique and objections as well as findings from academic research. In this context, the type of learning subject that underlies OER content and platforms, or even the OER movement as a whole, needs to be made more transparent or, rather, negotiated in the first place. Generally speaking, the discourse on learning materials as key elements of inclusion-oriented teaching and learning contexts must be further developed so that a broad awareness of these issues can be anchored and embedded in theory and practice (as well as future teacher training and professionalization).

With regard to the guiding principle of postdigital Bildung itself, its potential for a critical engagement with education in the digital condition must be further explored and placed on a broader footing. The anchor must be to enable educators and learners to critically engage with and potentially co-shape postdigitality.

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CHAPTER 5

Distance Learning and the Question of Educational Justice: A Dialogic Approach to Digital Diversity in Schools

Anke Redecker

Following scientific approaches to distance learning in schools during the COVID-19 pandemic, this chapter examines how learning in postdigital scenarios can especially harm disadvantaged students who have to cope with challenges of self-guided learning and its methods of (self-)monitoring. This is exemplified by examining drill-and-practice strategies and the creative challenges of e-portfolios. Instead of feeling excessively dominated by algorithms and the pressure of learning output, learners should have the opportunity to experience dialogic forms of transformative education that enable them to (re-)think and discuss in a critical and co-creative atmosphere. This can be arranged in video conferences, for example, where they are able to learn with and from each other, using media such as textbooks, podcasts, or films.

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While these ways of learning do not eliminate postdigital challenges, they do help students to address them and to make use of new situations meaningfully and responsibly, taking into account that digital learning practices and processes must address issues of surveillance and contingency in order to empower the vulnerable critical learner. Postdigital learning can thus be based on an educational theory of recognition with the aim of reducing injustice and establishing inclusive education.

Monitoring and Being Monitored: From Educational Injustice to Promises of "Drill and Practice"

During the school closures in the COVID-19 pandemic, teachers and students had to cope with distance learning, digital lessons, and didactical challenges (Goetz, 2020) far removed from their regular everyday school routine (Huber, 2021). For many unused to distance learning, these experiences were entirely new (Huber & Helm, 2020). A well-versed handling of digital didactics can improve students' education (Tulodziecki et al., 2019). However, many teachers first tried to avoid using technical innovation that they found stressful and confusing, instead working with printed worksheets in schools lacking the necessary technical equipment and didactic expertise to arrange digital distance learning (Eickelmann et al., 2020).

Suddenly these teachers were not only facing the new challenge of digitality, but also that of postdigitality, learning that human beings not only use digitality but can also be influenced and dominated by it, mostly unable to see through or overcome the entanglement between digital and human factors (Bettinger & Hugger, 2020; Redecker, 2020). In postdigital correlations of technical and social constructions, digitality and its various relationships to human beings and their practices become more relevant in discourses of educational theory (Jörissen, 2017; Macgilchrist, 2021a), inspiring inquiries such as "how data is entangled with shifting socio-cultural, political, economic, historic and material orderings and normalisations" (Macgilchrist, 2017, p. 100).

As a matter of power (Butler, 2014; Hall, 2019), social practices are not only initiated by subjects but also influence and construct them, while schooling can be understood "as precisely one salient mode of productive power, which is why there is such an important value in thinking

concretely about how best to intervene in how it happens, and how it might be transformed" (Butler, 2012, p. 177). Taking into account that postdigital practices can be seen as power relationships in the entanglements between technology and sociality, the pandemic resulted in disadvantaged students in particular, with less social capital (Bourdieu, 1983), suffering from practiced forms of data-driven distance learning. While teachers were expected to support them (Anger & Plünnecke, 2020), the reality was that many children were in fact desperately lacking this support, with the result that they ultimately had to learn alone (Helm et al., 2021; Redecker, 2022a) with insufficient access to technology (Ariyo et al., 2022).

Leaving printed worksheets behind and entering the world of digital learning, a first step can aim at drill-and-practice programs (Hoffmann, 2020; Jornitz & Leser, 2018), offering children the opportunity to manage their learning process and to control its outcomes, while teachers oversee these learning practices with a "focus […] on self-assessment to encourage independence in the learner, although counselling backup should be available when needed" (Moisey & Hughes, 2011, p. 421).

Some disadvantaged children who need a lot of advice and support are unable to cope with these apparently autonomous processes of self-guided learning (Aufenanger, 2020), which have to be explored and exercised with support from experienced teachers (Burow, 2021). Confronted with digital didactics and postdigital learning challenges for the first time, teachers had to address digital practices in educating subjects both involved in and affected by these same practices, which can be problematized by praxeology (Butler, 2012; Knaus & Bohnet, 2019; Allert et al., 2018). Installing and using algorithms, digital subjects seek to monitor digital practices while themselves being monitored by these algorithms (Reichert, 2014). They lack the possibility to oversee and manage the amount, ways, and impact of surveillance practices. For example, internet research and communication means being monitored and influenced by programs that generate profiles, demands, and offers, while users are unable to fully understand how they are being prompted and "normed." Even digital learning processes follow this pattern of postdigital practice.

Using drill-and-practice programs, students are monitored by algorithms and by their teachers, who make use of these. Michel Foucault (1995) described these methods of domination by authorities as disciplinary techniques. In practices of self-guided learning, learners are made to

believe they are acting autonomously while in fact they are being influenced by activities they are unable to oversee (Selke, 2014; Redecker, 2020).

With the aim of widely replacing in-person teaching activities, drill-and-practice programs seem to offer a one-fits-all solution for learning issues that ignores the often dramatic situations of some socioeconomically disadvantaged students. They may lack support from their parents, who have been stressed and overburdened by the pandemic and its challenges, not only concerning health and working conditions. Some disadvantaged children in particular felt the further socioeconomic pressure from which their parents were suffering (von Klitzing, 2020) when jobs and future perspectives were at risk. Many of them were learning in an atmosphere of anxiety, depression, and uncertainty. While this rendered (digital) empathy and support all the more necessary, schooling during lockdown showed that children in several countries felt isolated (Joulaei & Zolfaghari, 2021) and developed learning deficits (Wößmann, 2021; Hurrelmann & Dohmen, 2020). Many were left alone in their self-guided learning processes or taught by bewildered and exhausted parents (Huber et al., 2020) who were unsuccessfully trying to replace teachers at home.

Creative Challenges: The Ambiguity of e-Portfolio Strategies

To avoid and overcome norming procedures of drill and practice, digital approaches can focus on more creative forms of online learning, for example e-portfolios that can be seen as digital learning diaries (Häcker, 2005). These show learning processes and outcomes in an ensemble of digital products such as texts, photos, podcasts, and films. This fosters a much more flexible and individual way of self-guided learning, where students plan, configure, lead, and evaluate their learning processes, possibly enriched by blogs, wikis, and chats. Such methods enable them to shape their outcomes in co-creative processes with their peers of different backgrounds and interests, thus supporting inclusive learning in contexts of digital diversity. Here,

> the participatory nature of the web means that a two-way information flow is available to all. Both amateurs and experts, and all those in between, can access information, collaborate, and network online with others who share similar interests/passions. Learning can be reciprocal, with experts learning from and building upon the ideas generated by non-experts. (Wellburn & Eib, 2016, p. 67)

At first glance, e-portfolios that offer strategies like learning by teaching not only support the creative but also the autonomous and participatory learner, who has "responsibility for his or her own content. No longer a passive consumer, the learner is in an ownership role" (Martindale & Dowdy, 2016, p. 129). Rethinking this first impression, we can see an especially perfidious form of postdigital surveillance in e-portfolio strategies. Children face an ambiguous world of flexibility that can be both helpful and harmful at once (Meyer et al., 2011; Allert & Asmussen, 2017; Redecker, 2022b). They have to cope with the creative opportunities (Uther, 2019; Kanuka, 2011) and challenges (Bröckling, 2015; Filk & Schauer, 2011; Redecker, 2021b) of digitality, while suffering from a kind of Foucauldian governmentality (Foucault, 1995) in the name of creativity. Controlled and normalized by those who are often more interested in economic stability than in personality development, learners follow the rules of "an ethics of self-care and self-responsibility, and a battery of market-led rationalities and procedures" (Wilkins, 2012, 124), when they try to be more creative than others.

Ulrich Bröckling (2015) has described this mode of controlling the competitive controller with an elaborated logic of the "entrepreneurial self." Assuming that in several life contexts, from the workplace to leisure activities and from early childhood to old age, we act like entrepreneurs of our lives, Bröckling criticizes the ideology of being motivated to act as successful and competitive managers of our fate while the struggle to be better, wealthier, and cleverer than others can be seen only as an apparently autonomous way of living our lives. Entrepreneurs of their fate usually fail to realize that their living contexts are pre-formed by others and the other—not only by authorities such as politicians or teachers, as Foucault (1995) pointed out in his critique of disciplinary techniques, but also by practices (Deleuze, 2010) that control the controlled as well as the controllers. Accordingly, Nikolas Rose (2000) points out the technical relevance of controlled self-guidance: "Thought becomes governmental to the extent that it becomes technical. It must connect itself to a technology for its realization: audits, budgets, tests, examinations, assessments, dossiers, types of inscription and calculation, forms of practical know-how and so forth" (Rose, 2000, p. 145 f.).

Rose criticizes "a kind of cybernetics of control" by "mechanisms to fabricate a kind of moral virtuous, self-activating citizen" (Rose, 2000, p. 171). In digital learning contexts, even teachers can be seen as self-activating agents monitoring their students creatively. This seems to be

extraordinarily harmful because learners need their teachers to create helpful learning processes. Especially learners with special needs should benefit from creative, empathic, and didactically professional teachers (Helm et al., 2021). While Zierer stresses "that how school closures affect learning success greatly depends on individual schools and individual teachers" (Zierer, 2021, p. 11), even these schools and teachers can be seen as controlled controllers ruled by administrative and digital procedures:

> Concepts of the self that value self-knowledge, self-awareness and self-entrepreneurialism; a moral and political environment in which taking responsibility for one's life as an individual rational actor is privileged and promoted; the ability of digital technologies to monitor an increasing array of aspects of human bodies, behaviors, habits, and environments; the emergence of the digital data knowledge economy, in which both small data and big data are valued for their insights and have become tradeable commodities; and the realization on the part of government, managerial, and commercial actors and agencies that the data derived from self-tracking can be mobilised for their own purposes. (Lupton, 2014, p. 12)

Axel Honneth combines a critique of the entrepreneurial self with his theory of recognition when he argues against the "emphasis on the individual actor as a self-employer individually responsible for his or her own success or failure on the capitalist market" (Honneth, 2020, p. 103). Not only students but also teachers can be dominated as entrepreneurial subjects by the algorithms they have installed in order to monitor their (self-guided) learners. Bearing in mind that the entrepreneurial self described by Bröckling is a flexible competitor, learning creativity can be instrumentalized, normed, and normalized to motivate a struggle for learning outcomes with the main aim of building an economically flourishing future society of materially focused competitors in search of the most creative way to leave the others behind. Angela McRobbie (2011) argues against this instrumentalization of creativity criticizing a "rhetoric to become a space for producing young people who are to be 'entrepreneurs of the self' just as Foucault predicted in his mid-1970s lectures." Here, creative digital learning aims at a scenario where "the so-called *entrepreneurial self* is more or less explicitly an educational goal" (Heidkamp & Kergel, 2016, p. 58).

This atmosphere of creative competition can be fostered in schools, supported by digitality as one of the most famous future technologies.

"Forced to adopt frameworks, discourses and strategies based on efficiency, competition, innovation and flexibility, education institutions have become subsumed within the logic and vocabulary of business and entrepreneurial literacies" (Wilkins, 2012, p. 125), preparing and promoting the flexible, lifelong-learning member of working society by training the agile digital learner, who not only gathers but also creates economically useful information. Especially for those who are unused to dealing with these techniques of domination, this means weakening and damaging the learning self. Therefore, "an expansion of the analytical and ethical gaze in critical education technology research" is necessary in order "to focus on the techno-economic business model and the experimental technologies that increasingly underpin and configure a wide array of educational practices" (Macgilchrist et al., 2021a, p. 374).

Socioeconomically disadvantaged, disabled, or migrant learners who are unable to show competitive flexibility and creativity and therefore often do not receive much interest, help or encouragement from their teachers suffer from a certain self-fulfilling prophecy, which predicts further failure for these so-called "losers." Teachers who are not motivated to promote weaker and underprivileged learners leave the disadvantaged behind and are confirmed in their judgement concerning all these apparently "stupid" students (Foitzik et al., 2019; Mecheril, 2018; Stojanov, 2019). Not believed able to learn effectively, underprivileged students lose support and encouragement and are excluded from the struggle for success:

> The main domain of cognitive (dis-)respect during childhood, it should be noted, is the school […]. When children are exposed to social disregard, they are liable to underestimate their abilities and to discount their own views and beliefs. Thus these children are ultimately unable to integrate these views and beliefs into their current life and this problem will persist into their future public life. (Stojanov, 2019, p. 334)

Furthermore, the burden of being under surveillance by teachers, other learners, and algorithms is much more damaging where digital creativity, self-guidance, and flexibility cannot be managed by learners who become disoriented by the vast amount of internet information they have to consider, filter, and evaluate in their learning research practices (Reichert, 2014; Schaumburg & Prasse, 2019). They have to find their way through the diverse contents of manifold websites and are challenged to decide

which information is trustworthy. Digital communication can impose yet further pressure when students are faced with the input of various, possibly contradictory statements in the entanglement of algorithmic and human creation and the control of communication: "Algorithms owned by large corporations often determine the information that people are exposed to, but it is evident that outcomes may be unpredictable when vast numbers of users receive this information" (Ungerer, 2021, p. 560). This entanglement of control and contingency is confronted with a state of over-control. Students suffer from algorithms that monitor what they do online, how often they are active on learning platforms, post in chats, and react to those of others (Karsch & Sander, 2020). The struggle for the most creative monitoring practices ultimately leads to frustration and exhaustion, deeply weakening those who are disadvantaged before the struggle even starts. Postdigitality can further reinforce these mechanisms of injustice, especially dominating vulnerable learners with extraordinary effectiveness. Already battling with learning difficulties, they may not be able to tolerate the feeling of being under continuous observation, while postdigital practices dominate and norm them by—automatically—watching, recording, and evaluating their activities (Damberger & Iske, 2017; Selke, 2014).

Not knowing who is collecting data about whom, when, and where (Meyer et al., 2011) means that especially students who need special support suffer from the ambivalence of control and contingency. If students do not know when they are under surveillance, they expect constant observation and feel the pressure of being dominated and suppressed all the time. This can make them anxious, demotivated, and insecure—another self-fulfilling prophecy prejudicing the less successful learner. The pandemic can be seen as a prominent moment to begin further research on how disadvantaged students in particular cope with digital learning. While educational data and learning analytics can be very helpful when designing future education, they are also means of surveillance that treat these learners as mere objects of observation while their privacy and personal dignity are at risk (Baker & Inventado, 2016). Teachers and researchers are called upon to balance the opportunities and disadvantages of these practices.

Dialogic Didactics in Video Conferences: Where Digital Education Means More than Learning

While the digital learner aims at profitable learning outcomes, ruled by technically arranged monitoring processes in the struggle for economically successful outcomes, we can ask how learning subjects—and especially the disadvantaged—can be empowered by educational attitudes and practices that support personal development. This does not mean denying the relevance of economically profitable learning outcomes, which are indeed manifest in personality development. While learning focuses on many aims and forms of internalization, even of the unconscious and conditioned kind, education can highlight critical learners, bringing them into meaningful and responsible relationships with others, the other, and the self (Mayrberger, 2020).

Learners should be motivated "to develop skills and literacies that are appropriate for deep learning from (or in spite of) the published but unfiltered information they are currently encountering" (Wellburn & Eib, 2016, p. 70), focusing "the need for evaluation and critical thinking when using the Internet for research" (Johnson et al., 2011, p. 407) and communicating in digital scenarios. This seems to be a much more demanding form of learning than drill and practice or a creative struggle for economically successful learning outcomes. It can refer to digital means supporting the critical subject, not only affirming dominant practices, and it can also problematize these practices. If we talk about practices of subjectivation (Schäfer, 2019), we should not forget to consider subjects and persons at the same time. Looking at practices where subjects are constituted and formed, we should remember that there is no problematizing of subjectivation without a subject. Practices of subjectivation can only be relevant for us when we experience and address them, which is not possible without an experiencing and thinking subject.

Postmodern deconstruction theorems have taught us to question the subjects of truth and autonomy (Foucault, 2001). Postdigitality reminds us of the technically dominated, subjected self, no longer a knowing but rather a questioning subject with the possibility of focusing on forms of education. Here diverse students learn together, asking further questions and discussing, evaluating and elaborating on them, while the teacher's personality is crucial for children's critical learning in processes of

transformative education (Koller, 2012). The teachers can also question their students' point of view, motivating them to reconsider learning outcomes.

This can be achieved in video conferences that establish dialogic didactics (Goetz, 2021; Redecker, 2022a) and encourage learners to question their attitudes and argumentation. These learners benefit from teachers who avoid offering schematized answers. Instead of drill-and-practice internalization, students learn from questioning in processes of transformative education, experiencing that their former views can be re-examined. Here, "students do more than learn, and the teacher is quite explicitly an educator" (Macgilchrist, 2017, p. 99).

Transformative education can be explained with a phenomenological approach (Waldenfels, 2011; Meyer-Drawe, 2008) that focuses the individual and perspective-informed experiences of each learner within the plurality of digital diversity. Doubting one's own regular patterns of explanation can be harmful because we cling to our practiced patterns and often do not wish to abandon them when transformed by new experiences; on the other hand, without questioning our structures of explanation, we are unable to learn something qualitatively new, which can be referred to not merely as learning but as *Bildung*. Learners need somebody to question their views and help them to accept new experiences, stances, and reasoning. They benefit from teachers' encouragement to venture forward in this uncomfortable but enriching process of transformative education, where they are not only astonished and surprised but also disturbed and sometimes even helpless.

We need dialogic partners in "a space in which risk can be welcomed" (Macgilchrist, 2017, p. 99), helping us to cope with this educational process of critical questioning. Dialogic didactics focuses on empathic and sensitive teachers who do not necessarily provide new answers but who cast doubt on the old ones. They can ask questions such as: What do you think about this? How can we prove it? What surprises you? And how can we deal with this? Finding and pointing out their reasoning in regular video conferences, children enter into discussion not only with teachers but also with their peers. Critical thinking becomes communicative in manifold ways: "Critique moves the conversation forward by raising questions and troubling those previously held assumptions and convictions, including our assumptions about what work the word 'critical' should be doing. It also moves the conversation forward by imagining otherwise" (Macgilchrist, 2021b, p. 247).

Here, postdigitality focuses not only on an overwhelming relevance of digital technology in learning processes but highlights pedagogical actors, methods, means, and goals, looking at digital ways of learning that are not instrumentalized for aims other than personality development. In this context, participation—even in inclusive and transcultural settings (Redecker, 2021a; Filk, 2019)—can mean encouraging children to decide meaningfully and responsibly between several ways of finding and discussing their reasoning in learning processes.

Far removed from drill-and-practice impositions and a creative struggle for learning outcomes, this scenario can be arranged via video conferences where members of a learning group meet each other, problematizing learning contexts as if they were together in person (Redecker, 2022a). Here, the so-called social distancing is only a physical distancing. Using cameras, microphones, and loudspeakers, members of the learning group can see and hear each other in real time, enriching their communication with digital means such as chats, films, textbooks, cartoons, podcasts, or wikis. In video conference learning groups, the participants can learn with and from each other in different social formations, such as breakout rooms, where small groups can be formed according to different learning goals and methods. Video conferences can also make use of think-pair-share arrangements or controversial and detailed discussions with the whole group, where all participants can feel that their voices are heard. In such debates, participants learn to shape, present, and question their arguments and cooperate with others in an *as-if* scenario, analogous to in-person interaction but enriched by digital research and communication methods.

Disruption, Critique, and Empowerment: Recognition in Postdigital Scenarios

While children missed their daily school routine during the pandemic, regular video conferences helped to empower students, disadvantaged students in particular, and give them structure and support (Goetz, 2020) via daily meetings involving live contact. This form of learning together offered the flexibility of mobile learning (Uther, 2019). Highlighting the transformative and discursive potential of video conferencing does not have to mean completely neglecting drill-and-practice strategies, however. These strategies can be helpful in preparing processes of critical learning in

postdigital entanglements of various online learning methods. These can also be problematized in meta-reflections that discuss the advantages and challenges of different learning approaches:

> In this sense, digital education prefigures a new assemblage of human and non-human actors, since students receive individualised feedback from not only their teachers and peers, but also from software. Education, in this sense, is about the whole person, it includes space to reflect together on the technology and to take a critical distance to the media being used. (Macgilchrist, 2017, p. 99)

Video conferences can be arranged to problematize challenges of the digital entrepreneurial self in- and outside the meeting. For example, in common agreements, rules can be established in the group to avoid both harmful communication (Uebel, 2021) and an exaggerated (self-)monitoring of chat and mail activity: "instructors can vary the degree of openness to allow students to develop a level of comfort while allowing them to practice self-directed, networked learning in safe spaces" (Couros & Hildebrandt, 2016, p. 158). At the same time, students have to learn that even safe spaces are often not completely safe. By working with communication rules, students learn self-responsibility and social esteem, which is more than helpful, especially for disadvantaged learners.

Although video conferences offer the opportunity to learn in communicative arrangements of transformative education, they do not provide a one-fits-all remedy with which to overcome the entrepreneurial challenges of postdigitality. These challenges can be deconstructed and problematized, but not denied or completely removed. In digital learning contexts, we remain subject to practices we do not have completely under control, while at the same time they continue to "watch over" us. Even in video conferences, data about participants can be collected, evaluated, and processed. Chats are recorded and attendance times are registered. Combined with further digital devices on learning platforms (Gerhardts et al., 2020), students can suffer from the pressure of *always on* and *anytime anywhere* promoted by mobile learning. It is therefore more than important to shape a digital education that focuses on the empowered and critical learner in discursive lessons enabled by video conferences.

Considering the entrepreneurial self and its dangers, teachers have to consider that even the critical learner is restricted by the limits of autonomy. Educating the critical digital subject means strengthening powers of

reasoning, resistance, and social responsibility. Dealing with disability in inclusive scenarios, we can learn consideration for special needs, for example focusing on the "ability of asynchronous communication technologies to give students equal opportunities to contribute. When facilitated effectively by the teacher, this can result in a democratic learning environment for all students" (Kanuka, 2011, p. 104). Disabled learners can also be supported by assistive technologies and instruments such as personal environments or screen readers (Llouquet, 2017), bearing in mind that these measures can also mean restriction and less participation at the same time (Weich, 2020), another example of the ambiguity of harmful and helpful digitality.

Beyond competitive structures, and without denying power relations, a mutual education (Stojanov, 2011) can be established in scenarios of digital diversity considering that participation as a path to educational justice is based on an—even controversial—interaction with teachers and peers (Goetz, 2021) that enables students to support one another. And not only people with disabilities: we all have our restrictions and handicaps that can help us to deal realistically and confidently with challenges of postdigitality and our vulnerable selves in line with approaches from recognition theory (Honneth, 1995, 2020; Stojanov, 2019; Huber & Mork, 2021).

These approaches are established especially in contexts of diversity, disability, and inclusion (Boger, 2020; Felder, 2016), as well as interculturality (Castro Varela & Mecheril, 2010), which can be fruitful for an education-specific recognition theory of postdigitality. Referring to Axel Honneth's famous concept of recognition, we can ask how processes of addressing and re-addressing in digital learning scenarios can be shaped and situated meaningfully and responsibly. Highlighting "the communicative or cooperative structure of all processes of 'Bildung' or education," Honneth (2020, p. 103) emphasizes "the dependency of the child on others—be it peers or adults—by pointing out that his or her moral and cognitive development is deeply relying on different forms of recognition, starting in early childhood with love and care, followed by esteem in its many forms, and finally respect."

Unlike Honneth's prescriptive position, a descriptive direction of recognition theory (Bedorf, 2010; Ricken, 2013) denies the possibility of knowing each other and therefore of succeeding in recognition. Addressing and re-addressing each other, we try to get to know the person we are dealing with without success, determined by the social sense between us (Schaller, 1987), a kind of "inter-subjectivity" (Meyer-Drawe, 2008) that

cannot be assigned to concrete interactors even though the latter co-construct it. Communication and the way we see one another is therefore vague, ambiguous, and contingent. This alienation is intensified further when communicating in video conferences. For example, looking at the computer screen in video conferences, we can only see the heads of other participants and not the whole person. There is often a time delay when we write and read posts or hear spoken sentences, and we have to tolerate a technology-induced incongruence between meaning, saying, hearing, reading, and interpreting, which can make us feel dominated by precisely those digital scenarios on which we depend.

This can be examined and problematized in a theory of postdigital recognition that attends to the vulnerable, digitally dominated, but also resistant human being who can benefit from solidarity and cooperation. A postdigital theory of recognition should therefore not stop at pointing out the opposition between prescriptive and descriptive recognition. It should discuss a postdigital recognition that realizes the pressure of contingency and control without failing to problematize how far practices of addressing and re-addressing can be shaped meaningfully and responsibly. For ultimately, the digital subjects of education are not "something in the place of which something else, as an equivalent, can also be placed", but an "end in itself" with "inner worth, that is, dignity" (Kant, 1786, p. 77).

A postdigital theory of recognition that regards descriptive and prescriptive aspects in concert can empower digital learners. Such an approach avoids the desperate fatalism of both so-called mistaken recognition and of normative restriction. It encourages critical thinking on the part of the empathic learner, who builds personal strength on the basis of their own vulnerability and solidarity with the aim of appreciating and handling the ambivalence of digital opportunities and dangers. Vulnerable learners can embrace meta-reflection even beyond e-portfolios or video conferencing: virtual reality, for instance, can help them to question their horizons of experience and reflexive positions. By discovering the ethical aspects of history (Marrison, 2021), for example, they can improve their own educational process rather than optimizing it in an entrepreneurial manner.

Both compliant and resistant digital subjects can learn to cope creatively with postdigital challenges (Knaus, 2020), experiencing that they are not only influenced by but also playing with digital technology and features (Allert et al., 2018). They can escape monitoring to a certain extent, for example by not using the camera in a video conference, changing the

background setting, or using a false name. By addressing human vulnerability and finding one's own reflexive and responsible way to deal with digitality, the empowered learner can exercise strategy and flexibility, refining digital creativity and practicing it in collaborative solidarity.

Conclusion and Outlook: Resistance and the Vulnerable Learner

Problematizing digital learning in pandemic-related circumstances, this chapter has critiqued drill-and-practice scenarios and highlighted learning strategies by e-portfolios. These digital learning diaries can overcome the schematized self-guidance demanded by drill-and-practice strategies. At the same time, however, e-portfolios can exercise a much more harmful form of control as a result of postdigital practices that norm creativity. While this can be extremely harmful for disadvantaged students, a further step of the argumentation has concentrated on video conferences, which provide a digital space in which processes of transformative education can be inspired.

However, while video conferences can offer this space for deconstruction and problematization, they can neither fully overcome nor deny the postdigital pressures of control and contingency. This can be problematized, however, by a theory of postdigital recognition that highlights the vulnerable, empowered, critical, and resistant learner who aims to deal with digitality in a responsible and realistic manner. This can be seen as an ongoing issue in the establishment and promotion of transformative education in co-creative learning settings.

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PART II

Performing and Reflecting on the Postdigital Condition with Learners

CHAPTER 6

Learning Academic Practices: Enabling Students to Participate in a Postdigital Society

Jennifer Grüntjens, Maike Altenrath, Sabrina Schaper, and Sandra Hofhues

Introduction

Technological developments and achievements of engineering in the common understanding of digitization have progressed to an unprecedented scale. The preconditions and processes of their enculturation are so advanced that digital technologies are inextricably entangled with everyday processes. In line with Felicitas Macgilchrist (2021) and other colleagues, we argue that this observation in itself leads us to a concept of postdigitality which shapes social practices in the professional contexts of research, teaching, and learning as well as in daily life and the private

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spheres of subjects. The deep entanglements between humans, technology, and society bring us to the further assumption that the digital cannot be considered separately from subjects: practices are inscribed and thus part of them (Macgilchrist, 2021).

We can therefore assume that different educational contexts, such as Higher Education, have already been affected fundamentally by digitization, even if organizations of Higher Education are only just starting to reflect on this for themselves—slowly, and not least as one result of the COVID-19 pandemic. Our chapter aims to take a closer look at postdigital research practices, not only of professional researchers themselves but consequently of students as major shareholders in Higher Education and those engaging in research-based learning. This chapter is thus driven by a reflective and critical approach to digital technology. We assume that participation in Higher Education, learning, and critical engagement with academic practices also support participation in a postdigital society. Our understanding of participation includes a critical and reflexive mindset and attitude. We believe that Higher Education is assigned the task to enable learners to participate critically in a postdigital society. This includes preparing students for critical problem-solving and decision-making as well as valuing and understanding different ways of doing and thinking while being able to critically question and reflect on them (Wals & Jickling, 2002; Zobl, 2018). Being able to participate in education and in social and cultural life means being aware of postdigitality and able to act and think critically and reflectively. This chapter will therefore reflect on the conditions and significance of Higher Education today, considering how academic practices are formed under these aspects. Since we attribute great importance to these practices in all areas of a postdigital society, our primary research question asks: *How should Higher Education be constituted so that students can participate in a postdigital society?*

In response, the second section of the chapter elaborates on the characteristics of our culture of postdigitality, identifying the requirements and key practices demanded of students in order to participate in this postdigital culture. We show that organizations such as Higher Education institutions can make a decisive effort to support the participation opportunities of their students in the long term. Subsequently, the third section makes reference to a conceptional work about research(-based learning) practices (Grüntjens et al., 2022) as well as the academic discourse on Higher Education, research-based learning, and postdigitality. In consequence, we distinguish and discuss the research practices of networking, reflecting,

researching, and organizing and link them with the characteristics of a culture of postdigitality. We conclude by considering how Higher Education can contribute to student participation through learning and experiencing academic practices.

Participation in a Postdigital Society and the Role of Higher Education

It is impossible to step out of a postdigital culture (Cramer, 2014). Postdigitality is performatively enacted because new practices emerge as part of the shift from analog to digital. A new horizon, framework, or space of possibility emerges that defines what is important and unimportant, and the subject is constituted as a participating part of it (Stalder, 2021). This also involves changes in the conditions of perception (Jörissen, 2020), so that the term or concept of postdigitality refers to the current society and culture, which are deeply interwoven with the digital. Within the new (postdigital) space of possibility, new cultural orders and practices exist and performatively shape postdigitality as culture (Macgilchrist, 2021). In a postdigital society, these depend not only on political conditions, capital, and various resources but also on key competencies, characteristics, and the sociocultural backgrounds of subjects. In short, digital technologies are constitutive of cultural practices and processes of subjectivation (Allert & Asmussen, 2017).

According to Felix Stalder (2021), postdigitality can be defined by non-linearity, associative links, simultaneity, or an independence of context and time. Despite his earlier work (e.g. Stalder, 2016) deliberately distinguishing the concept of digitality from that of postdigitality, Stalder himself sees these two concepts as closely knit. He points out that both reject the distinction between "old" and "new" media or a culture "before" and "after" technological artefacts. However, for his own analysis, Stalder (2016) declines to use the term postdigitality: by dispensing with the prefix "post-" he seeks to avoid implying that the developments associated with digitality—which shapes culture and society—are already over, or at least that we have understood what they are all about and can move on to something new. From Stalder's perspective, the opposite is true: technological artefacts are now establishing themselves, assuming a concrete form, and the meanings of technological developments are becoming visible (Stalder, 2016).

Nevertheless, in our chapter, we wish to uphold the concept of postdigitality and consider Stalder's understanding of a culture of digitality applicable to our thoughts on participation in a postdigital society. We do not use the prefix "post-" to suggest that the discussion about prefigurations of digital technologies is complete or obsolete. Rather, we understand the prefix as a critical positioning that enables a conceptual approach to the interconnectedness of digital technologies and culture from an explicitly critical and reflective perspective. As Grünberger (2021) points out, the term postdigitality refers to the (increasingly less noticeable) inscription of the digital in all contexts of life, practices, institutions, and artefacts. Furthermore, the prefix "post-" does not refer to something "after" digitality, but rather—as in the case of postcolonialism—its continuation. For these reasons, our understanding of postdigitality fits with Stalder's concept of digitality.

In this dynamic and complex postdigital cultural space defined by nonlinearity, associative links, and simultaneity, orientation is needed to foster reflectiveness and collaboration (Stalder, 2021). In (cultural and educational) academic discourses, the term postdigitality is also used in critical analysis of assumptions of the digital (e.g. Cramer, 2014; Knox, 2019; Macgilchrist, 2021; Murray, 2020). In education science contexts, the term is used, firstly, to draw attention to subtle cultural shifts with "its mutation into new power structures, less obvious but no less pervasive" (Cramer, 2014, p. 13), that have a deep impact on ecology, economy, and sociality. Secondly, the term expresses a critical point of view which neither exclusively rejects nor advocates the relationship between people and technology but falls in line with our understanding of the requirements for participation—for example, a critical mindset and stance—in a postdigital society. Post- and neocolonial developments and discourses (e.g. post-communism, post-feminism, postcolonialism) and inevitable consequences of postdigitality for all spheres of life and societies are included (Cramer, 2014; Grünberger, 2021).

To address the conditions and opportunities for enabling students to learn how to participate in a postdigital society, we have to take a closer look at significant key practices in such a society. Stalder (2016) identifies (with regard to his key term *digitality*) three basic patterns or forms of digitality that in our understanding also apply to postdigitality. Key practices for participation can be derived from these, showing under which conditions participation is possible in the postdigital condition. Stalder (2016) distinguishes between referentiality (1), communality (2), and algorithmicity (3). With the term referentiality (1), he refers to practices of constant transformation, combination, and recontextualization of cultural material. Digitally encoded material—within databases, for

example—can be recombined and enriched with other material (or data). These processes allow subjects to "inscribe" in cultural processes (Stalder, 2016). We conclude that subjects can participate when they, firstly, know about these interwoven structures and, secondly, can deal with them in a reflective, critical, and creative way. The referentiality Stalder describes fosters communalities (2): There is a need to participate continuously in communication processes and to position oneself in networks. Accordingly, participation in social networks is closely related to processes of subjectivation. Networks make it possible to stabilize meanings, make resources accessible, and generate options for action. Here, the subject experiences orientation (Stalder, 2016). We conclude that subjects need to know how to participate in these communities as social networks and to understand their own position within them. They must also be aware of how to distance themselves from fake news, hate speech, or news overload. Algorithmicity (3) describes the growing importance of the collection and machine-sorting of digital data; in this regard, Stalder (2016) elaborates on the increasing amount of data and the impact of (algorithmic) sorting, ordering, and extraction. A key competence for participation is thus to be aware of the measuring and monitoring of all areas of life, the power of data, and those who generate and "own" them.

These three forms of postdigitality represent the characteristics and conditions of a society in which everyone is faced with these ubiquitous procedures of cultural negotiation processes. The far-reaching contexts and relations of being and—most importantly—participating in a postdigital society become clear. A culture of postdigitality includes everything that is generated, influenced, or prevented by it (Grünberger, 2021). Social action is increasingly embedded in technologies, and the ability to participate in education, social, and cultural life means being critically and reflectively aware of this postdigitality.

The characteristics and conditions of postdigitality described above also concern the role of Higher Educational organizations. The latter are challenged to go beyond a merely functional view of technology to understand it as something that shapes and changes the world. This includes the circumstances of teaching and learning in a postdigital culture, which no longer assumes a predictable mechanism between input and output: collaboration and joint reflection gain importance. Productive and creative approaches to ambiguity are becoming increasingly significant for the debate (Allert & Asmussen, 2017; Allert & Richter, 2016; Verständig, 2020), and participation for students means participation in the university as an institution, including its epistemes (Stalder, 2018).

In this regard, it is worth focusing further on the role of Higher Education within a postdigital society. Firstly, it is obvious that the digitalization of research and teaching has been politically and economically anticipated and is thus a central topic in formalized Higher Education strategies. Stakeholders agree on the fact that digital technologies with their practices should be increasingly integrated into Higher Education. Nevertheless, current research shows that ways of "doing digitization" are determined by the variety of teaching, personal beliefs of teachers, and not least by student heterogeneity. Thus, digital technologies could be understood as an option to shape and foster specific practices of studying. But the outcome is always determined by the way students, teachers, and others working in Higher Education make sense of these circumstances (Hofhues et al., 2020). It is therefore not only challenging for Higher Education organizations to acquire and handle digital technology; it also means understanding, reflecting on, and discussing sociocultural processes of digitalization among all stakeholders and teaching students how to find orientation in these developing social circumstances. For instance, in times of fake news, alternative facts, and information overload, Higher Education organizations offer more than ever a safe space in which to learn to deal competently with information (e.g. Götz-Votteler & Hespers, 2019). In addition, all these phenomena are not only specific challenges in terms of teaching and learning but also influence research itself and not least the role of Higher Education within a postdigital society (Pensel & Hofhues, 2020): "[K] nowledge is increasingly created in multiple ways and by diverse organizations and institutions" (Snellman, 2015, p. 85). Researchers are facing the challenge of sorting, reflecting, and commenting on these developments and knowledge processes. Influenced by digitalization, this happens independently of time and location, and research practices are constantly evolving as a result. This is reflected, for example, in the fact that academic libraries are no longer merely archives of knowledge, but by providing infrastructure and promoting media competencies they also become digitally driven learning environments for researchers, teachers, and learners (Hoebel & Mönnich, 2015; Herrlich, 2014).

As learning and teaching in Higher Education often draw on the old, and at the same time highly relevant, teaching and learning concept of research-based learning, it is obvious that the evolving conditions of research in a postdigital society are influencing study requirements. Humboldt envisioned Higher Education as a scholarly community where the union and overlay of teaching and research should not only support

scientific progress but also the mindset students need for self-guided, independent study (Deicke et al., 2014). It is this mindset that students need for learning and participating in a postdigital society.

This connects with the Humboldtian principle of *Bildung durch Wissenschaft* or "cultivation (*Bildung*) through knowledge/scholarship" as Zelić (2018, p. 662 [emphasis in original]) puts it. *Bildung* is a German term and not just the key idea or principle of continental educational tradition but also the "higher" task of (formal) education—such as in Higher Education—and modern pedagogy itself. As there is no exact English translation for this term, the German term is also used in the international literature to a certain extent (Sjöström, 2013). While we cannot explore in detail the discourse and historical development of the concept in the scope of this chapter, we can refer to and work with a simple definition by Vásquez-Levy (2002), who states that "*Bildung* is the process of developing a critical consciousness and of character-formation, self-discovery, knowledge in the form of contemplation or insight, an engagement with questions of truth, value, and meaning" (p. 118 [italics in original]).

The third section of this chapter therefore focuses on how learning and teaching in Higher Education should be designed to promote the formation of an inquiring mindset as the center of research-based learning and a core aspect of participation in a postdigital society. *Bildung durch Wissenschaft*—or, deriving from this, research-based learning—is one way to enable students to develop this insight and achieve such participation. *Bildung durch Wissenschaft* can be achieved when students learn to think and act self-sufficiently, discursively, critically, reflectively, and creatively while actively participating in research(-related) activities.

Research-Based Learning and Participation: The Importance of Research Practices for Teaching in Higher Education

Learning (and teaching) in Higher Education differs from learning in other organizations.[1] On the one hand, students acquire research-based learning through and about their own research (experiences). Depending on the design of the learning scenario, they retrace, discuss, and practice research processes and their individual steps (Decker & Mucha, 2018;

[1] Higher Education organizations are part of the science system, where knowledge is considered incomplete and cannot be taught but acquired. The acquisition of knowledge is a result of a continuous process of engagement with science (Langemeyer, 2019).

Huber & Reinmann, 2019). Learning and educating oneself through the independent systematic production of knowledge is central to this. On the other hand, independent (research) activities, which are frequently expected of students in research-based learning—planning and carrying out a research process, communicating with others, or researching relevant literature for example—are expected to promote the acquisition of general or key competencies such as communication skills, the use of media, critical and reflexive thinking, or the ability to solve problems and learn independently (Huber, 2009; Huber & Reinmann, 2019). While these outcomes are not guaranteed—as with any other form of learning, they depend on the design of the learning scenario and the students themselves—research-based learning offers corresponding opportunities (Huber, 2009). It is thus—at least conceptually—attributed to both the development of key competencies and the fostering of research-based thinking and acting; in other words, an inquiring mindset is the key goal of Higher Education (Bellmann, 2020; Huber, 2009).

Following the discourse about the benefits of research-based learning (e.g. Lopatto, 2009; Huber, 2009), we suggest that these go beyond the mere training of professional skills. Higher Education needs to be discussed under the conditions of a postdigital knowledge society by taking a closer look at the genuine research practices of networking, reflecting, researching, and organizing, and their interwovenness with the postdigital.

Networking as a Genuine Research Practice

Networking is a central quality of a digital—or postdigital—society (Stalder, 2016). As established above, participation in a postdigital society means learning to take part in (online) communication processes and positioning oneself in networks. Networks are used for orientation, to stabilize meanings, access resources, or take action in different forms and ways (Stalder, 2016).

The academic community has long since formed its own networks. Heffernan (2020) showed in a study that, of 100 academics employed in Higher Education, almost all participated in academic networks in some way. These networks were used for employment opportunities, the identification of publication opportunities, or to inform oneself about current developments in one's field and so on. Academic networking takes place in the digital world nowadays, via common social networks such as Twitter (e.g. Mahrt et al., 2014) or platforms designed especially for scholarly

communication and exchange such as Academia.edu or ResearchGate (s. Ovadia, 2014). Twitter is used to share information, resources, literature, or other media. In sharing publication URLs, the retrieval or promotion of scholarly work can increase (Mahrt et al., 2014).

Sharing work as well as connecting with others in a similar line of interest are central aspects of the research process. In this context, the use of networking platforms such as Twitter for communicating and networking with the academic community can be seen as a research practice. Networking practices via common or disciplinary social media platforms and the consequences arising from this—fake news, hate speech, bias or information overload, for example, as typical social media pitfalls—can be experienced and should be addressed during research-based studies. Students in a postdigital society should know how to participate in social networks, but also need to know how to deal with their consequences. Social media thus gain significance for research (practices), and in this particular context social media platforms such as Twitter, ResearchGate, and Academia.edu can themselves be understood as educational media used for research-based teaching in Higher Education. They therefore require analysis and reflection.

Students are also required to position their own work (a research idea or even their results) within the context of others' work in their field. They can connect their work with others or distance themselves from popular discourse. In this way, they gain deeper insight into their field and underlying differences and conflicts, but also themselves, their work, and their ideas as researchers. Twitter or other social networks can be seen as (relatively easy) means of connecting with people in the academic context, to gain access to or keep up-to-date with new work and developments in an area of research free of the restrictions imposed by time or space. Participating in networking practices during research-based learning in Higher Education helps students to slowly settle into these practices and associated consequences (see above). Following Stalder (2016), this enables them to acquire the skills necessary to participate in a postdigital society.

In sum, engaging in the research practice of networking and intensive communication during a research project can help students to learn how to navigate within a network as well as to relate to others and position themselves within the field, while at the same time forming their own individuality.

Reflection as a Genuine Research Practice

Bildung is not possible without reflection (Huber & Reinmann, 2019). Nor is research possible without reflection, since the latter can be seen as a fundamental pre-condition for (all) other academic practices. After all, researchers question, challenge, change, and develop existing knowledge, and every step of research practice is based on constant reflection on one's own approaches as well as those of other researchers. Reflection and reflecting involve not only the researchers themselves but also the academic community, the research object, and the research field. Reflection enables not only research but also a process of learning and (personal) development; (joint) reflection while engaging in research-based learning thus offers the opportunity to be both a researcher and a learner simultaneously (Grüntjens et al., 2022).

While reflection is a crucial part of research, opportunities for it do not arise automatically while conducting research or undergoing research-based learning. Such opportunities require space and must be adequately created (Huber & Reinmann, 2019). The same applies when critically engaging with current conditions, practices, and perceptions in a postdigital society (Knox, 2019; Selwyn et al., 2020).

Digital technologies enable new possibilities to gain insight into the thought, research, and work practices of scholars. Weblogs and e-portfolios are popular examples.[2] These informal tools allow researchers to reflect openly on their work and to connect with others. In Higher Education, both focus on learning through development and the act of reflection while creating (Farrell, 2020). Students can use them as opportunities to follow up with their own thoughts and reflection processes. In the case of weblogs, social media, or e-portfolios with a community function, it is also possible to interact directly with one another. Thus, when used for a (research) portfolio in Higher Education, they become—despite not having been developed as such—educational media.

In conclusion, when students reflect on research practices, they can simultaneously develop an important key ability for participation in a

[2] Since the 1990s, electronic portfolios (or e-portfolios) have been on the rise in Higher Education and extensively researched. Some e-portfolio software or platforms, such as Mahara, FolioSpace or PebblePad, particularly target students, teachers, and the organization itself, and aim to support teaching and learning. In other cases, students can use platforms or software of their own choice, which need not even be designed especially for portfolio or even educational purposes, such as weblogs or notetaking apps.

postdigital society: to deal with and to distance themselves from knowledge reflectively and critically. According to Stalder (2016), a postdigital society is characterized by the interconnectedness of cultural material and structures, power imbalances, and a flood of knowledge and information. This is why it is important to take a step back, become aware of this, and reflect on one's own thoughts and actions. This requires practices of reflection, which can be acquired via research-based learning.

Researching as a Genuine Research Practice

As already pointed out, digital material is always interwoven and thus referential (Stalder, 2016). Further, nowadays knowledge is created and distributed in numerous ways and by multiple organizations and institutions (Snellman, 2015). Incredible amounts of data are constantly being collected, algorithmically sorted, and extracted, requiring awareness of this as well as of the power dynamics it creates (Stalder, 2016). To participate in a postdigital society, students must know about referentiality, data, and algorithmicity in order to critically question, assess, and sort knowledge. Participation means making informed decisions. When students learn research-based and research-related practices, they also learn to critically engage with referentiality and algorithmicity.

Researching literature is an essential part of every research project. Researchers constantly refer to the work of others. They question other work, build on research results, and situate themselves in the discourse. Researching—in the literal sense—represents the connection of the researcher's own thinking with the "world of science" and the knowledge that exists in it (Grüntjens et al., 2022). Every researcher and piece of research is thus site-bound in one way or another. Epistemological processes of the global Western cultural area, for example, are based on Western attributions of knowledge, use methodological procedures legitimized there, or refer to spatially limited paradigms (Altenrath, 2023). In other words, academic literature is on the one hand always referential and, on the other hand, embedded in a certain network or disciplinary context.

It is by researching and engaging with literature that students learn about this referentiality and embeddedness. Learning research strategies such as the "snowball system" are not the only way to accomplish this. In this case, the bibliography of a work is searched for corresponding literature and thus, piece by piece, a research field or discourse and important authors and sources in it come to light. Referring back to the

aforementioned site-boundness of research and researchers, students should also learn about limitations and bias arising from strategies such as the snowball approach. Citing sources is sometimes far from objective and choosing a reference can be driven by subjective reasons, such as promoting one's own work (self-citation) or a particular academic network. Literature and studies discovered through the snowball approach are more likely to cite and be cited by other work in the same research area. Both can lead to a literature sample that over-represents certain perspectives or ideas. In consequence, other important work can be overlooked or marginalized, and power dynamics are reproduced. As of today, women and people of color are still underrepresented in certain academic fields; their work may be undervalued or overlooked due to unconscious biases and stereotypes. This can result in fewer citations, among other aspects, leading to a citation bias that reinforces existing gender and racial disparities in academic communities.

Furthermore, as a "classic" introduction to research, students learn the basics of source criticism and verification, such as distinguishing between types of information. This not only helps students to achieve their own research projects but can also be transferred to other (informal) contexts. Knowledge about source criticism or the ability to recognize fake news is indispensable, especially in today's society with its information surplus.

At the same time—and more specifically in terms of postdigitality—students learn about referentiality but also the preselection of data, or in this case literature, just by dealing with search masks, subject databases, and library systems. Literature, information, and data research opportunities have expanded in recent years due to open-access journals, the increasing online availability of research data and literature, text mining, and citation chasing (Grüntjens et al., 2022). Moreover, as already pointed out, academic libraries are no longer just collections of knowledge but often, also as a result of the COVID-19 pandemic, have a broad online service that can be accessed regardless of location or time. Online research skills and literature use are thus becoming increasingly important for students and researchers, who need to know how (academic) library systems work as well as the consequences of using them. Even if access to literature is supposedly easier online, the visibility of (some) publications and authors continues to be restricted by library- and digitization-related indexing procedures or the reach of publishers and so on (Grüntjens & Schaper, 2022).

Library systems are only a limited example of the use and consequences of big data and algorithms. Nevertheless, indexing procedures illustrate

the consequences of pre-sorting digital data. Students gain an impression of these procedures while researching literature online, and it is therefore important to consider not only source criticism and how literature can be retrieved but also the consequences of online literature searches. This includes a debate around the providers of websites, search engines, subject databases, and library systems, but also data (and literature) collection and sorting mechanisms.

The development of the Science Citation Index (SCI) in the 1950s constitutes a pertinent example. While legal citation indexes were developed as early as the eighteenth century, the first for scientific literature was established by Eugene Garfield's Institute for Scientific Information in 1955. The SCI had two main objectives: to identify scientific publications by author and to keep track of where and how often a paper was cited (Garfield, 2007). There were also associated benefits. First, often overlooked connections between publications could be easily tracked. Second, through the use of human–machine indexing methods, indexers no longer needed to be subject specialists. In consequence, citation indexes could be kept up-to-date more easily than subject indexes. Lastly, bibliographic descriptions via citations were less susceptible to scientific and technological outdatedness than the aforementioned subject indexes (Keen, 1964). Even in the early days of citation indexes, questions emerged about the capabilities of computer-automated citation indexing and its consequences (e.g. Garfield, 1965). In the context of these fundamental developments in (automatic) citation indexing, further questions arise: With today's possibilities of ranking and tracking scientific publications, what do page rank algorithms and key figures such as the h-index (s. Senanayake et al., 2015) say about the scientific impact of research? Who uses this quantified scientific output of researchers? And how do these algorithms, indexes, and other numbers influence the searching and visibility of literature, such as in popular search databases like Google Scholar? This example as well as associated questions and consequences are directly related to our postdigital society.

In sum, learning (literature) research practices in Higher Education can be seen as a first step to introducing students to algorithmic and referential practices in a postdigital society. Students need research practices in order to assess, evaluate, and select knowledge, but also to orientate themselves and to participate in this society.

Organizing as a Genuine Research Practice

During research-based learning, students are faced with the challenge of organizing, managing, and choosing the right tool. But they also have to visualize their personal and institutional context and the next steps in their research process. Being able to choose between different technologies for organizational purposes supports self-regulated learning as well as self-management (Grüntjens et al., 2022). Both abilities are much needed in a postdigital society determined by referentiality.

Following Felix Stalder (2016), the digital and the postdigital are complex cultural spaces defined by non-linearity, simultaneity, and independence from context and time. Furthermore, postdigitality is referential, which means that cultural material, especially when digitally encoded, can be constantly transformed, recontextualized, or recombined (Stalder, 2016). It has been established above that the capacity to orientate oneself within these structures is a prerequisite for other (research) practices such as reflecting, collaborating, or networking, and indeed, orientation also includes self-management and the ability to select what is necessary.

Looking at key research practices, orientation can be supported by practices of organizing. Organizing is important for research in two ways: On the one hand, researchers need to organize their work, for example by scheduling interviews or sorting files and literature. On the other hand, they need—as addressed above in contexts of networking—to organize cooperation with other project stakeholders and partners for the purposes of research projects, for instance (Grüntjens et al., 2022). In a broader sense, this includes finding one's way and place within the academic community.

It is an inherent characteristic of research processes, however, that they cannot be completely planned. Researchers must structure and organize their work, knowledge, and thinking while remaining able to respond flexibly to the unexpected. Nowadays, digital media play an important role in organizing the work and research processes (Grüntjens et al., 2022). Multiple tools, software, and programs support researchers in arranging appointments, creating a project plan, sorting literature, drawing a mind-map, or taking notes. Some of these are designed especially for academic researchers; others are not.

In sum, using digital media to organize the research process supports students in managing and handling constantly transforming, recontextualized, or recombined data and material. Here, too, even if the digital media used for organizing are not educational media per se, they will become so through their use in Higher Education.

Conclusion: From Academic Practices to Participation

Cultural practices are constantly transforming and are influenced in particular by new forms of referentiality, communality, and algorithmicity. Participation in this postdigitality, in this dynamic and complex cultural space of non-linearity, associative links, simultaneity, or independence of context and time (Stalder, 2016; Cramer, 2014), requires orientation. On the one hand, subjects have to act critically, reflexively, and creatively in a postdigital society in order to participate. On the other hand, the concept of postdigitality allows for a (critical) consideration of current academic practices and the role of Higher Education. We have shown that Higher Education can fulfill its role in enabling students to orientate themselves and participate in the developing social circumstances by teaching and introducing genuine research practices, such as networking, reflecting, researching, and organizing. Nowadays these research practices are always digital media practices too, inextricably interwoven with the postdigital (Pensel & Hofhues, 2020), and we have shown that teaching and learning these research practices is closely related to promoting participation in a postdigital society.

Research-based learning can foster an inquiring mindset and key competencies that are needed to participate in a postdigital society (Bellmann, 2020; Huber, 2009). While *Bildung* in the Humboldtian sense cannot be enforced, it is commonly believed that it is best facilitated in Higher Education through research-based learning. Furthermore, it is believed that *doing* and engaging in science provides a strong impetus for self-reflection, which is key to *Bildung* (Huber 2009, Heudorfer, 2019). In consequence, research-based learning can be seen as a fundamental concept with which to foster *Bildung* in and for Higher Education. On the one hand, we believe *Bildung* can be supported through research-based learning on the part of students, the undertaking of academic practices, and their enculturation into science (Langemeyer, 2019) and, on the other, we believe it necessary that research-based learning in higher education be designed in such a way as to reflect (current) academic research practices in a postdigital society (Grüntjens, 2022). Additionally, the transferability of what is learned and achieved to the larger lifeworld can be emphasized in such scenarios, supporting students in transferring academic practices and resulting knowledge to other practices.

Selecting, choosing, and organizing tools, materials, (re)sources, and literature introduces students not only to academic research but also, to a greater extent, to the skills needed to participate in a postdigital society. In doing so, students learn to apply (and reflect on) these practices under assistance and in the "safe space" of teaching and learning without exacerbating existing social inequalities (Steinhardt, 2022), fostering social participation. Digital media thus become educational media. At the same time, this means that perspectives such as those from Critical Educational Technology must be adopted for (critical) debate.

Enabling students to think and act reflexively, critically, and creatively also means taking a closer look at Higher Education organizations and how they might offer students guidance in dealing with simultaneity and constant change. Higher Education itself is also affected by the constant change processes of postdigitality. To what extent does Higher Education consider itself committed to society and to what extent would aspects of postdigitality be included in its program as well as in its structures and its thinking about society? Ultimately, and in line with the principle and the premise of *Bildung durch Wissenschaft*, we assume that the contents, self-understanding, and structures of Higher Education can support students in thinking and acting self-sufficiently, discursively, critically, reflexively, and creatively. This means that the participation of students depends on the capacity of Higher Education itself to critically question itself and continually develop.

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CHAPTER 7

Expanding the Pedagogical Space: Co-design and Participation in an Online Postgraduate Course

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Introduction

Current Issues in Clinical Education is a course within an online Master's in Clinical Education at the University of Edinburgh, where over 300 students (themselves professional clinical educators), located around the world, learn about principles, theories, and practices of education. *Current Issues* is presented as "content-free": beyond some general resources (e.g. how to write a position paper), content is curated by students and teachers on the fly. Over ten weeks, each student identifies and discusses a topic of

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personal and professional relevance that is not yet settled in policy, research, or public debate. Where other courses rely on journal articles and formal sources, *Current Issues* also turns to news items, blogposts, social media, and forms of grey literature. In the absence of a clear scientific evidence base, topics are often highly contentious and, potentially, intractable. Each student must explain how the issue matters to their context and argue for a clear position. This is assessed through individual, ten-minute video presentations (worth 30%), and a 2000-word position paper (worth 70%). In the iteration of the course discussed in this paper, the lead teacher was also positioned as a "student," presenting her own assignment, and seeking feedback comments from student "peers." While peers contribute to feedback, marks are allocated by tutors alone.

At the start of the 2021–2022 iteration of the course, Gill (lead teacher) and Tim (co-teacher) invited all students to co-author a paper about participation in *Current Issues*. Two students, Kanastana and Yathu, volunteered. At the time of writing, Kanastana, a General Practice trainee located in London, is interested in mental health, sexual and reproductive health, and improving health disparities. Yathu is an anaesthetics trainee located in Birmingham, interested in global health and curriculum design for undergraduate medical training. Gill is a dietician by background, senior lecturer (or is she … find out at the end!), programme director of the Master's in Clinical Education, and head of Postgraduate Education at Edinburgh Medical School. Tim is also a senior lecturer and deputy director of the Master's. He has a background in digital education and was previously a learning technologist. Gill originally designed *Current Issues*, and she and Tim have each led it in previous years. In 2021–2022, Gill was lead, and Tim helped out with occasional live sessions, assignment moderation, and some posting on the discussion board. Authorship of the chapter was led by Tim and Gill, with Kanastana and Yathu contributing their thoughts and perspectives and commenting on and editing drafts.

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In the rest of our chapter, we draw on co-creation (Bovill et al., 2011) and postdigital literature (Fawns, 2019; Jandrić et al., 2018) to consider the forms of participation that occurred in this online, postgraduate course. Our postdigital view questions the dichotomy between digital and non-digital education, and rejects the idea that any course can be fully online or offline, since it is always embedded in social and material relations. Its content, activities, and learning spill into and out of any formal, digital, or physical spaces (Fawns, 2019). We look beyond a social focus and beyond digital/non-digital binaries to the embodied and material entanglements of people, technology, purposes, values, and contexts (Fawns, 2022). Further, rather than writing as academics researching students, we are teachers and students of the *Current Issues* course, co-authoring as colleagues. We use, as landmarks for our journey, assignments written by three of us: Kanastana's on Critical Race Theory in medical education, Yathu's on the role of medical students in the front-line response to COVID-19, and Gill's on reward for expertise in university teaching. Through our collaborative writing process, we attempt to negotiate our different perspectives into a coherent or harmonious (to borrow from Taylor & Bovill, 2018) account of co-participation that unifies some of the richness and complexity of our online participation.

Emergent Content: What Happened?

In 2021–2022, 15 students took the course. Regular live conversations were held in Microsoft Teams and recorded for those unable to attend. Discussion boards (Blackboard Learn) were available for asynchronous conversations, and students could also meet or chat independently via their preferred technologies. Emails were sometimes sent by students seeking clarification, and answers were posted on discussion boards for all to see. Before the course started, Gill sent a short video about the course structure and asked for comments. Students negotiated more frequent synchronous conversations (from fortnightly to weekly), changed the proposed timings to better fit their schedules and time zones, and added the choice of presenting assignments in real time or pre-recording. During the course, they also negotiated extensions to assignment submissions. At the end of the course, Gill recorded another video reflecting on how she felt things had gone and inviting students to reply.

Each student's assignment formed a focus for conversations, research, and thinking. Topics included simulation in psychiatry, training for special

needs dentistry in Pakistan, supporting the integration of international medical graduates, and more. Kanastana contrasted crude approaches to equality, diversity, and inclusion within undergraduate medical education, such as standalone courses and active bystander training, with a more integrated application of Critical Race Theory (CRT). She drew on literature from beyond medical education to demonstrate some negative consequences of simplistic approaches (Benjamin, 2017), and to argue that race is a social construct and not a biological fact (Ford & Airhihenbuwa, 2010). This underpinned her proposal for *race-conscious medicine*, where *racism* is a modifiable risk that impacts patients, rather than *race-based medicine*, where *race* is seen as a non-modifiable risk factor (leading to the pathologizing of racialised people) (Cerdeña et al., 2020). Kanastana examined widespread racial disparities in UK health and social systems, and how historical racial divisions are embedded in the Western medical knowledge base and continue to seep into policies and guidelines that attempt to reduce racial disparities. CRT helped her to identify normalised structures that continue to create barriers for racialised people, and to point to ways of deconstructing them. She proposed the introduction of CRT from the start of medical education in order to provide some immunity against the race-based lens, and to support a move towards a race-conscious delivery of care.

Yathu considered the role of medical students in the COVID-19 pandemic. He illustrated the lack of clarity in guidance from regulatory bodies (Association of American Medical Colleges, 2020; General Medical Council, 2021) and professional unions (British Medical Association, 2021), and how, due to widespread uncertainty and safety concerns, medical students' participation in clinical care was suspended in many institutions (Kachra & Brown, 2020). Pointing out that students have played key roles in previous global healthcare crises (Martin et al., 2020), he argued that the importance of practice-based learning for future clinicians does not disappear in situations of crisis. Yathu's position was that, in a climate of chronic challenges to doctors' welfare, patient safety, and workforce retention, medical training cannot stop in response to any given healthcare threat. Instead, he argued, the medical education community should establish a clear framework for students' roles in such circumstances.

In a change from previous years, Gill decided to take part in the course as a student. She had concerns about the variable levels of engagement of students in previous years and wondered whether her participation would

act as a form of role-modelling. She also intended to generate an updated example of her work for the course workbook, and to use the course structure to help her do some focused reading for a related research project. For her assignment, Gill used her recent application for promotion to Professor of Clinical Education to explore teaching expertise in higher education, how it is understood, and how its conception by different stakeholders has implications for agency, recognition, and reward. She argued that teachers are exploited in an uncaring system, and that their voices are often de-privileged outside of their courses (e.g. in deference to student voices within a customer-service model, and often in deference to managers, IT staff and, sometimes, Ed Tech providers). Gill called for institutions to improve the clarity around how teachers can provide meaningful evidence of expertise in the context of new and emerging pedagogical practices, including forms of teaching, design, and educational administration and facilitation that are less visible. Gill also discussed tensions between teaching and educational leadership, where promotion criteria remove teachers from teaching practice (e.g. by requiring significant committee and policy responsibilities). She argued that good teaching and good educational leadership are not mutually exclusive, and that policies and processes should allow development in both without compromising the standards of either role.

Process: How Did It Happen?

At times, the course was conceptually and emotionally challenging. Kanastana remembers feeling "defeated" after her presentation: technologically challenged and ill-prepared in comparison to her peers (Yathu, Gill, and Tim all remember her presentation as excellent, well-structured, clear, and confident). However, she also felt surprised at her ability to answer questions comfortably, and this encouraged her to pursue further reading. In speaking about CRT, Kanastana felt she developed a stronger voice, encompassing her passion, motivation, confidence, and professional curiosity. In the end, she produced work that she was very proud of. Comfort, ownership, and developing a stronger voice were salient aspects of her participation. This shows that, even in our professional, postgraduate context, co-creation approaches entail an emotional as well as a conceptual shift for students and teachers (Cook-Sather, 2014). For the four of us, uncertainty and emotion made this course feel different from others within the programme. There was a sense of risk and potential reward,

expectation, a feeling of not quite knowing where things would end up. While Gill and Tim had run the course before and had confidence in their abilities to cope with whatever happened, they still had a sense of anticipation and excitement about a course with such an open design. Would we produce a course together that generated valuable learning, fulfilled the requirements of Master's-level study, and met the demands and expectations of the students? What topics would students choose, and how would they engage with the process?

Sometimes, and particularly early in the course, all four of us felt like imposters. It was difficult to feel "at home" until we had populated the course with content and connections. In such an open space, students needed gentle welcoming and clear signposting to what they might do next, examples, reassurance, and a mutual acceptance of living with uncertainty. All of these things, along with elements of structure (e.g. tasks, formative and summative assignments), supported both Yathu and Kanastana to settle on a topic, build confidence, and produce work they were proud of. The end of the course was packed with strong emotions of achievement, gratitude, and relief at getting through an emotionally challenging and stressful, but immensely rewarding, learning experience. At the time of writing, it is still hard for Kanastana to fathom that she was able to openly challenge racial disparities in medicine. Yet, this did not signal the end of her engagement or learning. She is still coming to terms with what she has learned and achieved, and where she wants to take this project in the future. Kanastana and Yathu each wanted to go beyond producing work for an assignment and to develop personally meaningful ideas that they could carry forward to further projects (and, for Yathu at least, possibly a PhD).

The freedom to develop his own ideas was, for Yathu, an important reason for studying at Master's level. Navigating the relative absence of structure, finding a topic, and developing and defending relevant arguments felt like good, albeit scary, preparation for further study at PhD level. Yet, while Yathu enjoyed the open nature of the course, he felt that collaboration with students and teachers played a crucial role in enabling this freedom. Similarly, within a supportive community, Kanastana found the courage to follow her interest in tackling CRT in medical education. Creativity needs constraint (Candy, 2007), and some initial structure was necessary in order to create a manageable space. For example, the formative and summative assignments helped Yathu to articulate his topic and justify his position, and to balance breadth with a focus on feasible

solutions. The combination of such pre-designed elements and conversations with the community helped the students navigate the uncertainty of an open course.

The value of learning as a community was clearest at the start of the course, as the students developed confidence through constructively challenging conversations with peers from different disciplines and settings. Initially, having no clear focal topic was daunting. Yathu lacked confidence in identifying a workable area of interest. He worried that others might think his arguments were not worthwhile, or that someone else might think of a solution to the problem he had identified. Kanastana had wanted to discuss CRT in medical education for a long time but had not believed it possible within a postgraduate program. She did not feel confident enough to broach it; it felt disconnected from other students' topics, and the literature seemed very broad. She would not have pursued this topic without encouragement and reassurance from teachers and peers. It took time, dialogue, and familiarisation with the course community to overcome her hesitancy.

Relationships are at the heart of the students-as-partners movement (Matthews, Cook-Sather, et al., 2019a). During the various, unpredictable contingencies of the course, students would sometimes help each other navigate challenges (Sun & Goodyear, 2020). At other times, students worked as individuals in parallel, rather than within a community (e.g. not communicating outside of scheduled sessions). Our postdigital view shows us that isolation is not a direct consequence of studying online (Fawns et al., 2019), but of the social and material conditions in which that study is situated. For instance, participation is constrained by professional and personal lives, caring responsibilities, unstable household conditions, or limited technological infrastructure. Indeed, while online learning is sometimes described as inferior, disembodied, and lacking social connections (Boys, 2022; Fawns, 2019; Fawns et al., 2019), it can help students work around some of these constraints, and can underpin rich social and material experiences. People log in from many different physical spaces (e.g. bedrooms, trains, corridors, storage cupboards in hospitals) and are interrupted by children, pets, or visitors ringing the doorbell. Through voice, video, images, and text, participants bring in elements of their homes, local surroundings, offices, clinical practice settings, and so on, revealing glimpses of each person beyond the student/clinician/teacher, while also highlighting the challenges of carving out

conducive spaces for reading, thinking, and discussing complex issues (Sun & Goodyear, 2020, p. 20).

Current Issues involves whole-class co-creation *in* but not *of* the curriculum (Bovill, 2020). Loose design and minimal content were intended to encourage participation while allowing clarification, well in advance, of what students should expect. There are exciting examples of co-design of the curriculum (see, e.g. Bovill & Woolmer, 2018), but these involve considerable up-front investment from teachers and students and an amplification of risk, trust, and community-building. Co-creation within the curriculum is already very uncertain, and already of great potential value. During *Current Issues*, students negotiate content, conversation topics, deadlines, conversation schedules, and adjustments to the ways technologies are used. However, this is not a new course. Each year teachers modify the design rather than redesigning from scratch. The formal course descriptor, learning outcomes, structure, and centrally supported educational technologies are set in advance by teachers in combination with other institutional stakeholders. Institutional policies and technological infrastructure are held as fixed design constraints (Ellis & Goodyear, 2009), and the culture of the program as well as students' existing relationships with peers and teachers shape what is possible. For example, *Current Issues* runs in the second year of the Master's. Those who continue beyond the first year are more heavily invested, have had longer exposure to the program philosophy, and have an appreciation of the general approach. Teachers can build on prior trust- and community-building, and thus introduce greater risk and flexibility into the design.

Pedagogical Space

From an idealistic view, *Current Issues* can be seen as an open space where new knowledge is generated through co-participation (Bovill & Woolmer, 2018) and the interrogation of identities and relations (Gutiérrez, 2008). One of the defining features of distance learning is that it happens across multiple places (physical settings of teachers and students, physical infrastructures of the university and the Internet, and material representations on digital devices), and materially and virtually interweaving locations and contexts (Ellis & Goodyear, 2016) can be valuable in international, interdisciplinary programs like ours (Aitken, 2021; Fawns, Mulherin, Hounsell, & Aitken, 2021b). *Current Issues* students are working professionals who teach other healthcare practitioners in a range of settings, mixing clinical

and educational commitment, bringing concerns and controversies to the course for consideration, and returning to their practice settings with new insights (Aitken, 2021). This is combined with a *seamful* approach to design and orchestration, in which students and teachers work together to understand the mechanics of their negotiated ways of teaching and learning (Fawns, Mulherin, Hounsell, & Aitken, 2021b). The aim is that dialogue around the educational approach exposes students to their teachers' thinking about the course and allows them to negotiate designs and configurations. This approach seems, to us, to make particular sense in relation to our context of cultivating (clinical) educators.

However, there are a number of challenges to this ideal. Firstly, it would be misleading to suggest that our *Current Issues* course started from a blank slate. It was already bounded by timescales (schedules, deadlines), technologies (e.g. virtual learning environments, home setups, devices), who was involved (students, teachers, disciplinary professionals, the wider community), where people were (across countries and continents, in clinical settings, home offices, distributed via online networks), and what was to be learned (learning outcomes, resources, assessments). There were already systems and policies in place, standards, cultures, traditions, and practices. In the design phase, educators sketched out further constraints for the educational activity that might occur, and then further limited this during the course through forms of orchestration (setting tasks, giving guidance, scaffolding through dialogue, etc.).

Secondly, as we have discussed above, some structure is necessary for agency, and some constraint is necessary for creativity. *Space* is a widely used concept in education, though often in vague, ambiguous, or inconsistent ways (Ellis & Goodyear, 2016; Turnbull, 2002). Here, we distinguish *space* as abstract, potential, and multiple; from *place* as specific, lived, and value-laden (Massey, 2005; Tuan, 1977). Loose designs, such as *Current Issues*, create considerable space as well as expanded possibilities for reinterpretation, creativity, and unpredictability. This can support students to go beyond the "normal" and expected (Boys, 2016), allowing a more inclusive and responsive design for those students who enrol and the topics they pursue. Too much space, however, can lead to some students straying too far from the design intentions, or becoming paralysed from lack of structure (Boys, 2010). For example, Kanastana and Yathu had the freedom to learn things they could not have predicted, but found it difficult to establish the scope of what was to be learned. Discussions with peers and teachers helped them to fine-tune the focus and depth of their

explorations, but their engagement and participation will not reflect all students (some may have remained "lost" in the openness of the course even after the final assignment). At stake is not just the final outcomes (i.e. the assignments), but the "quality of the space" in which they are constructed, through dialogue (Wegerif, 2013, p. 5).

Further, the openness of the space is limited by power structures, the agency of teachers and students to navigate perceived or actual institutional constraints, and the expectations of a range of stakeholders. In our program and many others, the marketing of programs, the requirements of course descriptors and design guidelines are oriented towards pre-set content and reading lists, the prediction of learning outcomes, and so on. Yet, an obstacle to good education may lie, ironically, in views of teaching as disseminating knowledge that is *already known*, as opposed to research as the generation of new knowledge. Universities are sites for knowledge production, not just passing on old stuff (Neary, 2016). Neary proposed *students as producers* as a critical response to a culture of students as consumers (Neary & Winn, 2009). Teaching as generating new knowledge, rather than passing on the already known, aligns with our own university's emphasis on research. It follows that teaching should become part of an ongoing knowledge-generation process. Within this, teachers cannot be constantly generating new knowledge *for* students and then passing it on to them; instead, knowledge must be generated through student and teacher collaboration in teaching and learning. Partnering with students, therefore, while potentially increasing uncertainty, can help us to understand what is important about higher education (Peseta & Bell, 2020) and how we can generate knowledge that will benefit educators, the institution and, perhaps, society.

There is a significant risk that this potential will be unrealised because some students and teachers are insufficiently supported to navigate the pedagogical space created through participative approaches. While some may relish the freedom and potential of co-creation, others will find it daunting and stressful and require more support, and such differences may be exacerbated in very open designs. There may be too much collaborative work for teachers and students to do, and not enough time or energy to do it successfully. Trusting conversations and transparency become crucial in order that students can appropriately interpret the design intentions (Goodyear, 2015), and negotiate appropriate support. A related risk is around the requirement for not only students but also teachers to embrace vulnerability and uncertainty. A co-participation lens can widen the usual

focus on "engagement" beyond students to include how teaching staff are motivated in relation to their own courses (Matthews, Cook-Sather, et al., 2019a). It can support an expanded perspective through which more can be seen (Cook-Sather, 2014), and common-sense assumptions about teaching can be interrogated (Brookfield, 2017).

Co-participation between teachers and students creates the potential for all parties to make sense of conversations from an insider perspective (Wegerif, 2013). The purpose of such conversations is not to change the students' minds to align with the teachers' pre-conceived knowledge, but to change the understandings of all parties and thus generate something new: an expansive, rather than a linear, view of development that includes horizontal learning across contexts (Aitken, 2021; Engeström & Sannino, 2010; Gutiérrez, 2008). The boundaries are unclear between teaching and learning, or between academic and professional work: everyone is negotiating multiple contexts at the same time, rather than crossing from one to another (Fawns, Mulherin, Hounsell, & Aitken, 2021b). For all participants this requires confidence and a willingness to embrace uncertainty. Gill and Tim are relatively at home in uncertainty, having many years of online teaching experience and a philosophy of openness, vulnerability, and honesty. However, this way of thinking about postgraduate education is not common or comfortable for many teachers or students.

Further, "student-led" educational design is still entangled in the power relations and political economics that permeate contemporary postgraduate education (Gravett et al., 2020), and mechanisms of participation are mostly controlled and initiated by universities or teaching staff (Carey, 2018). In *Current Issues,* this was evident in the assessment of individual work, weighted towards a relatively traditional form of written text, and in the imposition of teachers' values. Gill and Tim follow aspirational principles of openness, authenticity, vulnerability, and honesty (Fawns, Aitken, Jones, & Gravett, 2021a), but students have little say in this philosophy. In *Current Issues*, there is no feasible option for students to learn within a more familiar structure. We see this as neither inherently good nor bad: education cannot be entirely student-led because it is a negotiation of values and relations between institution, educators, and students. While this highlights a limitation of the partnership metaphor (since students rarely get much say in how "student-led" a course will be), all design contains gaps between design intentions and what students, teachers, and others do, and important elements of pedagogical space are found in these gaps. Design cannot cover all emergent activity, learning conditions are

not entirely predictable, and students cannot help reinterpreting designs and instructions (Sun & Goodyear, 2020). Gaps can lead to misunderstandings, but they can also be richly generative, allowing choice, creativity, self-management and, ultimately, meaningful participation (Sun & Goodyear, 2020). Dialogic space, where new meanings are contested, can be created through the tension and contradictions between multiple perspectives (Wegerif, 2013).

Postgraduate Education: Who Is Teaching Whom?

The participation of students and teachers in our loosely designed course entailed not only the negotiation of the content to be learned by students, but a surfacing of questions—relevant to all education but often neglected—of who is learning what, and the roles of different participants in supporting the learning of others. A turn away from teacher-centeredness (Neary, 2016) towards "student-centredness" (Ramsden, 2003), "student voice" (Cook-Sather, 2018b), social justice (Brennan & Naidoo, 2008), critical pedagogy (Bovill & Woolmer, 2018), and a recognition of complexity (Goodyear et al., 2021; Goodyear & Carvalho, 2019) has moved research into fertile new territory around students as partners (Matthews, Cook-Sather, et al., 2019a), producers (Neary, 2016), co-creators (Bovill & Woolmer, 2018), and co-configurers (Sun & Goodyear, 2020). This movement looks to draw on and develop students' educational and learning expertise (Matthews, 2017), as well as to support their agency within educational processes and designs (Bovill et al., 2011). It encourages us to consider students' creativity and their potential to make relevant that which they have chosen to study (Bovill, 2018). At the same time, it prompts us to think about teachers as learning from their students in various ways (e.g. about course topics, about their students' hopes and ideas, about teaching and learning).

However, while partnerships with students are often conceived of as equal or aspiring to be equal (Cook-Sather et al., 2014), it can be unclear how students actively acquire power within institutional constraints (e.g. around grading or admissions) (Carey, 2018). As Kanastana's work on CRT highlighted, there are often entrenched and invisible obstacles to equity of participation and access (i.e. who is participating in the first place). We know from previous research (Aitken et al., 2019) that students on our program arrive with various forms of cultural and social capital, without which they may not have the necessary qualifications, professional

experience, capacity to negotiate the application requirements, or funding to enrol. This capital influences the experiences and perspectives they bring as well as their potential to participate in the social, material, and cognitive activity of the program.

Some co-creation literature focuses on equity as an aspirational value (Cook-Sather, 2018a, 2018b), which is illustrated by Gill's "student" role. Gill thought that if she did the assignments and shared how her thinking was developing, it would reduce the gap between teacher and students. In fact, she found this very onerous and did not complete the position paper. This was acceptable because she was neither seeking qualification nor paying fees, and her "failure" was simply used as a prompt for discussion within the course (e.g. around the tension between personal development activity and urgent demands such as marking). Gill also designed the initial course structure, schedule, and assessments; orchestrated conversations; helped students understand course expectations; and offered guidance around appropriate topics. At the end of the course, she allocated grades to students and was not graded herself (but did seek and receive feedback from others on the course). She was far from a typical student in her role, power, and insider knowledge of the course. Her aspirational positioning as "student" did reconfigure some power dynamics (e.g. by inviting suggestions for her assignment, emphasising all feedback as peer feedback, and learning about the demands of the assignment from a student perspective), but the lack of consequences for not completing her student role exposed the inequitable positionality of teacher and students. For us, equity remained a principle from which we could learn about the nature of our teaching, learning, and design rather than a reality embedded within the course.

Coming to see students as partners may be a threshold concept (Cook-Sather, 2014; Marquis et al., 2016) for teachers and students. It can be uncomfortable, troublesome, and transformative of how we see and do education (and of whom we see as involved). In *Current Issues*, students taught each other, and the teachers, in a very direct sense (Gill and Tim learned about CRT from Kanastana and about trainees' medical practice during the COVID-19 pandemic from Yathu). There was a messy and often unarticulated overlapping of roles beyond the binary of teacher/student. Indeed, maintaining a clear delineation between teacher and student roles may obstruct co-creation. In *Current Issues*, students and teachers negotiated not only content and process, but also pedagogy (Bovill et al., 2016). For example, they learned about, and reconfigured, relations

between education and professional practice and the horizontal learning that happens across those contexts (Aitken, 2021). Distinctions between teacher and student did not completely unravel; they were held together by assessment, perceived authority, policy, and culture (e.g. Kanastana still privileged Gill's voice within the feedback process, in part because she would mark the work). But there are more elements involved in education than just teachers and students, including other stakeholders and technology. To talk of "equality" is to separate out the contributions of different elements, rather than seeing their contributions as relational and entangled (Fawns, 2022). If power cannot be equally shared, perhaps it can be "distributed appropriately" with all participants constructively challenging practices that reinforce existing inequalities (Healey et al., 2014, p. 15). We see this as an important and challenging aspiration for co-creation approaches, while recognising that it also raises a further power-related question of who decides what is "appropriate."

Evaluating Postdigital Co-Creation

Studying is expensive and time-consuming. A course with no content may seem a poor investment when viewed through instrumental conceptions of teaching or reductive measurement of outcomes. Indeed, students are asked to do some of the work traditionally done by teachers around generating content and feedback. Yet, an interesting challenge for evaluation is that, through the process of education, we can come to new purposes and values, a new sense of what matters, a new understanding of teaching expertise. The learning process may produce very different values and conceptions of teaching from those with institutional power in relation to evaluation, recognition, and reward (Aitken & Hayes, 2021; Aitken & O'Carroll, 2020; Fawns & Sinclair, 2021).

Many institutional conceptions of teaching expertise need reframing in relation to co-participation. It is common to conflate expertise and experience in teaching (Berliner, 2005; Brookfield, 2017), but *how* teaching is done matters (Fenstermacher & Richardson, 2005). For example, Gill has heard many clinical educators talk about inspirational teachers who, upon further scrutiny, are charismatic and entertaining but not necessarily effective at designing, curating, or orchestrating learning activities and environments. Elsewhere, Gill and colleagues have written about the shortcomings of teaching awards that privilege more overt and visible

practices while marginalizing the careful background work that underpins successful learning activity (Fawns, Aitken, & Jones, 2021c).

Approaches in which students explicitly share responsibility for the quality of their education fit uneasily with traditional conceptions of "good teaching," instrumental evaluation, or the "value-for-money" rhetoric of Higher Education, where students are positioned as consumers of an educational product or service that is provided by an institution and its teachers (Bishop et al., 2018; Fawns, Aitken, & Jones, 2021d; Matthews, Dwyer, et al., 2019b; Neary, 2016). Through the course, we all learned much more than what showed up in assessments (Ellis & Goodyear, 2009) and centralised evaluations (Fawns & Sinclair, 2021). From a postdigital view, unfamiliar approaches, including (even now) online courses and co-participation approaches, shine a light on aspects of education that we should have been examining all along (Fawns, 2019). For us, education is always a collaborative endeavour between teachers, students, and others (Fawns, Aitken, & Jones, 2021d), all of whom are also "learners." In an *ecology of participation* (Taylor & Bovill, 2018), each participant sets out their own direction and set of values that may not correspond with ideas of economic value (i.e. "value for money"). Who, then, is fit to judge teaching expertise or quality of teaching, particularly in co-creation approaches where the teacher takes a less prominent role, yet one that requires a different and potentially unfamiliar expertise (Aitken & Loads, 2019; Bovill et al., 2016)?

Both co-creation and postdigital literature highlight the value of processes of collaboration, negotiation, and shared decision-making to personal and professional development (Lubicz-Nawrocka & Owen, 2022). Gill found it empowering to talk with an interested group of peers (i.e. her students) about the continuing development of educators and the challenges of an academic career. Kanastana and Yathu found it useful to collaborate with Gill on their projects and to gain insight into some often invisible aspects of their tutor's role. Little et al. (2012) suggest that such open discussion of the terms and intentions of collaboration can help students not to be exploited. Open discussion of how a course works erodes the distinction between teaching and evaluation, and these new understandings are part of the value of education that can only be appreciated after the fact (Aitken et al., 2019). Conversations between colleagues are a noted means of academic development (McCune, 2018; Roxå et al., 2011) and, by including students in what would traditionally be teaching conversations (how to run the course, what the content should be, what is

working and what isn't), teachers could not only gain valuable insights from students about what they needed, but all parties concerned could broaden their perspectives on the educational process (Fawns, Mulherin, Hounsell, & Aitken, 2021b).

How we evaluate teaching influences the capacity of teachers and others to enact principles of equitable or inclusive participation. Evaluation methods that isolate educational elements (e.g. teaching methods, technologies, or the expertise of individual teachers) (Fawns, Aitken, & Jones, 2021d), or miss less conventional or visible forms of engagement (Fawns & Sinclair, 2021), do not encourage teachers to consider the diversity and complex interplay of factors that influence the quality of educational experiences (Fawns, 2022). Much learning happens in unconventional ways, and outside of the view of teachers (Boys, 2022; Ellis & Goodyear, 2009; Gourlay, 2015). If we want to be inclusive and understand what is really going on, it is important to look beyond familiar forms of learning and teaching, and beyond methods and overarching designs, to the complex entanglements of people and the conditions in which they are learning.

Conclusions

In this chapter, we have considered our experiences as students and teachers on a "content-free" course. Co-creation is not a method, but a collaborative enterprise that must be carefully designed and orchestrated, including trust-building before the start of the course. We found a number of parallels between the challenging aspects for students and those for teachers, and a blurring of the distinction between teacher and learner roles. Such approaches can develop educational expertise for students and teachers, and increase agency and creativity, but are sometimes deeply uncomfortable. Navigating an open and loosely defined course structure was particularly challenging in combination with the pursuit of a potentially confrontational and exposing area of enquiry such as Kanastana's assignment on Critical Race Theory. Our postdigital view questions the dichotomy between digital and non-digital education (Fawns, 2019), and emotions are not absent simply because a course is "online" (Fawns et al., 2019). In our *Current Issues* course, there was a need to build confidence for both teachers and students and to foster a supportive space for the safe expression of emotion.

Co-design is still entangled in tradition and entrenched institutional constraints, such as assessment, and limitations around recognition and

reward of non-traditional teaching. The delegation of agency through content, tasks, and processes does not automatically produce a course that challenges convention: in their negotiation of educational practices, students may simply reinforce existing norms (Boys, 2016). It can be scary to challenge the familiar and to push for something different. As Boys points out, education presents an opportunity to expose the often invisible "spaces in-between" of different disciplines, educational designs, and the perceptions of students and teachers. We can question the "assumed practices and boundaries" of educational design (Boys, 2016) and examine the seams between different practices (Fawns, Mulherin, Hounsell, & Aitken, 2021b).

Combining co-creation and postdigital views, we have argued for a need to go beyond the social to consider the material. Technology plays an important role in co-creation, where different elements mutually shape possibilities for collaboration. Students always "co-configure" tasks and social and technological arrangements with their teachers (Sun & Goodyear, 2020). In the case of *Current Issues*, this co-configuration was amplified through a loose design in which the teachers' initial design intentions made space for students to contribute ideas and resources and to negotiate changes to schedules, tasks, and assessments. All of this contributes to a "pedagogical space" made up of the parameters that shape what might be learned and how, the gaps between design intentions and actualised activity, and space for the production of new knowledge.

Epilogue We are pleased to write that Gill was promoted to Professor of Clinical Education in 2022, during the writing of this chapter.

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* Be careful what you wish for!

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CHAPTER 8

Let's Figure It Out: Participatory Methods for Reflecting on Educational Media in a Postdigital World

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Participation, Reflection, and Educational Media in the "Postdigital Condition"

A school uses a Learning Management System to organize the setting and handing-in of homework. With this system, teachers can see whether and when the students submitted their completed tasks. One teacher stated that he now checked each and every piece of homework, with the result that he now gave different grades to certain students than before. One student stated that he was

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experiencing stress because the teachers would now always know when he had done which piece of homework.

This brief impression can be seen as representative of the "postdigital condition." As outlined in the introduction to this volume, this condition can be characterized by the ubiquity of digital technology within most areas of our everyday lives, including the setting and handing-in of homework. Educational media practices today are in general deeply entangled with digital technologies (Macgilchrist, 2020) and schools thus become sites of performed postdigitality. Participation comes into play on at least two levels here: (a) participation in the postdigital condition and (b) participation in shaping it. Whereas participation in terms of (a) simply means to become involved in postdigital practices, participation in terms of (b) means to have a voice and a say in deciding which technologies are implemented how and—ideally—in decisions around the design of the technologies themselves. This is crucial, as all media or technology makes some kind of difference to others and this difference comes into play whenever a new such tool is put into practice, such as when data production, data processing, and teaching and learning practices change when using Learning Management Systems (LMS), for example, Moodle, iServ, or Google Classroom for managing homework. In line with the critical approach to postdigital theory (Striano, 2019), reflection is required on what this difference is in each given context and to what extent it matters. Reflection thus becomes the basis for deciding in what aspects of the postdigital condition one is willing to participate in terms of (a), as well as what measures to take when participating in shaping the postdigital condition in terms of (b). Against this backdrop, educational media are both (1) means of reflecting on the postdigital condition and (2) part of the postdigital reality itself. Although both aspects are of great importance, this chapter will focus on reflection on, and the shaping of, educational media together with practitioners.

Many approaches, both existing and under development, appear suitable for this focus. On the one hand, concepts such as the Tech Check

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from Unblack the Box,[1] the Pedagogical Impact Assessment (PIA) (Kerssens & van Dijck, 2022), Data Ethics Decision Aid (DEDA) for reflections beyond educational media (Franzke et al., 2021), or the Media Constellation Analysis (MCA) (Weich, 2020) focus on political, cultural, pedagogical, ethical, and/or media-related aspects. On the other hand, established approaches from technology-focused assessments seek to assess the risks of technologies before their implementation. In the case of digital technologies, these assessments often deal with risks that arise from the collection, processing, and further use of personal data, especially since the General Data Protection Regulation (GDPR) came into force, demanding a Data Protection Impact Assessment (Art. 35 GDPR) (Friedewald et al., 2022) when the processing of personal data is likely to result in a high risk to the rights and freedoms of natural persons. Both kinds of approaches are based on different traditions, theories, and concepts and are seen as complementary for assessing EdTech (Kerssens & van Dijck, 2022), but seldom combined, although they share the common goal of analytical reflection on technology and its use. This leads us to the assumption that a combination of both kinds of approaches has the potential to give a more comprehensive picture of educational media. This is especially important in participatory research contexts in which practitioners can articulate their perspectives on educational media and reflect on their use or even help to shape them. This chapter will therefore make use of experience from an interdisciplinary participatory research context that combines media studies, computer science, and data protection, describing two different approaches from our academic fields. We will then relate these to one another in order to find synergies that take advantage of the diverse expertise involved and enable people in participatory processes to reflect on postdigital educational media use and shape technologies as well as practices according to their needs and values.

In the following, we will first outline the backgrounds and implementations of workshop concepts that make use of (a) the Media Constellation Analysis (MCA), informed by media studies, and (b) the workshops embedded in a Data Protection Impact Assessment (DPIA), which is grounded in data protection legislation and the tradition of technological impact assessments in diverse fields around digital services encompassing workflows and technologies. We will map out the key elements of these approaches, how they are put into action in workshops, and what potential they offer for reflecting on and shaping educational media in a

[1] https://unblackthebox.org/materialien-ergebnisse/die-alternative-checkliste/

participatory manner. Finally, we compare both approaches in terms of similarities and differences, and suggest ways to combine them in order to generate interdisciplinary synergies.

Two Approaches for Reflecting on Educational Media in a Postdigital World

Media Constellation Analysis (MCA)

The media constellation model and the method of analysis based on it originated from the aim to conduct media analysis, reflection, and design based on media studies perspectives together with people who have no prior knowledge of these.[2] The desideratum arose from the lack of a model enabling the development of analytical perspectives and questions based on media theory together with representatives of other disciplines and practitioners, or offering these a heuristic process with which to analyse, reflect on, and design media. Media reflection in practice contexts is particularly relevant in phases of media transformations and associated challenges. Consequently, the model and the method had to be positioned within the discursive field around "digital media" and "digitization," and it needed to make current transformations comprehensible without following the dominant technology-centred and progress-oriented positions, even explicitly opposing them. It thus connects well with the notion of "postdigital" (see also the introduction to this chapter and to the volume).

The idea of media constellations is based on a set of assumptions and concepts from media theory, first and foremost the invisibility or unconsciousness of relevant parts of media, the idea of media as products of heterogeneous interrelated elements rather than mere technologies, and the production of meaning as a constitutive aspect of media. The assumption that media, or certain aspects of them and their and modes of action, usually remain hidden is a commonplace of media studies approaches rich in tradition (see Burkhardt, 2015, p. 35ff. for a detailed discussion) and not least justifies the existence of media studies itself. Krämer assumes that media

> act like window panes: the more transparent they remain, the more inconspicuously they stay below the threshold of our attention, and the better they do justice to their task. […] It is only in the noise, which is in the disturbance or even in the breakdown of their smooth service, that the medium

[2] This introduction to the approach is closely based on Weich (2023).

> is brought to mind. The undistorted message, on the other hand, renders the medium almost invisible. (Krämer, 1998, p. 74; transl. AW)

And Hartmut Winkler states that "[i]t takes an almost artificial detachment to bring the media themselves into view" (Winkler, 2004, p. 24; transl. AW). The MCA seeks to enable this "distancing" and to recognize "the medial" not only in the "disturbance," "noise," or "failure," at the same time recognizing that the latter can provide useful information about media constellations and that "noise" can be seen as a fruitful analytical perspective within postdigital theory (Macgilchrist, 2021), but also in a targeted search for elements and interactions. In addition to the "mediated," of which McLuhan said it was "like the juicy piece of meat carried by the burglar to distract the watchdog of the mind" (McLuhan, 1964, p. 32), the question of what is involved with what relevance in the constitution of a media constellation shifts into view further elements that often remain hidden in everyday dealings with media. Examining interactions brings the manner of this constitutive process into focus.

The media constellation model follows in the tradition of many other concepts that conceptualize media as products of heterogeneous elements (e.g. Leschke, 2015; Burkhardt, 2015; Schüttpelz, 2013; Couldry, 2008) (see Fig. 8.1).[3] Yet, it adds another facet by introducing a heuristic

[3] Modelling media as integrated in or consisting of heterogeneous interconnections and analysing these interconnections is by no means new. Leschke writes, for example, with reference to McLuhan: "The basic assumption, namely that heterogeneity, but especially materiality and idea, social practice and theory are institutionally, aesthetically, and functionally coupled, was in this respect not a surprising insight for media studies, but a simple condition of its existence" (2015, p. 76). In this respect, the media constellation model and media constellation analysis connect to an established figure of thought in media studies. As stated elsewhere, in contrast with other media studies approaches such as the *dispositif* (in terms of an apparatus), this approach avoids the assumption that "the" video conferencing dispositif exists in the same way as there is "the" cinema dispositif as a medium, in favour of a more differentiated perspective and the opportunity to conceptualize complex and variable interconnections. In contrast to a broader and more Foucauldian understanding of a dispositif, it also avoids the suggestion that there is a general applicability or a strategy and urgency as Foucault did for sexuality, for example (although the question of urgency seems promising in this case as well). An Actor-Network-Theory approach would not allow subject positioning to be taken into account due to a different underlying ontology. Framing video conferences as situations, on the other hand, would not address the question of media or mediality as such. At the same time, the term mediality itself remains abstract as it only addresses the distinctions and distinctiveness of certain media without addressing what to look at when analysing it. The media constellation approach offers groups of elements and relations that can be used for a heuristic analysis of this or their specific mediality.

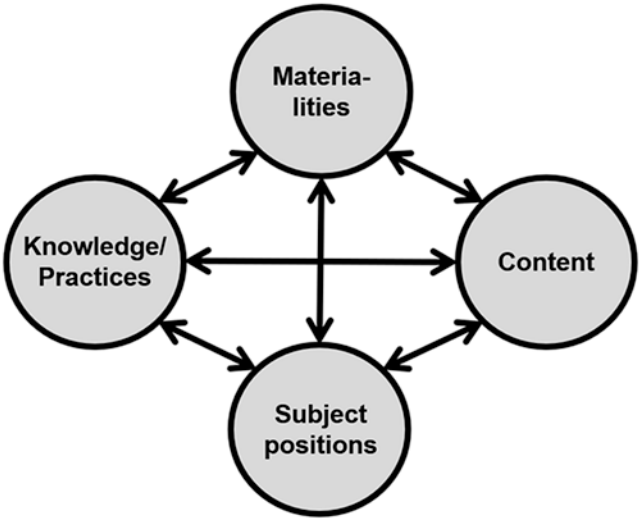

Fig. 8.1 The media constellations model

distinction between the elementary groups of materialities (hardware, spaces/architecture, bodies, and so on), knowledges and practices (cultural and discursive elements), content (the perceptible elements that signify the constituted meaning), and subject positions (requirements to human actors, interpellations), which are interrogated with regard to their interactions that, to a certain extent, constitute mediality (see Weich, 2020, 2023).

To return to the vignette above about homework and LMS, important materialities are, for instance, servers (in the case of Moodle, these might be local; in the case of Google Classroom, they might be in any of Google's data centres), the Wi-Fi routers in school and the students' homes, or devices such as tablets or smartphones. Relevant knowledges and practices are about the concept of homework within schools in general but also practices known from ticket systems in business contexts as well as knowledge about surveillance and discipline. Checking and giving feedback on each and every student's piece of homework is a new digital practice for teachers, and students might adapt their practices of working on the given tasks, knowing that they are being checked systematically. The crucial content is, besides the software and its interface, on the one hand, the homework and the feedback itself but, on the other hand, it is also the

information on whether and when the homework was submitted as well as metadata documenting in detail the use of the platform. The subject position of the teacher is characterized by the opportunity and also the (implicit) imperative to check and give feedback to each and every homework (ticket) and thus to take on the role of an all-seeing supervisor and corrector. The subject position of the student is characterized by the imperative to work on each and every task (ticket) in time and in a way that the all-seeing teacher appreciates.

This kind of analysis is accompanied by a gridding or categorization that provides a pragmatic added value compared to many of the approaches mentioned, since it names what to look for within these confusing entanglements. On the other hand, it is accompanied by a presuppositional setting that shapes and restricts one's view. Those seeking the elements mentioned take them as a given starting point and leave others out of the equation. At the same time, the model does not itself specify what is to be understood under the headings of the element groups in each case, but leaves room for diverse definitions with an open invitation to decide in the course of a specific analysis what exactly is meant by materialities, for instance, and with reference to which theories and concepts. In doing so, depending on the approach chosen, the boundaries may become fragile and/or element groups may overlap. At the same time, it is by no means to be assumed that the elements found in the analysis can usually be described on their own, but rather that they often (co-)produce each other and that the description of one must include a description of the others. In the case of interactions, it is therefore not always necessary to assume an interaction of existing elements but, following Barad, also their intra-action (Barad, 2005). With regard to digital media, such a perspective—in the sense of the approaches to (post)digitality outlined above—leads us not to start from "single media" and not to focus on "the digital" as a property in and of itself, but rather on the multifaceted co-constitutive interweavings of digital and analogue elements. These, and this is directly connected to (a), are not all openly revealed, but must be analytically "taken apart" or brought forth through the "lenses" chosen in each case.

The primary purpose of media constellations is to constitute a "symbolic sphere" (Winkler, 2008) that creates meaning. This distinguishes them from other heterogeneous constellations whose primary purposes are about purely physical changes, such as a jackhammer that is meant to break things on a construction site. This "two-worlds theory" is controversial, but it seems pragmatically helpful for the purposes of demarcation.

Objectives of the Media Constellation Analysis (MCA)

Generally speaking, the media constellation model serves as a bridge between abstract media theory and the experience of practitioners such as teachers and students. It provides a heuristic device to map out interrelations between the heterogeneous elements of media constellations without determining these in detail. From the researcher's point of view, the main objective is to enable those unfamiliar with media theory or analysis to gain an understanding of the relatedness of these seemingly disparate elements (practices and knowledges—subject positions—materiality—content). This can also be understood as analysing the mediality of a given media constellation; that is, the specific relations of its elements. With the focus shifted towards mediality, an instrumental view of media that frames them as neutral tools of communication can be bypassed and attention can be shifted to the—often unacknowledged—ways in which certain elements are related to and influence one another as well as how meaning is constituted within these constellations.

While building an understanding of mediality can be considered the primary goal in terms of media education or for a transfer of knowledges and concepts within interdisciplinary contexts, for participants in a particular setting, an analysis of media constellations is usually a means to an end. A teacher might wish to reflect on an experience using certain media technologies in a classroom to gain a better understanding of "what happened," for instance if the students did not use the chosen media in the proposed way. Two aspects regarding media reflection through MCA should be noted in the light of these adherent objectives.

First of all, the constellation model itself shapes what counts as a goal within the process of media reflection. This is important because, just like the specific media constellations themselves, the model as a tool for analysis is not neutral insofar as it pre-determines to a certain degree what can be said about a given constellation. It is reasonable to suspect that goals formulated by a participant who considers media-neutral tools will focus on the technological aspects of communication, such as whether messages sent between users arrive as intended. Using the media constellation model, different aspects might enter the metaphorical field of vision, but what can be established via analysis is still bound to the dimensions of the model.

On the other hand, participants' goals also shape what constitutes the constellation in question. Whether, for example, a subject position or

certain practices can be considered part of a constellation in a school context depends at times on the teacher and their didactic concept for the situation. Are students allowed to use their phones for research while taking part in a discussion? The answer to this question determines whether smartphones need to be considered a desirable part of the constellation or rather a disturbance to and within it. Thinking about media constellations can thus help both with planning and reflecting on the use of media.

A Participatory Analysis of Media Constellations

The current application of the media constellation model to reflection processes conceptualizes it as a single workshop with a total length of around four hours. It has been conducted mostly via video conferences to date, using the collaborative whiteboard tool *Miro* for visualization purposes. The current target group are teachers, but shorter workshops are planned for the near future that also involve students. Before being introduced to the media constellation model as a frame of reference, participants are asked about their general and recent experiences teaching with (mostly) digital media technologies in a brief introduction round. The answers to these questions are collected and will be raised as possible problems or topics to reflect on later.

The workshop begins with the participants getting to know the concept and how it can be used as an analytical tool. Following a theoretical introduction into media constellations—sometimes via a remote learning exercise that participants are asked to complete beforehand or as a brief introduction by members of the research team—an exemplary "walk" through the concept of the workshop entails four steps. Before starting out, participants choose a media constellation on which they wish to reflect and which is familiar and/or useful to them in their everyday practice. Here, we pick up on the responses to the current issues of interest shared by the participants beforehand. Examples could be homework with an LMS as mentioned above or challenges in video-conferencing scenarios. This preliminary step may seem straightforward, but it requires some deliberation and usually guidance by moderators. The problems teachers are facing may, for example, be related to several and even locally dispersed media constellations. Naming the constellation suitable for addressing the problems faced is therefore a crucial preliminary step.

In the first step, participants are asked to describe a challenge they experienced in the said constellation and also to name a specific goal they

are striving to achieve. As mentioned above, the objectives set in this step also affect the modelling of the constellation itself to a certain degree. Which practices by students can be considered challenging or disruptive is directly related to the goals the teacher sets their students, for example. This normative aspect of media constellations and the often implicit objectives, alongside "just learning" about a certain topic and being able to relay that information, is in itself an important part of the approach.

In the second step, participants describe and list the elements of the constellation in question. They are asked to name all materialities, bodies of knowledge and practices, subject positions, and contents they can think of. The aim here is not to achieve a comprehensive list, but to come to a more differentiated account of the specific elements involved. While some elements may be very obvious, other aspects might only emerge after some discussion. While this step is generally thought to be more descriptive than analytical, mapping a media constellation can be insightful in its own right and is in practice usually accompanied by suggestions from both participants and moderators on the significance of certain elements.

Step three picks up on the challenges and goals named in step one and proceeds to analyse relationships between certain elements that might explain why the challenge arises or help to achieve the stated objective. In practice, this means grouping elements along the grid of the media constellation model and coming up with hypotheses on what their relationship to each other might be. At this stage, more often than not the focus tends to shift back to step two, since thinking about certain challenges might reveal crucial elements that were missing. While they are planned consecutively, steps two and three refer to back to each other many times, which indeed is encouraged by the moderators.

The last step seeks conclusions. What measures should be taken when trying to work within the media constellation in the future? The answers to this last step are often already implicitly stated in step three, when groups discuss the specific relations of elements that are challenging or useful for the stated purpose of the exercise. This often entails considering new learning goals. Certain practices or bodies of knowledge implicitly or explicitly required in a media constellation, for example, in themselves often constitute valuable exercises in media education. Using a search engine is then more than the simple act of finding and extracting information but can be considered a lesson in navigating the complex and ambiguous territories of data and knowledges of the Internet. Or, to give another example based on the vignette in the introduction to this chapter, a

reflection on the subject positions for students in an LMS such as Google Classroom might be related to more abstract educational goals and the question as to whether a surveilled "ticket-worker" is a pedagogically and politically desirable way to perceive a student.

The (Participatory) Potential of Educational Media

In regard to education and educational media, the MCA approach can be used on at least three different levels: (a) to reflect on media constellations in their capacity to help teachers and students achieve didactic objectives, (b) to design media constellations together with teachers and students, and (c) to reflect on media constellations in the context of learning scenarios in order to train the media reflection skills of students.

As shown above, the first approach is highly functional in workshops with teachers in which they analyse and reflect on the media they use in class. In a slightly modified variant, it can also be used in workshops with students. Joint workshops with teachers and students, perhaps involving the principal and school management or even parents and ministerial staff, can foster participatory practices in terms of both teaching and school development. When the media constellations are analysed together, all participants can articulate their specific perceptions of the elements and relations in a given media constellation, addressing how they are experiencing the subject position intended for them. In participatory research designs, this kind of knowledge production can provide deep insight into the potential and challenges of educational media. It can also be the basis of a participatory decision-making process about which media constellations a school should seek to establish, which takes us to the level of design.

Considering media through the "lens" of media constellations, it becomes possible to design not only media contents or media technology but to a certain extent also practices and subject positions, as well as the interplay between all these elements. In participatory design processes, teachers and students define a goal together and co-design the elements of media constellations and their interplay. This can begin with any element of a media constellation in the making. Teachers and students could agree, for example, on a certain subject position for the students that the media constellation is to provide. The other elements can then be considered from this perspective: Which material circumstances foster this subject position? Which practices and which knowledges are expected of the students in order that they fit the envisaged subject position?

The approach can also be used to reflect on everyday media constellations in class together with students. Teachers can ask which elements come together while using Instagram or playing Fortnite, for example. What material resources are needed? What practices and knowledges are demanded? What subject position is provided for me and the others? And do I consider these facts desirable or problematic for myself, for others or perhaps for the environment? What are the consequences of participating in a certain media constellation? The media reflection approach that teachers might initially have adopted for their professional use of educational media can easily be used to improve the reflection skills of their students with regard to their everyday media use.

Privacy Risk Analysis and DPIA

When reflecting on (educational) media with the MCA, the focus is on a relatively broad and open approach which can incorporate a diverse set of dimensions into the workshop. The concept of media in the workshop concept presented above is abstract and addresses media as a holistic concept. Another possibility is to address specific perspectives of educational media and corresponding digital services as in the risk workshop of the Data Protection Impact Assessment (DPIA) approach (Friedewald et al. 2022) considered here. The starting point is to consider the technological realization, workflows, and people involved in a digital service which performs a specific task, and to analyse the privacy risks from the point of view of the affected persons. Such a risk-based approach is a key concept of the General Data Protection Regulation (GDPR) (cf. Gellert, 2018).

DPIA: Background and Context

For a long time, there was a social consensus that technical progress was a fundamentally desirable phenomenon. Weaknesses in technical artefacts and systems often had immediate identifiable causes that could be remedied by further technical developments. This optimism around progress was cast into the first shades of doubt in the 1950s and 1960s when the risks of, for example, nuclear power and pesticides became apparent. It became clear that large technical systems in particular not only have potential negative effects on many people, but that in addition to direct effects there are also secondary or rebound effects. A complex variety of factors are involved, and long delays between cause and effect due to

accumulation make it difficult to respond effectively to the risks, as seen, for example, in the case of climate change. This was the starting point for technology risk assessment, with the aim to identify the negative consequences before the start of a technological project and to mitigate or eliminate them through technical, organizational, or communicative measures. After risk assessment had long focused on risks to health and the environment, it became clear in the 1990s that data processing was also a "dangerous technology" in the sense that it posed significant risks to a large number of people, if not for life and limb then for fundamental rights. In today's products and services based on the processing of (mostly personal) data and networking via the Internet, there is a power asymmetry between providers and users, whereby the latter can usually only decide whether they want to make use of offers according to the providers' rules or not at all. In addition, in the light of increasing cyber-attacks on internet services and their users, it has long been clear that data processing and the Internet are crucial for the functioning of modern society. A comprehensive risk assessment takes all this into account. Since the adoption of the GDPR, it has become mandatory for data processing organizations to conduct a DPIA when the processing "is likely to result in a high risk to the rights and freedoms of natural persons" (Art. 35 GDPR).

At the heart of data protection is the concept of "personal data," the protection of which is guaranteed as a fundamental right under Article 8 of the Charter of Fundamental Rights (CFR) of the European Union. In Article 4(1) of the GDPR, "personal data" is defined as "any information relating to an identified or identifiable natural person." Alongside identifiers such as name, address, and identification number, personal data also encompass information that easily allows for the identification of a person via location data, health-related information, photos, video, and audio data. Location-related information can reveal, for instance, where a person lives, works, attends school or university, and also information about friends, relatives, and so on. Political opinion or sexual orientation might be derived from other data using machine-learning. Due to the increasing digitalization of more areas of our lives, we are—as the notion of the post-digital condition implies—almost always surrounded by digital services based on sensors such as web services, health apps, smart speakers, or location-based services. Most of the information processed by these services can be used to derive information about a person.

Article 1(2) GDPR states that it "protects fundamental rights and freedoms of natural persons and in particular their right to the protection of

personal data." Other fundamental rights protected by the GDPR include the right to "respect for private and family life" (Art. 7 CFR), "freedom of thought, conscience and religion" (Art. 10 CFR), and "freedom of expression and information" (Art. 11 CFR). Potential harm as a result of mishandling personal data might be, for example, career disadvantages or discrimination, damage to reputation, or the feeling of being "watched" due to video surveillance or web tracking. Some people might also refrain from exercising their rights, such as the right to express their political opinion or visit certain places, for fear of negative consequences.

The methodology presented was developed for the implementation of DPIAs in accordance with Art. 35 GDPR.[4] The typical context of a DPIA is the processing of personal data for a digital service for which there is a concept (definition of a processing purpose, the processing steps, and the data required for the processing) and possibly a technical implementation. The accompanying workflows and the stakeholders with a connection to the digital service are also established. The aim of a DPIA is to take a holistic view of "digitization."

A Participatory Analysis of Privacy Risks

Identifying and analysing privacy risks in a participatory workshop in the context of a DPIA requires an approach involving stakeholders from very different backgrounds, including those without in-depth legal and technological expertise. A participatory approach is important since privacy risks pertain to the rights and freedoms of natural persons and need to be investigated from the point of view of the *affected person* (in legal terminology: the "data subject"). Participation in this activity allows individuals to reflect on privacy risks from their personal perspective in an interactive workshop. Individuals can be affected in different roles, as employees, as consumers or, as in this case, as teachers and students. They can also be affected in multiple roles, for instance as agents of a company that collects data about others and, simultaneously, as employees whose data is processed by that same company. The context of the workshop is an activity encompassing the processing of personal data. Examples of such a processing activity might be video surveillance, a workflow management system,

[4] The approach presented here is based on the DPIA framework developed by some of the authors in a number of research projects (cf. Bieker et al., 2016; Martin et al., 2020; Friedewald et al., 2022).

an LMS, or a location-based service in a specific context. The analysis of privacy risks is always dependent on the specific context.

In order to define and implement technical or organizational countermeasures to address the privacy risk, the key challenge is to understand what such a potential risk is and what the potential harm or damage might be should it occur. To this end, a scenario-based approach discusses a specific case from the participants' daily use as the basis for the study. Privacy risks for students in an LMS-based learning scenario can potentially result from tracking and metadata analysis employing machine-learning. Machine-learning approaches can be used, for example, to predict student performance (Kim et al., 2018), which could lead to incorrect classifications and wrong perceptions by teachers (O'Neil, 2016, Ch. 3). Greater awareness is therefore required of the need to reflect critically on machine-learning classifications. Further privacy risks might arise when cloud services are used in the context of the LMS where it is not sufficiently transparent to what extent data and metadata might be used for additional purposes.

These scenarios were jointly identified and described by the DPIA team, which comprised a moderator and members with expertise on data protection and on the context under investigation. In the context of a DPIA, the latter would be those working in the application area or who are affected by the data processing. Potential damage is identified for the scenarios and the analysis investigates what might trigger this damage and examines the nature of the causal chain (see Fig. 8.2).

The first step is to identify whose data is being processed and what kind of personal data are incorporated. This includes immediately identifying information, including names, location data, health data, or even log data revealing details pertaining to the identity of a natural person using digital services in a learning or work context. Based on this information and the scenario description, a discussion ensues as to what might be potential damage or harm based on the scenario for the affected person. It is then important to analyse how the potential damage might be caused. This could include technical aspects such as access to data or systems, technical defects, processes and stakeholders, such as people using data outside the initially intended application area. Since all these potential effects are important for defining adequate risk mitigation measures, these elements and persons need to be identified. Persons in this context are referred to as "actors" or "stakeholders." Workflows or technical aspects are referred to as elements triggering harm or damage.

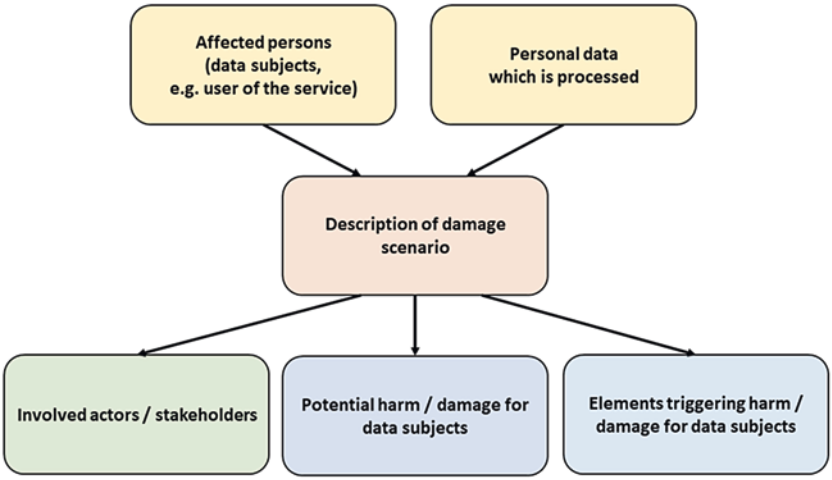

Fig. 8.2 Analyzing privacy risk

For people with only limited expertise in privacy and legalese, it is usually difficult to identify and describe in detail potential harm caused by the processing of personal data. For this reason, we used the concept of data protection goals which translate the data protection principles formulated in Art. 5 GDPR into five objectives that are more generally comprehensible and more easily applicable in workshops (see Fig. 8.3). Data protection goals are also part of the Standard Data Protection Model developed and recommended by the Conference of the Independent German Federal and State Data Protection Supervisory Authorities (SDM, 2020), defined in the following:

- *Data Minimisation* stands for the principle of necessity, according to which no more personal data are to be processed than are needed to achieve the purpose.
- *Availability* refers to the requirement that personal data must be available at any time and can be used properly in the intended process.
- *Integrity* stands for the requirement (a) that IT processes and systems continuously comply with specifications and (b) that the data to be processed remain intact, complete, and up-to-date.
- *Confidentiality* means that no person is allowed to access personal data without authorisation.

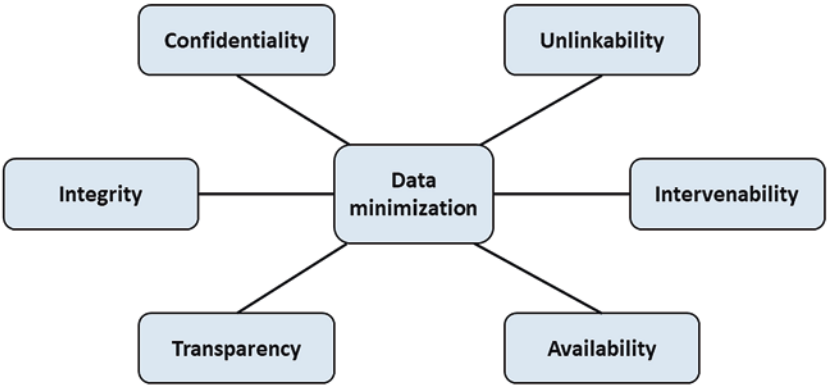

Fig. 8.3 Data protection goals

- *Unlinkability* is the requirement that data shall be processed and analysed only for the purpose for which they were collected.
- *Transparency* means that the data subject, system operators, and supervisory authorities must be able to understand the how and why of any data processing.
- *Intervenability* finally refers to the requirement that data subjects can actually exercise their rights of notification, access, rectification, blocking, and erasure at any time. (Friedewald et al., 2022, p. 430 f.)

It is important to note that these objectives are highly interdependent and sometimes in conflict with each other. For instance, data cannot be both completely confidential and available at the same time (goals on opposite sides in Fig. 8.3 are generally contradictory).

Participation in the workshop described above can change how an affected person reflects on data and privacy within their postdigital everyday practices, and lead to their having a say in decision-making processes concerning the implementation and use of data processing systems. In the example of an LMS that predicts a student's performance, such a workshop could have two outcomes: first, that students and teachers become aware of what data are processed in order to make a prediction and that it is only a statistical probability that the prediction will actually occur; and second, that if a decision based on the prediction will have a significant impact on the student, it will be important to uphold transparency or

perhaps even to refrain from using the prediction altogether. At this point, however, it is also necessary to point out the fundamental limits of participation. First, there is the question as to whether genuine participation is really possible within the contexts considered here, determined as it is in any structured process by defined roles. The implementers of this process determine a priori what will or will not be negotiated and with whom within the participation framework. Ideally, the organizers see themselves as "honest brokers" and aim to give all participants the best possible opportunity to get involved. In many cases, however, they will also have their own interests or have to represent the interests of certain stakeholders, an aspect that only underlines further the ambivalence of placing the responsibility for conducting a DPIA with the actual data controllers or companies. Second, there are inevitable differences in participants' knowledges, especially when involving different stakeholders. Lawyers and technicians, for example, will always have an advantage in DPIAs over those from other backgrounds, because they will be familiar with the relevant technical details and legal terminology. Under these circumstances, it will hardly be possible to guarantee the participation of those without such qualifications, at least not on an "equal footing." Finally, there is the practical problem of how to obtain such comprehensive information or assessment within a limited timeframe in order to design a technical solution that will minimize conceivable risks to citizens' rights and freedoms (see Schiering et al., 2020; Weinberger et al., 2021).

The (Participatory) Potential of Educational Media

In recent years, digital services have been increasingly used in the context of education, in administration, video conferencing, Learning Management Systems (LMS), or other specific learning applications. Based on information processed such as answers to questions, login times, clicks, and so on, further details can be derived via learning analytics and machine-learning. A DPIA workshop on risk can thus be applied in schools on different levels: (a) in terms of participatory reflection and decision-making around the introduction of digital services in education, such as learning apps, LMS or administrative systems in the sense of a DPIA; (b) it can also be used to raise awareness of privacy and security issues in the context of digital services in general. The main difference, and therefore constraint, between the classic DPIA and an adapted DPIA workshop in an education context as specified in (b) is that the focus is not on a specific, planned

data-processing activity, but rather typical digital services in education are analysed as use cases in the context of the workshop.

For both (a) and (b), we propose beginning the workshop with a prolonged introduction to the envisaged processing operation with a focus on the end user's individual perspective. As in an education context the majority of the team is usually unfamiliar with processing operations, we propose a narrative approach with which to introduce the user interaction in the envisaged processing operation. For the identification and the analysis phases, it is essential to streamline the workshop as compared to the more open classic approach. To this end, detailed boards can be prepared for the team members to fill, perhaps with detailed instructions that help them phrase their perspectives, as compared to the more discussion-focused classic approach with a team of experts.

Comparing and Combining

Similarities and Differences

The workshop concepts detailed above originated in very different fields. In this section, we will outline similarities and differences between them in order to identify potential synergies in combining them. In terms of the notion of the postdigital, both approaches share the basic assumption that our everyday lives are fundamentally entangled with digital systems and media. At the same time, their analytical focus is not limited to the digital as they also take analogue elements into account, inquiring as to their interplay.

Both workshop concepts share similar objectives, seeking to identify relevant elements of a given context, to analyse them and their interplay from the participants' point of view, and to find measures with which to improve the context for them. Within the workshops, both approaches introduce their specific context, which is unique for each of them. In the case of the MCA workshop, the context is a given media constellation in a classroom situation, while in the case of the DPIA workshop, it is an envisaged processing of personal data as described by the GDPR in any context including, but not limited to, educational media. In both cases, participants with a little specialized knowledge with regard to privacy and data protection as related to media are given a brief introduction to these fields. This is followed by an identification of the fundamental elements of the given context as well as a deeper analysis of the elements and their

interplay. In this phase, the participants contribute rich and highly valuable knowledges from their everyday practices within the given context in both of the workshops. Apart from their main goals, both workshops raise the awareness of non-experts of a field that permeates their daily lives. The media constellation workshop seeks to raise the participants' awareness of the media that surround them, while the DPIA workshop fosters participants' awareness concerning privacy risks.

Despite these similarities, some aspects differ between the two approaches. Whereas the MCA is open to all kinds of aspects that might be of interest for the participants in terms of the elements of a media constellation, the DPIA focuses inherently on privacy risks within the existing legal provisions. And while the MCA might mostly be focused on challenges, dysfunctionalities, or political and ethical issues that arise within media constellations, it neither specifies a particular group of problematic topics nor does it exclude the analysis of good practice examples per se. The aim of the DPIA, on the other hand, is to identify and analyse privacy risks and to eliminate or mitigate these risks via adequate measures. The GDPR and the data protection goals integrated in the SDM is oriented to external norms, whereas the MCA is primarily analytical and elicits norms that are inscribed into educational media and the participants' practices, values, and goals. And while the DPIA primarily inquires as to how (personal) data are *found* or *collected*, the MCA focuses on how data are *made* within media constellations.

A DPIA workshop is built upon specific questions defined by the legal provisions and encourages the participants to answer these, which gives the workshop a fixed structure. By contrast, the media constellation workshop is designed around open questions which are discussed and in part also raised by the participants. These aspects render the MCA a rather vague, and the DPIA a more focused endeavour.

Finally, the underlying theoretical concepts differ: the DPIA is based on concepts from legal discourses and digitization, such as natural persons, contracts, data subjects, stakeholders, risks, damages, processing operations, data (flows), and measures. The MCA, on the other hand, is based on concepts from (poststructuralist) media and cultural theory, such as mediality, knowledges, practices, materialities, content, and subject positions.

However, one inherent weakness of DPIAs is obvious: they tend to be limited in scope due to their specific legal regulations, and usually only focus on data protection risks. This blind spot has occasionally been criticized; the GDPR states that it "protects fundamental rights and freedoms

of natural persons" (Art. 1(2)), and not just their personal data (Hallinan & Martin, 2020; Bieker & Bremert, 2020). In this narrow interpretation, however, there is a danger that important risks such as discrimination, which are caused by the asymmetry of power between data controller and data subject, remain unnoticed by a DPIA.

(Potential) Synergies Through Combination

One promising opportunity lies in focusing on privacy in a MCA based on elements of the DPIA. This would mean constructing a privacy-related *scenario* (DPIA) based on the analysis of a media constellation (MCA). In a first step, the MCA would outline the constellation by identifying the relevant materialities, knowledges/practices, contents, and subject positions as well as their interplay. To return to the vignette on homework and LMS from the beginning of this chapter, this would mean taking into account the servers, routers, network connections, tablets, smartphones, the software and its interface, the tasks, the students' results, the metadata (such as timestamps), the teacher's feedback, knowledge about homework, practices of submitting, checking, and giving feedback as well as the subject positions of an all-seeing supervisor and feedback-giver on the one hand and the subject positions of the supervised and controlled task-workers on the other. The DPIA would now focus on a concrete privacy-related scenario within this constellation; for example, the fact that the teacher might see that a student submitted their homework at 2 a.m.

In a combination of MCA and DPIA, the submitted homework and the metadata would be seen as *content* that came into being because of a certain media constellation from the perspective of the MCA (and has thus not merely been "collected" as the GDPR would assume). In the DPIA approach, this would be framed as *personal data* (DPIA). The *practices* (MCA) of handing-in, submitting, checking, and correcting homework as well as giving feedback would be taken into account as *data processing* (DPIA). The *subject positions* (MCA) of the teacher and the students could be framed as *data subjects* and *stakeholders* (DPIA). If the LMS is Google Classroom or another proprietary system, the corporation as a kind of corporate *subject position* (MCA) would also be considered as a *stakeholder* (DPIA). The *materialities* (MCA) of the technological infrastructure such as tablets, servers, routers, network connections and so on, as well as the software as the *content* (MCA) and *practices* (MCA) of teachers, students, and the provider of the LMS would be analysed in terms of the *processing operations* (DPIA).

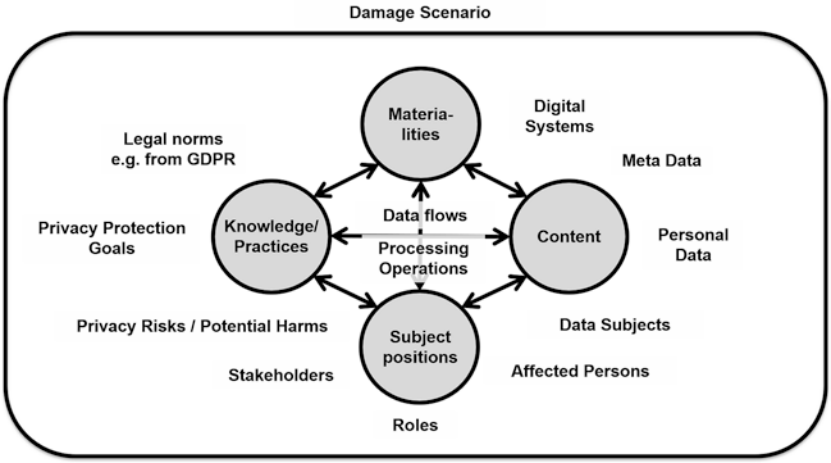

Fig. 8.4 A damage scenario

Constructing *damage scenarios* (see Fig. 8.4) and taking into account the participants' perspectives on privacy-related *risks* (DPIA) could provide insight into the *knowledges* (MCA) that might inform their media *practices* (MCA), for example, whether or not the student considers the teacher's ability to monitor when homework has been submitted as a privacy violation. This can help to bridge the gap between knowledges about and attitudes towards privacy and actual behaviour, which has been referred to as the "privacy paradox" (Dienlin & Trepte, 2015; Coopamootoo & Groß, 2017). By adapting input on *privacy goals* (DPIA), the media reflection can be connected to a normative framework that is either taken for granted or itself reflected upon as *knowledge* (MCA).

The potential of this combination for enhancing the MCA lies in taking advantage of the clear focus of the DPIA and reframing it for a broader cultural reflection instead of for legal and organizational consideration. For educational media in the postdigital condition, it would enable the participants to reflect on privacy issues in the context of LMS or learning apps, for example, while putting them into the context of their everyday media practices and the roles they play as subjects in the educational media constellations in which they are involved.

But this integration would not only benefit the MCA, but also the elements of the risk workshop from the DPIA, as it relates the risks to

additional aspects based on components and interplays from MCA. This means that the *digital systems*, the *processing operations*, the *data flows*, and the *data processing* (DPIA) would be interpreted as parts of an interplay that creates a *symbolic sphere* and therefore *meaning* (MCA). So the scenarios would not only be assessed in terms of *legal* (DPIA) but also *cultural* and *political* (MCA) issues. To return to the homework/LMS scenario discussed above, this would involve the question as to how power relations between students and teachers change, what kinds of (self-) images of teachers (as supervisors) and students (as supervised) are inscribed as *subject positions* (MCA) within the software and how they unfold within actual *practices* (MCA) in which the *processing operation* (DPIA) is taking place. While the risk assessment in the DPIA workshop already touches on these questions, an MCA would provide a frame to render them explicit in different terms. The *data subjects* and *stakeholders* (DPIA) would not be conceptualized as given natural persons but as products of *subject positionings* (MCA) and therefore power relations that go along with certain agency and affordances. This could specify *roles*, mentioned above in relation to the DPIA, from a media studies point of view. *Data processing* (DPIA) in Google Classroom would be framed as a (media) *practice* (MCA) with not only *legal* (DPIA) but also *cultural* (MCA) relevance in terms of school culture and a change in deciding which mark each student is given. For educational media in the postdigital condition, it would enable the participants to reflect on not only legal and digital components within a scenario, such as in the context of LMS or learning apps, but also the cultural (teaching and learning) practices, and the production of knowledges and meanings as well as on their own position as subjects. Additionally, integrating elements of a DPIA into an MCA would allow for reflections that would not even take place within a classic DPIA. To return to the vignette, for instance, and assuming that the LMS is Google Classroom, the use of the system in schools is not even possible from a legal point of view and therefore would not be a suitable case for a DPIA. An MCA, in contrast, is not limited in this way but can and should also focus on legally problematic media constellations.

Such a synthesis has the potential to raise not only awareness of privacy and data protection, but also to address the discrepancy between knowledge and action. Combining legal, technological, and (media-) cultural aspects might lead to a more comprehensive reflection that relates everyday media practices to the design of systems and services and thus the

opportunity to shape both as parts of a postdigital condition that takes the participants' needs and values into account.

Enriching a DPIA with elements of an MCA could also remedy the blind spot of a DPIA in the narrower sense and shift in the direction of a "Privacy Impact Assessment" (PIA) as was discussed before the adoption of the GDPR (Wright & de Hert, 2012). These aim to uncover unknown properties and risks of a technology or system, are not limited to data processing, and assess not only data protection and privacy aspects but also ethical, economic, and security considerations. Although they do not fulfil the legal requirements for a DPIA, they can provide important impulses for social and political discussion (Friedewald, 2017).

Conclusion and Outlook

This chapter has introduced the MCA and the DPIA as two possible approaches for reflecting on and shaping certain aspects of educational media within the postdigital condition in a participatory manner. While both are valuable in their own right, a combination of the two generates synergies by integrating the perspectives and expertise of media studies, digitization, and data protection. In order to evaluate how far these synergies can be made productive, further research is required in participatory research into media constellations that are potentially harmful for the privacy of the persons involved and that implements interdisciplinary co-design and, ideally, also the interdisciplinary co-facilitation of workshop concepts. Additionally, other approaches such as design justice or design thinking could be taken into account for further synergies in interdisciplinary constellations.

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CHAPTER 9

From Official Document Utopias to a Collective Utopian Imagination

Marko Teräs, Hanna Teräs, and Juha Suoranta

Introduction

Essentially, there are two ways to think about the function of the social sciences. One is to focus on the production of empirical results ("facts") with various research methods. The other is to consider the creation of ideas ("possibilities") around what social reality—in this chapter, the digitalization of education—could be like (see Eskola, 1984; Gergen, 2015; Wright, 2010). In this chapter, we develop the latter approach by arguing that we need utopias and a utopian imagination of the digitalization of education to create alternative and possibly better futures (whatever they may be). We further argue that these futures cannot be known or invented

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in advance *for* people as some intellectuals, rulers, or governments have done, but rather *with* people engaged in particular educational and other practices.

The futures that we focus on are those of the digitalization of education. Digitalization has in recent years shaped a prominent narrative that impacts educational policy and practice, and its significance has only been heightened by COVID-19 and the push to establish online and hybrid teaching and learning. The future of the digitalization of education is formulated mainly by megacorporations in alliance with international and national policy-makers. These players include global institutions such as the OECD, EU, WTO, and five large high-tech corporations (Ball, 2012; Robertson, 2009; Verger, 2013). They tend to claim that digitalization "revolutionizes" and "disrupts" more or less all walks of life, including education (Suoranta et al., 2022).

From the perspective of practicing educators, these discourses are manufactured in advance, they presume consent and consensus, and they often disregard local knowledge and contexts. As such, they represent "formal freedom," "the freedom of choice within the coordinates of the existing power relations," whereas its opposite, "actual freedom," assumes dissensus and "designates the site of an intervention that undermines these very coordinates" (Žižek, 2002, p. 544).

This chapter aims to critique this limited view of the future of the digitalization of education and locate alternative approaches within utopian thinking to co-create alternative "postdigital" futures. Although some have wanted to leave the definition and meaning of postdigital for multiple interpretations (Jandrić, 2022), for us in this chapter, the term postdigital signifies simply the increasingly ubiquitous and messy existence of our lived experience, social structures, and processes with digital technologies, as opposed to the juxtaposition of "the analogue" and "the digital" (see also Cramer, 2014; Cramer & Jandrić, 2021; Jandrić et al., 2018).

Martin Heidegger noted that technology as an object tends to withdraw from our lived experience (Gallagher, 2014). It becomes invisible to us in use. We "extend" ourselves with technologies to act on our projects, but at the same time, technologies use us (Ihde, 2010). Furthermore, technological understandings of our state of being can lead us to see ourselves as objects and resources to be used (Salminen & Vadén, 2015, p. 9). This can be considered a source of our problems: we forget technology is "there" not only as a socio-material actor, but also as something that always requires tangible materials such as rare metals and—most of

all—energy (Salminen & Vadén, 2015). We therefore need techniques that penetrate such thinking and bring it into the debate.

As an approach to challenging the present and to co-creating and imagining alternative futures, taking into account the local knowledge of ordinary people, we present the Method of Empathy-Based Stories (MEBS). In addition, in this chapter, we draw from the interdisciplinary field of utopian studies (Marks et al., 2022). For example, Żuk (2020) has noted that modern social sciences and utopian thinking are interlinked, while Wright (2010) sees "real" utopia as a road for more *emancipatory social sciences.* Utopian thinking can therefore be seen as a process for getting people involved in more democratic decision-making (Żuk, 2020). To achieve this, Levitas (2013) proposes utopia as a public hermeneutic and constitutive method or as "speculative sociology" (Levitas, 2013, p. 218). In imagining alternative futures, sociologists could have a role in expanding people's views beyond the current (neoliberal and other) modes of thinking (Żuk, 2020, p. 1057; see also Wright, 2010).

Utopian writing has a long history of classical and Christian influences (Kumar, 2003). But it was Thomas More who coined the term *utopia* (*ou*: not and *topos*: a place; meaning 'nowhere,' or when pronounced as 'eutopia,' 'the happy place' or 'place of the happy') in his *Utopia* (1516). Since then, utopia "as the expression of the desire for a better way of being and living" (Levitas, 2013, p. xii) has traveled through human history as one of the most common terms with which to imagine the future.

Different centuries and epochs have had their utopias. Antiquity had Plato's *Republic*, the Renaissance saw the publication of More's *Utopia* with Tommaso Campanella's *The City of the Sun* (1602), Francis Bacon's *New Atlantis* (1626), and Thomas Hobbes's *Leviathan* (1651). The Enlightenment produced, among others, Jean-Jacques Rousseau's *Émile* (1762) and Denis Diderot's *Supplement of Bougainville's Voyage* (1796). Interestingly, education is one of the central themes in these utopias in one way or another (see, e.g., Bierman, 1963; Bejan, 2010; Halpin, 2001; Webb, 2022).

The nineteenth century saw the rise of socialist futures influenced by utopian socialists such as Henri Saint-Simon, Robert Owen, and Charles Fourier. They redefined and broadened the concept of utopia from a socialist perspective and created their thinking based on humanistic ideals (Engels, 2020; Leopold, 2011). Marx and Engels despised utopian socialists mainly for their system-building and detailed speculations on future societies, but their criticism was contradictory as they praised the original

generation of utopian socialists (Leopold, 2007; Paden, 2002). Recent twentieth-century utopias included such works as H. G. Wells's *A Modern Utopia* (1905) and Aldous Huxley's *Brave New World* (1932). Remarkably, the twentieth century witnessed the rise of dystopianism as its prevailing zeitgeist (Vieira, 2022).

Education has been a popular topic of utopian literature throughout the centuries, from Plato to Paulo Freire (Webb, 2022). Utopian thinking, speculative and social science fiction have also found their place in twenty-first-century education science. Macgilchrist et al. (2020) have speculated on how digital education might evolve in the coming decade given various scenarios. Selwyn et al. (2020) have employed "social science fiction" (see Lackey, 1994) to imagine what schools might be like in 2030 as a result of digitalization. Costello et al. (2022) have used speculative fiction as a narrative research method to imagine the role of books in the future.

The Digital Future of Education and the Rise of Official Document Utopias

Utopias have been used to imagine possible, desirable, states of things and societal orders of the future for centuries, in the treatises of philosophers, novelists, and intellectuals who have imagined better futures and means of governing society and people.[1] However, if we wish to locate where the currently powerful speculations and visions of the future are emerging, we will find them in surprising places, such as official vision documents and discussion papers by intergovernmental organizations (e.g., OECD, 2020; 2019; EU, 2020; Centeno et al., 2019; WEF & PwC, 2021; WEF, 2020; WEF & The Boston Consulting Group, 2015), national institutions (e.g., Ministry of Education and Culture, 2019), and multinational technology and consulting companies (e.g., Microsoft, 2018; Microsoft & McKinsey & Company, n.d.; Kenworthy & Kielstra, 2015).

These reports, discussion papers, and vision documents factualize and build a discursive truth within which the future and digitalization of education are described and thus imagined. They circulate a global discourse of digitalization and data-driven education, entwined with neoliberal ideology, which is increasingly colonizing educational discourse, local lifeworlds, and practices (Rizvi et al., 2022). We thus define these as "official document utopias," often developed for policymaking by armies of

consultants powered by a neoliberal worldview and its interests in what a desirable future would look like within its ideological framing (see Mannheim, 1954; Bauman, 2005).

Although realistic and deterministic, these documents contain similar features or techniques as past utopian literature. First, they begin by suggesting something is wrong with the current state of affairs. Second, they offer solutions or blueprints as to how the world could be better. And third, often explicitly, they define what is desirable or "better." Besides, the documents are based on a circular reasoning that the future is more uncertain than ever (an argument also used in the past), primarily due to technological disruption. And as the logic continues, education is essential in tackling this uncertainty. Still, they assert, because education is severely outdated, it first needs to be radically transformed with technology before teachers can use it to prepare students to be employable in the future.

As such, the documents as official utopias aim to ensure and manage the future with their sociotechnical and educational imaginaries (Rahm, 2021; see also Fairclough, 2013, p. 266) and can be regarded as utopias with their future-looking outlines, programs, and recommendations:

> All utopias are, by definition, fictions; unlike, say, historical writing, they deal with possible, not actual, worlds. To this extent they are like all forms of imaginative literature. They go further than conventional fiction in their extension of the bounds of the possible to include what to many may seem impossible or at least very improbable. Their fiction, that is, belongs more to the genre of science fiction than that of the conventional realist or naturalistic novel. But for all that, they remain in the world of fiction and share its main features. (Kumar, 2003, p. 69)

While the documents also claim to predict the future, they describe the latter as always uncertain and in the state of becoming. Consequently, these documents—widely circulated and affecting educational policies in different parts of the world—are actually playing a key part in producing the technology-oriented future they only claim to predict and describe. Furthermore, they resemble visions of "utopian engineering" (Popper, 2013, p. 151), similar to classical totalitarian utopias, which aimed to manage and revolutionize the whole of society (see also Bauman, 2003, p. 16).

Classical utopias and science fiction were usually written by individual authors and intellectuals (Kumar, 2003). This is where document utopias

differ: they are typically put together by officials, consultants, and experts and sometimes involve various "stakeholders" in co-creating and imagining the future. While co-creation workshops and similar events make the future appear democratically imagined, it does not necessarily mean the imagining was performed in entirely free acts of fancy. Indeed, it is always envisioned under specific rules of discourse: currently, for example, the "future megatrends," "technological disruptions," and "individuality." Moreover, the questions proposed in such workshops are often congruent with the current neoliberal paradigm infused with technological optimism and determinism: "How can digitalization help individuals to succeed in an unstable working life?" or "How can digitalization create new value and economic growth?" Besides being utopian, they also contain an ideological package in reproducing the neoliberal paradigm. As such, they are still not "transcending the existing order," but are "harmoniously integrated into the world-view characteristic of the period" (Mannheim, 1954, p. 174). They claim to be neutral and to provide "'value-free' knowledge to be applied onto society to engineer its development" (Žižek, 2008, p. 22).

Traditional utopias "promised the end to the toil," as Bauman (2005, p. 311) puts it. These are forward-looking utopias where the best of all worlds is yet to come. The official document utopias encapsulate "the dream of a toil never ending" in Bauman's words and have "moved the land of solutions and cures from the 'far away' into 'here and now'." " Instead of living towards the utopia," document utopias are "living inside the utopia" (Bauman, 2005, p. 311). They are lived here and now without the horizon of a better life. This presentism of the official document utopias manifests itself in the daily struggles of neoliberalism, in which people must run ever faster (without a goal or an end in sight) even in order to stay still. (Bauman, 2005; Traverso, 2016).[2]

Another major concern is that the rules of the discourse often go unnoticed in the present-day official document utopias. They limit our imagination and inhibit use of the local knowledge gained from daily life and the educational environments in which the digitalization of education is actualized. The often abstract utopia of the potential of digitalization thus becomes more real than its shortcomings witnessed in real life (see, e.g., Teräs et al., 2022; Mertala, 2020). The grand narrative of the document utopias overrides the local, contextual needs and knowledge.

Official document utopias can define what is realistic and unrealistic and, while doing so, turn it upside down. In their discursive universe of

truth, it appears practical to govern and manage people, society, and education with emerging technologies almost always on the verge of fulfilling their infinite potential. While proclaiming to imagine the future, these official documents have colonized the space for a utopian imagination, in addition to inviting everyone along to imagine their future, which is ultimately more of the present.

Participatory Imagination of the Future: Method of Empathy-Based Stories

When it comes to imagining and speculating on digital futures, we agree with Markham (Markham, 2021; Pronzato & Markham, 2023) that repeating discursive patterns of technological optimism and determinism works as a *discursive closure* that often limits the ways in which we can think, discuss, imagine and impact digital futures. Still, Markham remains hopeful that we can break the discourse of inevitability, the seemingly locked digital future, and the powerlessness we might experience in the face of it. They suggest we could achieve this with performative critical pedagogy and collaborative, iterative interventions with people acting as researchers drawing from their lived experience to develop their local practices (Markham, 2021). With this hope and vision, we also wish to locate the following approach in order to imagine genuinely alternative and, hopefully, better futures.

Eskelinen et al. (2020) state that there is "the need to recognize the open, dynamic and reflexive nature of utopias, and generally the need for utopian thought and horizons beyond the existing (liberal capitalist) social order" (p. 14). In what follows, we introduce a research methodology that utilizes peoples' lived experiences and imagination and can enhance our possibilities to envision alternative futures, namely the Method of Empathy-Based Stories (MEBS). Theoretically, it can be placed in the tradition of utopian thinking described above, except that MEBS is a bottom-up approach utilizing peoples' ideas and thus representing their *collective imagination*.

Methodologically speaking, MEBS is a participatory research method (Jungk & Müllert, 1987; Cumbo & Selwyn, 2022; Selwyn et al., 2020; Ryynänen & Rannikko, 2021; Eickhoff & Geffer, 2009). These make use of local, place-based knowledge and people's capacities to act both individually and as a collective. It is based on and develops people's reflective

abilities to build visions and imagine better futures that can eventually turn into reality.

Imagination is a vital capacity in order for human beings to flourish. It gives us something to strive for and "can generate new desires for change and help channel discontent into meaningful action" (Muldoon, 2022, p. 3–4). By using our imagination, we can fill in blanks, reconstruct, complete, or invent something (see Pateman, 1997). Ernst Bloch reminded us that the most tragic form of loss is that of the capacity to imagine that things could be different (Giroux, 2022, p. 21; Bloch, 2000). Using imagination, we can see an object or a situation as something else (e.g., an air brick as a pencil holder), manipulate the object in real or mental spaces, and change our point of view and the context of an object in our thinking and action (Pateman, 1997, p. 2).

But imagination can only bring us together to ponder future possibilities if we have the chance to use our imaginative powers. At best, the collective use of imagination can form an antidote to unreason or the work of what Henry Giroux has called neoliberal "disimagination machines." In his interpretation, these machines impose "forms of civic decay, moral irresponsibility, and political corruption while legitimating and rewarding ignorance, commodification, privatization, and crass selfishness over those values that generate trust, cooperation, critical thinking, compassion, social responsibility, and the common good" (Giroux, 2022, p. 27). As an approach that creates spaces of imagination, MEBS can provide an antidote to the decaying effects of disimagination machines.

The founding figure of the development of MEBS was Finnish social scientist Antti Eskola (1934–2018), who in the early 1980s was searching for a way out of the methodological impasses of positivism. As an answer to the critiques of both structural sociology and neopositivism, he developed MEBS. He defined humans as conscious, active beings who can take into account various laws and necessities of everyday life and thus control their lives. Consequently, people ought to be treated accordingly in the social sciences (Eskola, 1988). Harré and Secord (1972) had arrived at the same conclusion earlier and, ironically, used it to support their criticism of social psychological laboratory experiments (in which people are mistreated and deceived), calling for science to treat people as the human beings that they are.

The basic procedure of MEBS is relatively straightforward: research participants are given a frame story of a few sentences, and they are asked to empathize with the situation and write a short story of what has

happened before, how the case will proceed, or what will happen in the future. The writing session usually takes around 20 minutes, after which the researchers and the participants can share their experiences about the situation and the writing of their stories. The methodological trick is to vary one (or, in some instances, two or more) elements of the given frame story so that one half of the participants are given a slightly different version than the other half. In this way, the method produces differences in and varying accounts of the research theme.

In the 1980s, Eskola experimented with the method and concluded that it worked well for people of different ages and professions. In 1982, Eskola applied MEBS with athletes, psychologists, adult educators, social workers, and librarians to identify their fears for the future (see Eskola, 1988). He used three variations of frame stories in which the year is 1996 and, in the case of librarians, a group of interest to us, "an international congress of the world's biggest librarians' organization is due to be held" (Eskola, 1988, p. 293). In the first variation, the congress is arranged, "but it has to be broken off," and in the second, it was "decided that for several reasons the meeting might just as well be canceled." In the third variation, "everything goes smoothly and there are no disputes whatsoever.'" In all variations of frame stories, the participants were asked: "Why? What could have happened in the world and the field of librarians over these thirteen years?" (Eskola, 1988, p. 293).

Librarians emphasized technology in their stories as a problem and a threat to the future. The world congress needed to be canceled because the mainframe computer had broken down or been sabotaged. Computers seemed to have become an enemy; they and related technologies would dramatically change library work. The librarians expected computers to destroy the future of reading and printed culture and that publishers would only disseminate reprints of old classics. One librarian left the conference angrily and set up an underground organization to fight for books. Furthermore, they imagined that people would no longer visit libraries at all, interacting only with machines and eventually becoming separated and isolated because of the devices. Ultimately, there would no longer be a need for libraries or librarians in a world of digital machines (Eskola, 1988, p. 296; Eskola, 1984).

The methodological lesson of these early experiments was, first, that unlike in laboratory experiments or statistical research, it was essential to stay true to the participants' words, voices, and ideas; that is, what the various groups and individuals in these groups considered crucial to

themselves and their lives. Second, it was essential to respect these experiences—in the form of written stories—and build theoretical ideas from them together with theoretical concepts. After the first methodological experimentations in the 1980s, MEBS was further developed and used primarily in Finland (see Ikonen, 2013; Nishimura-Sahi et al., 2017; Särkelä & Suoranta, 2020; Wallin et al., 2018; Rytivaara et al., 2019).

Practices of Digitalization in Education in 2050

In our research project, we used MEBS with Finnish teacher students. They participated by writing about their ideas for the future of digitalization. We collected the data in the early spring of 2022 in a Finnish higher education institution. Half of the teacher students were given a frame story that painted a positive view of digitalization in education:

> We are living in the year 2050. The practices of digitalization in education have progressed considerably. From the teacher's point of view the situation is good in every way. Why? Imagine a situation and write a short story about it.

The other half of the teacher students were given a negative variation of the frame story:

> We are living in the year 2050. The practices of digitalization in education have progressed considerably. From the teacher's point of view the situation is bad in every way. Why? Imagine a situation and write a short story about it.

We collected the MEBS stories as part of a course lecture, a common procedure when using MEBS. The students first participated in a lecture, which was delivered online via an online meeting software. Its topic was digitalization and teacher agency, and the MEBS was presented to the students as a brainstorming activity following the lecture. As the session took place online, two Microsoft Forms questionnaires were prepared, each with either a positive or a negative frame story and space for the students to write their stories anonymously. The students were then randomly divided into two groups, facilitated by the breakout room function of the meeting software. At the beginning of the form, students were given information about the research, a data management plan, and the ability to either give or withdraw consent for the story to be used as research data. The students were then given 30 minutes to write and submit their

stories. After the preliminary analysis of the data, short narratives summarizing the most frequently appearing elements and scenarios were written and shared with the students on the course online platform. Although the students had the opportunity to comment on them, they did not do so.

The stories varied greatly in length and depth. Some were just a few sentences long, whereas others were written as full narratives with protagonists and milieus described in detail. However, even some terse and concise stories contained insightful and meaningful considerations about the future. It should be noted that the literary style and length of writing in MEBS does not necessarily correlate with the importance of the findings.

We identified two main approaches to the optimistic scenarios in the stories: techno-utopias and human wellbeing. The techno-utopias centered around technological development and science fiction-like devices that change how teachers work and interact with students. Technology was seen as a force that drove changes in society. The imagery and examples presented in these scenarios greatly resembled popular culture narratives familiar from science fiction, and they lacked elaboration on how exactly the technological innovation described had improved teachers' working conditions. These scenarios thus seem to repeat the logic of techno-scientific innovation inevitably equaling positive development, which has been critiqued by Birch et al. (2020). On the other hand, the stories that stressed wellbeing were more critical in nature. In these scenarios, the role of technology was subordinate to humans, and it was only used when it would bring a clear added value, such as freeing up a teacher's time for more important things such as meeting with students or enjoying a better work-life balance. In these future scenarios, technology was envisioned as invisible, user-friendly, and less prominent than today. Some stories even described conditions where technological development had taken a reverse turn, and the return to a simpler, technology-free environment had a positive impact on teachers' wellbeing.

In the negative future scenarios, human interaction was reduced, surveillance and bureaucracy increased, and teachers' work became ever more fragmented. Student numbers had skyrocketed, and they were no longer treated as human beings, but as mere student numbers and icons that appear in digital learning management systems. The teacher's work was reduced to that of a machine operator, whose task was to monitor and handle student data. Actual teaching was no longer needed as machines took care of that. Human interaction had become so rare that students no

longer developed social skills; in fact, they could no longer even produce facial expressions. Loneliness and social anxiety had become the norm.

Perhaps surprisingly, the basic logic of the stories appeared somewhat similar to Eskola's early experiments. In our study, the participating teachers feared that digital technology (e.g., the Internet and artificial intelligence) would make teachers redundant. This could indicate the sense of lost agency and autonomy in the postdigital world where various technological systems often impose their agency on us (Teräs et al., 2022; Roumbanis Viberg et al., 2021; see also, Jandrić & McLaren, 2020). Like Eskola's librarians, teachers also imagined that digitalization would disrupt genuine interaction between people. It is hard to say to what extent any of these concerns were caused by the COVID-19 pandemic. In any case, the stories were valuable in giving us insight into peoples' lifeworlds, fears, and hopes, even if on a rather abstract level. In addition, these results might show human reactions to technological changes as similar over different historical eras and in discourses addressing automation (see e.g., Volkov, 1967).

There are, of course, limits to the use of imagination, as Markham (2021) has described, for instance. In their interventions with researchers, artists, and activists that sought to develop a critical consciousness about digital futures, participants reached into the black box of digital platforms, but it was hard for them to find alternatives. The same could be said for our MEBS stories. However, we cannot attribute a possible lack of imagination to our participants—their ability to write and imagine—for we did not ask for future alternatives. Instead, we built our frame stories on the dichotomy between "good" and "bad" futures in the digitalization of education, which most probably guided the participants to assess the general conditions of the future of teaching practice.

By using different frame stories in this respect, MEBS could be thought of as a method that offers ideas, insights, and weak signals on a given phenomenon to inspire the imagination of researchers, and a first step in imagining the participatory and reflective development of postdigital discursive practices where digitalization is both ubiquitous and continuously transforming organizational structures, processes, and practices (see also Markham, 2021). The same holds true with the utopia tradition in general: "Utopian texts can be understood as heuristic tools for social imagination rather than 'architectural' blueprints for an ideal society" (Eskelinen et al., 2020, p. 7). In other words, by using MEBS we can, in a best-case

scenario, create experimental possibilities via open spaces and freedom that are not yet realized but already potentially in the world.

The question of whether MEBS produces mere stereotypes has already been discussed in the MEBS literature. As Eskola and Eskola (1995, p. 165) put it, the method undeniably produces stereotypes; on the other hand, stereotypes are also part of everyday life and, as social research methods tend to produce stereotypical representations of such, MEBS need be considered no different (Eskola & Eskola, 1995, p. 165).

In reading MEBS stories, we relate to what Levitas (2013) terms as the archeological mode of the utopian method, which "entails identifying these silences and interpolating the absent but implied elements—filling in, where possible, what is missing, or simply making evident the blank spaces" (p. 154). In addition, we consider the use of MEBS as part of the tradition of utopian pedagogy as defined by Webb (2022) is as follows:

> It is concerned with creating spaces for the exploration of desires, longings and hopes, and for drawing out utopian possibilities within concrete experience. It is a pedagogy of transformative hope; a pedagogy aimed at liberating the imagination as to the possibilities for systemic change. Utopian pedagogy is underpinned by a profound confidence in the capacity of human beings to construct (both imaginatively and materially) new ways of organizing life. It seeks to cultivate an awareness that human beings are self-organizing and self-determining historical agents and a confident belief in the transformative power of collective action. (p. 658)

Conclusion

The interpretive process should not stop at MEBS, but continue to imagine "real utopias," those not yet realized but feasible alternatives to the status quo (Wright, 2010; Särkelä & Suoranta, 2020). In this task, MEBS could be used (and is used in our research project)[3] as a starting point for deliberative discussions and emancipatory debates in future workshops (see Jungk & Müllert, 1987) between researchers and participants on concrete local-level postdigital futures; that is, to imagine peoples' work and study practices anew.

These imaginations can be connected to existing examples of digital practices such as Wikipedia and its sister projects, which are open digital platforms for anyone (with basic literacy and digital skills, a digital device, and an internet connection) to participate as thousands of volunteers have

done so far. Public libraries constitute another example that has offered print (and nowadays e-books) to read and study for free, thus increasing "equality in access to the material conditions necessary to live a flourishing life" (see Wright, 2013). These examples and people's—in our research project, higher education teachers'—imagination can lead to the developmental process of what Khasnabish (2012) has called radical imagination:

> Put simply, it is a process by which we collectively map 'what is,' narrate it as the result of 'what was,' and speculate on what 'might be.' It is both cognitive and corporeal and, rather than being necessarily spectacular or dramatic, it can be quite mundane. While the capacity to envision that which does not yet exist is obviously a human capacity, the radical imagination is also necessarily a collective process, something that arises out of dialogue and encounter rather than emerging fully formed from the mind of a gifted individual. (p. 228)

Thus, genuine engagements with participants are needed in imagining the viable and convivial digital futures of education. Moving on to the next step of utilizing and developing our *collective utopian and radical imagination* in future workshops requires us to be aware of the contradictions inherent in the dominant discourses and the preliminary thematic framework of digital futures based on written MEBS stories. This gives us the opportunity—to paraphrase Antonio Machado's words—to make the digital road by walking together.

The general task of critical research on the digitalization of education is to criticize current discursive practices in the digitalization of education and search for constructive alternatives. As James Muldoon (2022) puts it, "[i]t is strategically unsound to always be on the defensive, waiting to protest the latest round of capitalist tech innovation. We need to challenge the seeming inevitably of technological progress by putting forward our own vision of how tech should be designed and implemented" (p. 3). And, as he further points out:

> The technological determinism of our time increases the urgency for us to imagine different ways in which digital platforms could be organised. There are many existing accounts of what is wrong with Big Tech but few detailed proposals for how these problems should be addressed. (Muldoon, 2022, p. 3).

The collective and dialogical thought processes of MEBS can be valuable tools in building alternative and future scenarios to break the corporate-state hegemony of planning and implementing the future of digitalization in education. As Moisio and Rautiainen. (2020) have argued, existing "hegemonic ideologies change futures to eternal repetitions of the present" (p. 100). As such, they also degrade democracy if it is seen "not as a form of government, but a principle which can be applied to assess and develop existing practices and institutions, or to imagine completely new ones" (Eskelinen, 2020, p. 155). Genuine collective imagination can be seen as practicing democracy and breaking the existing hegemonic modes of thinking for a better world with democratic ideals (Eskelinen, 2020; see also Jandrić & McLaren, 2020). These ideals can also be seen as an important compass in our postdigital world when they steer us toward democratic waters instead of in the opposite direction. We therefore argue for a reflective and critical mindset regarding postdigital futures, rather than becoming seduced by the perpetual promises of technology (Marcuse, 2002). This is important for societal and ethical reasons such as democracy, equality, and environmental matters. As "the digital" is increasingly "post" in the lived experience, the social world, organizational structures, and processes, we might come to forget the link to environmental matters, increasingly believing that the new environmental and societal challenges emerging technologies always impose can be addressed merely with new and more efficient technologies, even if their impact is indeed deemed multistable and often unpredictable (Ihde, 2010). Such an overly positive and careless attitude might leave us with neat gadgets, but also with a scorched Earth (Crary, 2022)—an impossible equation of existence.

Notes

1. Imagining peoples' lives and the organization of the social world around them has been given various names, such as utopia (Levitas, 2013), speculative fiction (Atwood, 2011), speculative social science fiction (Lackey, 1994), science fiction (see, e.g., Freeman, 2000) and SF (Haraway, 2013). There is no consensus on the meaning and use of these terms, and quite often authors disagree on their use, such as of the term *utopia*. The terrain is thus diverse and sometimes conceptually confusing to say the least (Levitas, 2010; see also Sargent, 2010). Ordinary people have also envisioned their lives and destinies, but the products of their imaginations have vanished into the night of forgotten history and rarely been published;

Jacques Rancière's (1989, 2003) historical works on ordinary peoples' hopes and aspirations are an exception.

2. Enzo Traverso has interpreted this distinction and change in the meaning of utopia from the Marxist perspective as follows: "The Marxist vision of history implied a memorial prescription: we had to inscribe the events of the past in our historical consciousness in order to project ourselves into the future. It was a 'strategic' memory of past emancipatory struggles, a future-oriented memory. Today, the end of communism has broken this dialectic between past and future, and the eclipse of utopias engendered by our 'presentist' time has almost extinguished Marxist memory. The tension between past and future becomes a kind of 'negative,' mutilated dialectic." (Traverso, 2016, p. xiv.)
3. https://carde.group/research-projects

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CHAPTER 10

Asynchronous Narrative Audio-Messages: An Internet-Based Qualitative Method for Data Collection in International Research

Eva Kleinlein

Introduction

Digital technologies such as mobile phones and tablets are crucial elements of most people's everyday lives and play a key role in today's communication. As they increasingly interweave with our analog world, the concept of postdigitality gains importance. The postdigital turn builds on the so-called digital revolution (Pepperell & Punt, 2000, p. 2) but negates the binary distinction between the analog and digital in favor of an emphasis on the intertwined nature of humans and technology and how they influence each other. The introduction of the concept of "postdigital" thus aims to "adequately capture contemporary human existence" (Jandrić et al., 2018, p. 894).

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Especially through mobile messaging services such as WhatsApp, Signal, and Facebook Messenger contemporary communicative practices have been transformed and new questions have emerged in relation to the ways we communicate. These internet-based and digital services offer the possibility to communicate with people around the world in diverse and time-saving ways. They not only allow the sending of text messages and emojis but also synchronous or asynchronous communication via voice or video calls and messages.

Although this postdigital turn can be strongly observed in our everyday life, both in leisure and work contexts, research methods that rely on these technologies and developments have so far evolved comparatively slowly. Lupton (2021) shows that synchronous communication options such as voice or video calls are increasingly utilized in qualitative research, especially since the beginning of the COVID-19 pandemic in 2020. Nevertheless, asynchronous digital communication methods are still rarely used in qualitative research.

This chapter introduces the new method of Asynchronous Narrative Audio-Messages (ANAs), which was developed by the author in the framework of an ongoing international research project in education science (Kleinlein, 2021a). The method emerged from the above-mentioned observations and in response to the postdigital condition that characterizes our time. Accordingly, ANAs can be understood as a postdigital, qualitative research method that makes use of the opportunities offered by modern technologies, such as asynchronous digital communication features. While the ANA approach brings many opportunities and benefits to contemporary research, potential challenges must also be addressed and reflected upon.

The following sections contain a detailed description of the method and associated methodological considerations, followed by a critical reflection on the facilitating and constraining effects of its use. To draw a clear and concise picture of the method's potential fields of use, ANAs are distinguished from other qualitative interview methods. The last section of the chapter illustrates the practical implementation of the method by presenting an ongoing international research project that focuses on the inclusive schooling practices of teachers from a systematizing and transcultural perspective.

COVID-19 and the Ongoing and Increasing Need for Digital Tools

> Media communication has become, with the emergence and widespread use of personal portable Internet technologies (e.g., smartphones, tablets, and smart watches) as well as the increasing connectivity of more and more devices and items, so profoundly embedded in people's everyday life that it permeates a plethora of daily routines, practices, and social interactions. (Kaufmann & Peil, 2020, p. 230)

The technological developments mentioned above were already available during the past decade (Wagner-Schelewsky & Hering, 2019), but their use has substantially intensified since the beginning of the COVID-19 pandemic. To avoid further spread of the novel coronavirus, many countries introduced restrictions on traveling, or even leaving one's apartment. Face-to-face interactions were to be limited to the absolute minimum in order to prevent infection. Digital communication thus became even more important and one of the few means available for interacting with family and friends, colleagues and partners, and for keeping up-to-date with recent legislation, declarations, and developments around the world. Digital tools for instant messaging (e.g., WhatsApp and Telegram), social media channels (e.g., Instagram and Facebook), video conference platforms (e.g., Zoom and Microsoft Teams), and other interactive online platforms (e.g., Moodle and email) consequently gained even greater importance (International Commission on the Futures of Education, 2020).

The Need for Qualitative and Quantitative Digital Research Methods

Even though the use and importance of mobile and digital technologies have significantly intensified over the past few years, the development of digital research methods is still relatively slow (Thimm & Nehls, 2019). Despite the fact that digital technologies have become an integral part of our everyday lives, many disciplines still predominantly base their research methods on traditional data collection through in-person interviews and observations. This is not only because classical research procedures have long proven successful and earned established legitimacy, but also because "the methodological literature on [virtual qualitative research] techniques is limited" (Roberts et al., 2021, p. 10).

Nonetheless, the last several years have seen a gradual transformation of the research field through increasing use of internet-based research methods (Wagner-Schelewsky & Hering, 2019) that enable participation from around the world and the inclusion of people who tend to otherwise be excluded or overlooked in research. The pandemic, however, strengthened the need for new and adapted digital methods. In-person observations and interviews, as well as field visits, became impossible due to travel bans, curfews, and elevated security measures to mitigate the spread of the virus (Roberts et al., 2021). Consequently, the pandemic led numerous researchers to engage in digital research methods, be it because planned data collection methods could no longer be carried out or because the unpredictable nature of the pandemic required more crisis-proof methodical approaches (Lupton, 2021). It was not just in-person methods that were shifted into the digital sphere—such as by conducting interviews online instead of face-to-face—but the development of completely new digital methods also became more important.

To take a closer look at digital research methods, I will begin by distinguishing between quantitative and qualitative approaches. In quantitative research, digital methods such as online surveys, tests, and measurements are already used frequently. While an even broader use of internet-based research methods is conceivable in quantitative research too, the potential of digital methods in qualitative research is particularly far from fully exploited. In terms of research fields, it is also evident that "sociology has been slow relative to other disciplines in adopting these new technologies" (Sugie, 2018, p. 459). This is particularly apparent as the situation challenges social scientific research in two unique ways.

Firstly, research in the social sciences relies strongly on qualitative research methods. These are generally more difficult to transfer into a digital format, as they aim to capture a more detailed and open picture of social realities than quantitative approaches. Moreover, the social distancing rules that came with the pandemic had an immense impact on social interaction. As social interaction and communication play a crucial role in the social sciences, this development also resulted in challenges to research in this field. Consequently, within weeks of the pandemic's outbreak, not only the shape of social interactions changed but also how they could be investigated. In this regard, Lupton (2021, p. 1) points out that "[i]solation measures to contain the spread of COVID-19 means that social researchers who are used to doing fieldwork have had to consider ways for avoiding in-person interactions by using mediated forms […] that will achieve similar ends."

Secondly, the immense technological developments that have (re-) shaped our social lives over the past few years have presented a further challenge to social scientific research. The new concept of postdigitalism emerged out of a reality in which "[w]e are increasingly no longer in a world where digital technology and media is separate, virtual, 'other' to a 'natural' human and social life" (Jandrić et al., 2018, p. 893). While the concept is complex and its definitions vary across disciplines (Taffel, 2016), it generally describes the entanglement of digital technologies and human realities that can be observed in recent times (Jandrić et al., 2018). Alongside these postdigital developments, new and fast-growing research fields have developed that traditional research methods are not necessarily able to investigate. Thus, the "postdigital challenge posts [*sic*] significant epistemic questions" (Jandrić et al., 2018, p. 895) that have not yet been comprehensively studied. Accordingly, Sugie (2018), Kaufmann, and Peil (2020) call for engagement with the latest multimedia features and development of contemporary approaches that allow for investigation of this vast and rapidly growing research field. Simultaneously, reflecting upon the "postdigital choice: using the technology most suitable to the job, rather than automatically 'defaulting' to the latest 'new media' device" (Cramer, 2015, p. 21) is crucial. It is therefore of the utmost importance that we develop meaningful digital research methods that are particularly applicable to the social sciences and to a qualitative research paradigm.

Mobile Technologies in Qualitative Social Science Research

Mobile technologies offer particularly promising opportunities for qualitative social science research. Mobile phones facilitate a wide range of options for research that have so far mainly been exploited by quantitative research, while "the full potential of smartphones in qualitative research has not yet been realized" (Kaufmann & Peil, 2020, p. 229). Since mobile technologies and smartphones are characterized by their "dialogical, instantaneous, and multimedia capacities" (Kaufmann & Peil, 2020, p. 230), they hold great value for qualitative research in the social sciences.

Mobile phones and other mobile technologies allow a growing number of people worldwide easy access to the Internet (Roser et al., 2015). As "in recent years the availability of Broadband communication has expanded rapidly and is now widespread" (Debenham, 2007, p. 6), social media, mobile messaging apps, and other applications for communicating with

people around the world has for many become a regular part of social interaction (Lannutti, 2017; Roser et al., 2015). Already in 1998, Negroponte went so far as to say that "being digital will be noticed only by its absence, not its presence" (Jandrić et al., 2018, p. 893), which is becoming increasingly true. We thus live in a postdigital era where digital technologies form a regular and indispensable part of people's everyday lives and experiences.

With regard to communication, digital technologies are especially intriguing and attractive as they facilitate "conversations with people who are not physically present, […] while we are on the move and simultaneously engaged in other activities" (Tagg & Lyons, 2022, p. 1). Building on this, mobile-based means of communication can take place on different time scales: synchronized communication uses formats such as video and phone calls, whereas emails, texts, and voice messages can be used for asynchronous conversations between people in different parts of the world. Although this distinction between asynchronous and synchronous communication practices can help structure this complex field, it must be acknowledged that such clear distinctions are not always useful. Especially in light of postdigital theory, "binaries such as online/offline, virtual/real, old/new media, digital/analogue, technical/natural" (Macgilchrist, 2021, p. 660) tend to blur, and entangled forms gain relevance.

In everyday life, the variety of synchronous and asynchronous mobile communication options is already much appreciated. However, only a few of these have so far been deployed in research. In general, it can be noted that, even though interviews are one of the most traditional and widely used research methods for qualitative data collection (e.g., Braun et al., 2017), interview-based research so far rarely employs mobile and internet-based communication options. Consideration of multiple forms of interviews is thus particularly interesting and promising.

The Unexplored Vastness of Internet-Based Interview Methods

At least eight different formats are conceivable within the frame of internet-based interview methods. These can be classified in terms of the time and data aspects upon which they are based (see Fig. 10.1). As mentioned above, internet-based communication can take place synchronously or asynchronously, and it can also take entangled and ambiguous forms.

For a general, simplifying structure, we can make a broad distinction between two *time formats*: synchronous and asynchronous interview methods (ibid.). Regarding the *data format*, there are at least three means of communication that are particularly relevant for internet-based interviews: text, audio, and video. As a result, text-based methods, audio-based methods, and video-based methods can be distinguished from one another. Additionally, these three (or even more) communicative practices can also be jointly deployed in interview formats, which leads to the consideration of mixed-media methods. Figure 10.1 provides a structured overview of some of the possible formats and exemplarily indicates specific methods, such as ANAs (this chapter), MIMIs (Mobile Instant Messaging

	Synchronous Interview Methods (SIMs)	**Asynchronous Interview Methods (AIMs)**
Text-based methods **→ only text**	T-SIM: Instant Messenger (IM) Interviews (e.g., via WhatsApp, Signal)	T-AIM: Email or Written Interviews (e.g., via Outlook, WhatsApp)
Audio-based methods **→ only audio**	A-SIM: Telephone Interviews (e.g., via WhatsApp, Skype)	A-AIM: Asynchronous (Narrative) Audio-messages / ANAs (e.g., via Phonic, WhatsApp)
Video-based methods **→ only video**	V-SIM: Video Interviews (e.g., via Zoom, Skype)	V-AIM: Asynchronous (Narrative) Video-messages (e.g., via Phonic, Telegram)
Mixed-media methods **→ audio, text, pictures, videos, links, location...**	M-SIM: Mobile Instant Messaging Interviews / MIMIs (e.g., via WhatsApp, Signal)	M-AIM: Asynchronous Mobile Interviews (e.g., via Phonic, WhatsApp)

Fig. 10.1 Systematization of internet-based interview methods

Interviews; Kaufmann & Peil, 2020), and IM (Instant Messenger) interviews (Lannutti, 2017).

Starting with the *synchronous internet-based interview methods*, one of the first to be mentioned is Instant Messenger (IM or T-SIM, see Fig. 10.1), as it was deployed rather early on (Lannutti, 2017). IM interviews are text-based and can be conducted with IM tools such as WhatsApp or Signal. The method requires the interviewer and the interviewee to be online at the same time, but it allows them "to interact while each is in a location that is safe, convenient and comfortable (and quiet!)" (Lannutti, 2017, p. 238).

Further synchronous internet-based interview methods are for example based on audio (A-SIM, see Fig. 10.1) or video (V-SIM). Internet-based telephone or video interviews can be conducted via IM tools such as WhatsApp, FaceTime, or Zoom and have been met with increasing interest since the early stages of the COVID-19 pandemic (Lupton, 2021). As the pandemic forced many researchers to abandon face-to-face interviews, the conversion of pre-planned in-person interviews into telephone or video interviews enabled a rather simple adaption of the data collection method (e.g., Gray et al., 2020; Oliffe et al., 2021; Tungohan & Catungal, 2022).

The last type of synchronous internet-based interview methods I wish to mention here are mixed-media methods (M-SIM, see Fig. 10.1), such as the Mobile Instant Messaging Interview (MIMI). MIMIs (Kaufmann & Peil, 2020) go beyond the possibilities of IM interviewing "by exploiting some of the unique communication and multimedia features offered by mobile instant messaging apps" (Kaufmann & Peil, 2020, p. 229). More specifically, MIMI participants are encouraged to answer by using the variety of media formats provided by IM tools. Participants can send pictures, audio, and videos as well as links, or even their location (Kaufmann & Peil, 2020). In their study, Kaufmann and Peil (ibid.) asked participants to reply within 15 minutes, which then led to dialogues of about 10 to 20 minutes; in this format, MIMIs can be considered a synchronous interview method based on mixed-media data.

Nevertheless, a more asynchronous realization of this approach is also conceivable (M-AIM, see Fig. 10.1). This way, participants would not be under pressure to answer the interviewer within a tight timeframe but instead at a time convenient to them. The multiple communication and media formats that are offered by most IM apps can then be used by participants and contribute to a comprehensive data collection with a mixed-media approach. While this method opens up many new and innovative

opportunities for data collection and research, at the time of writing, I have found no study that makes use of this particular approach.

Another a*synchronous internet-based interview method* is the email interview. This was one of the first internet-based interview methods, reliant on text-based communication (T-AIM, see Fig. 10.1). The email interview has already been widely used for many years (Bampton & Cowton, 2002) and became even more popular during the pandemic (Dahlin, 2021). Nevertheless, the challenges presented by text-based interview methods are often highlighted, for instance that problems "might arise for interviewees who are less able to explain themselves in writing" (Ratislavová & Ratislav, 2014, p. 457).

With the exception of email interviews, asynchronous audio- or mixed-media methods are generally strongly underrepresented in the research field as compared to synchronous interview methods. Building upon this overview of internet-based interview methods, and based on the relevant literature in the field (e.g., Baur & Blasius, 2019; Boase & Humphreys, 2018; Braun et al., 2017; Dahlin, 2021; Lupton, 2021; Roberts et al., 2021), we can distinguish five main trends:

1. Over the last decade, internet-based research has become increasingly relevant and contributed to a transformation of the field (e.g., Wagner-Schelewsky & Hering, 2019).
2. Internet-based quantitative research is more advanced than its qualitative counterpart, so the potential has not yet been fully exploited (e.g., Kaufmann & Peil, 2020).
3. Social scientific research in particular is lagging behind other disciplines regarding the use of internet-based methods (e.g., Sugie, 2018).
4. The COVID-19 pandemic reinforced the development and need for internet-based research methods, including for the social sciences (e.g., Lupton, 2021).
5. Synchronous internet-based interview methods are increasingly used, whereas asynchronous interview methods are still rare (e.g., Roberts et al., 2021).

Following these observations, the potential of asynchronous methods such as audio-, video-, or mixed-media-based interviews (A-Aim, V-AIM, M-AIM, see Fig. 10.1) has not yet been exhausted. This is partly due to the fast technological developments of IM tools. The video messaging

function of Telegram, for instance, was only added in 2017 (Telegram Team, 2017), and the voice messaging feature of WhatsApp was added in 2013 (Olson, 2013). Since then, the voice messaging feature in particular has been extensively used in peoples' everyday lives and has "become part of our communicative repertoires, [of] the set of resources through which we make meaning" (Tagg & Lyons, 2022, p. 2). Nevertheless, they have so far barely been used in research, a potential that will be explored in the following sections.

Audio Messages as a Tool for Qualitative (and Quantitative) Research

Several means of communication can be subsumed within the frame of audio-based asynchronous interview methods. Possible examples are audio messages, voicemails, voice messages, and voice recordings. Yet, these are not necessarily internet-based. The term 'voicemail', for example, describes "a phone message recorded by someone when you [the recipient] do not answer their call" (Cambridge Dictionary, 2022), and recordings are generally understood as "speech, music, or moving pictures that have been recorded to be listened to or watched later" (Cambridge Dictionary, 2022). Neither term refers necessarily to internet-based communication but goes back to earlier technologies such as answering and dictation machines.

The terms "voice messages" and "audio messages," however, usually refer to the new internet-based technological function that can be found in IM tools such as WhatsApp or Threema (Staudacher & Kaiser-Grolimund, 2016). In what follows, these terms are thus used interchangeably. They refer to recorded messages of audio (typically a voice) with the purpose of delivering information to another (or multiple) person/s. Audio messages allow users to elaborate extensively on a topic in a way that is time-saving and facilitates asynchronous, oral communication (e.g., Hector, 2017; Howind, 2020). Consequently, audio messages are especially used to explain, ask, or describe something relatively complex: "you will find people sending WhatsApp voice messages to friends and family – some very short and practical, others exhaustingly long descriptions of daily routine or personal encounters" (United Nations Development Programme, 2018, p. 7). The format enables users to express something that could be misunderstood if written, or that would

take a long time to write down (Howind, 2020; Schlobinski & Siever, 2018). Audio messages thus have similar advantages to the telephone or video calls, but offer the possibility of communicating asynchronously and automatically storing the shared information. These characteristics are especially intriguing considering possible time differences and busy schedules of the interacting partners (Tagg & Lyons, 2022).

Further advantages and peculiarities of audio messages are of particular interest to social science research: The United Nations Development Programme (UNDP), which was already using audio messages in research in 2018, points out that "[v]oice messages not only allow more to be said in less time, they also facilitate the inclusion of illiterate people in the survey" (UNDP, 2018, p. 7). Thus, the format strengthens participation and inclusion of people who have difficulties reading and writing. Building upon the experiences of the UNDP (2018) with WhatsApp voice messages in a survey with Syrian refugees and host communities in Lebanon, we can identify further aspects with particular relevance for the design of similar methodical approaches. These ten benefits of voice-based WhatsApp surveys are summarized in Fig. 10.2.

Even though these advantages make voice-based WhatsApp surveys appear very promising, the format also harbors potential issues. With WhatsApp in particular, data security issues must be considered and may lead to the disqualification of this IM tool. Within both the UNDP (2018) and Kaufmann & Peil (2020) studies, the decision to rely on WhatsApp for research purposes was intensively evaluated and ultimately found to be best. However, the use of WhatsApp or other popular IM tools may not be an option for other research topics and objectives. Since common and more data-sensitive survey platforms—such as LimeSurvey, SoSci Survey, and SurveyMonkey—do not yet offer audio or video message features, the use of other, new programs is necessary for conducting audio messages for qualitative research. While some research projects may require the development of custom-built programs (see e.g., Gergle & Hargittai, 2018; Sugie, 2018), ready-made solutions can also be used if suitable. One, steadily improving, such tool that can be used for this purpose is Phonic (2020). Phonic was developed in 2020, partly for research purposes, and allows researchers as well as participants to work with audio and video messages. Moreover, Phonic adheres to the data protection guidelines required to conduct privacy-sensitive research (Phonic, 2020).

The UNDP (2018, p. 7) highlights that carrying out surveys with WhatsApp can…
1) "allow more to be said in less time"
2) "facilitate the inclusion of illiterate people"
3) "limit[…] the power and interference of the researcher in people's stories"
4) avoid the researcher "steer[ing] the narrative through follow-up questions or prompts"
5) "amplify the voices of very vulnerable people whose stories are not usually heard"
6) avoid a "personal relationship between researcher and participant that could produce social desirability or silencing effects"
The UNDP (2018, p. 9) suggests that the format enables participants to…
7) be "comfortable with that type of communication"
8) "have more time to reflect on their answers"
9) "choose when to reply to the question and in what format and length", and thus
10) "might even be more honest and reflected"

Fig. 10.2 Benefits of voice-based WhatsApp surveys (based on UNDP, 2018)

The Invention of Asynchronous Narrative Audio-Messages

This chapter introduces a new audio-based asynchronous interview method (A-AIM, see Fig. 10.1). Asynchronous Narrative Audio-Messages (ANAs) are an internet-based method for conducting interviews unrestricted by the time and location of interviewee and interviewer. The asynchronicity and digitality of the method allow for a highly flexible, anonymous, and resource-efficient collection of qualitative audio data from participants around the world, rendering it highly promising for qualitative research in the social sciences. ANAs can be used with popular IM tools such as WhatsApp or Signal as well as with more data-sensitive internet-based platforms such as Phonic (2020). Generally speaking, ANA is a rather unstructured and open interview method that aims to generate extensive descriptions and narratives from the respondents. Consequently, the method shows characteristics of narrative interviews (Schütze, 1983)

as well as problem-centered interviews (Witzel, 2000). Similarities between ANAs and problem-centered interviews include that both approaches allow the interviewer to ask follow-up questions to collect more detailed information on specific topics that the researcher is interested in (Witzel, 2000). Further, the similarities between ANAs and narrative interviews are especially interesting in that both methods are only roughly structured, enabling interviewees to intensively elaborate on an open question or narrative impulse without being interrupted or directed by the interviewer (Küsters, 2019). Building on this, ANAs can be seen as a special form of internet-based narrative interview. Nevertheless, ANAs also overlap with other well-established interview methods, such as expert interviews and guideline-based interviews, depending on their specific implementation. This facilitates flexible usage and continuous development of the method.

In general, ANAs can be used as a data collection method within a wide variety of methodological and theoretical fields. While the narrative approach especially invites reconstructive analyses, other methodological approaches are also possible. The last section of this chapter exemplifies the practical implementation of ANAs within a grounded theory-based project, but also content analysis, thematic analysis, objective hermeneutics, and the documentary method are approaches that could be considered to analyze data conducted by ANAs. A critical reflection on specific research aims, questions, and the suitability of data collection and analysis approaches is thus crucial for the design of a comprehensive research concept (Kaufmann & Peil, 2020). In what follows, peculiarities and characteristics of the use of ANAs in the social sciences are presented in more detail to outline the possible benefits and limitations of this new and innovative data collection method (see Fig. 10.3).

Possible Benefits of Asynchronous Narrative Audio-Messages

Due to their asynchronous, digital, and audio-based character, ANAs hold many opportunities for qualitative research in the social sciences. Overall, their three main benefits can be attributed to opportunities regarding *flexibility and resource efficiency*, *anonymity or pseudonymity*, and *in-depth qualitative data*. These are presented in more detail below to enable a more comprehensive understanding of the method and its potential field of use.

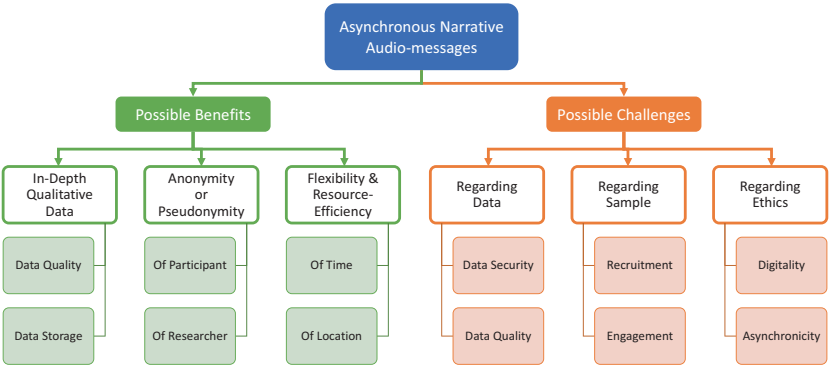

Fig. 10.3 Possible benefits and challenges of asynchronous narrative audio-messages

Flexibility and Resource Efficiency

One of the main aspects that substantially distinguishes ANAs from the interview methods mentioned previously is their flexibility and resource efficiency. As the importance of methods not requiring physical attendance has grown, especially in the context of COVID-19, the possibility for flexible participation is one of the main advantages of ANAs. Other crises, such as the war in Ukraine, closed national borders, unsafe environments, or natural and ecological disasters also heighten the importance of crisis-resistant research methods that facilitate the participation of "hard-to-reach, resource-poor, and mobile groups" (Sugie, 2018, p. 485). Using ANAs can thus be viewed as a participatory research approach that enables the inclusion of groups and individuals who are often inadvertently excluded or overlooked in research. Especially with responsive and widespread devices such as mobile phones, the use of ANAs allows for great flexibility and resource efficiency of both *time* and *location* for participants as well as for researchers.

Regarding the flexibility and resource efficiency of *time*, ANAs allow participants to contribute to the survey whenever they wish, whenever time allows, and a sufficient internet connection is available. Consequently, participants can decide to read the question and reflect on it before answering a few minutes, hours, or even days later. Additionally, participants can record their audio message spontaneously whenever they have an idea or remember something they wish to share in the survey. This is possible

because researchers and participants do not need to agree upon a time and date for the conduction of the interview as they do when conducting interviews in person or via Zoom (Gray et al., 2020). Moreover, the method permits not only flexible and time-saving participation but also data collection: faster recruitment times are possible as no appointments need to be agreed upon with possible participants. Furthermore, due to the asynchronous collection format, the interviewer does not need to be present during data collection. As numerous people can take part in the survey simultaneously without the interviewer being present, a vast amount of qualitative data can be collected with relatively little time and fewer resources. In terms of time-flexibility, the asynchronous format of ANAs (see Fig. 10.1) thus offers major advantages for researchers and participants.

ANAs also offer several benefits for participants and researchers in terms of the flexibility and resource efficiency of *location*. By facilitating participation from anywhere around the world where the platform is accessible and a sufficient data connection is ensured, ANAs allow researchers and participants to overcome many geographic limitations. Differences in time and location thus do not pose obstacles to the collection of rich, qualitative data, enabling researchers "to overcome the challenge of physical distance [which] may make some studies possible that would not otherwise be within their grasp" (Lannutti, 2017, p. 238). By using ANAs, both researchers and participants can save significant amounts of valuable resources such as time, money, and energy that would otherwise be required for travel and scheduling.

Anonymity or Pseudonymity

Another advantage of ANAs is the possibility of pseudonymous or even anonymous participation. Fully anonymous participation means that participants are unidentifiable in every way. This is difficult (but not impossible) to achieve in qualitative research, since individuals are often asked to share personal or professional experiences which cannot be fully anonymized. Pseudonymity, however, involves replacing specific names and locations that could indicate information about the speaker, protecting the participant's privacy. While in-person interviews require the physical attendance of both the interviewer and interviewee, making anonymous participation nearly impossible, internet-based methods allow both, the participant and the researcher, to keep their distance if required or desired (Gray et al., 2020).

For the *participant*, anonymous participation is certainly of great value as research conducted with ANAs enables them to participate without sharing any personal information such as their names, email addresses, mobile numbers, or other contact details. This can especially be of major importance in research projects addressing restricted, forbidden, or taboo topics such as political and sexual orientation or a criminal past. The anonymous online participation of interviewees thus opens up new opportunities to investigate delicate or even problematic research topics.

On the other hand, ANAs also allow for the anonymity of the *researcher*. Although this option may be interesting or beneficial in certain projects, it must be critically examined and necessitates ethical reflection. As it is crucial to provide research participants with sufficient information about the background of the study, researcher anonymity is barely acceptable. In addition, it should be noted that the anonymity of the researcher may lead to difficulties in recruiting and engaging participants. Participant anonymity in general thus opens up productive research possibilities, whereas researcher anonymity must be treated very carefully and critically.

In-depth Qualitative Data

The third main advantage of ANAs can be attributed to the possibility to collect in-depth qualitative data while simultaneously benefiting from the aspects mentioned above. While data collected with ANAs cannot be considered equivalent to data collected through in-person or synchronous interview methods (see Fig. 10.1), the former can be regarded as in-depth qualitative data with great potential for qualitative research in the social sciences. This benefit can be divided into two relevant perspectives, namely *data quality* and *data storage*.

Regarding *data quality*, the method is associated with many benefits. As audio messages are already a regular means of communication for many, the format is likely to be familiar to the majority of participants. The possibility to participate in the survey at any time, spontaneously, and in suitable situations with no distractions not only enables flexibility of participation but can also support the collection of valuable qualitative data. Moreover, due to the absence of the interviewer during the conduction of ANAs, fewer interviewer effects may occur as compared to synchronous interview settings (UNDP, 2018). Further, since audio messages can give the impression of "thinking aloud" or talking to oneself, ANAs can allow for particularly interesting insights into participants' thoughts and ideas

(Lombardinilo, 2022). On the other hand, the absence of the interviewer also means that the latter is unable to elicit contextual information by being physically or temporally present. While the interviewer consequently has little to no effect on the interviewee or their situation, they are also unable to observe the participant's context for additional information. The interviewee is therefore asked to express all necessary information in a precise and detailed manner in order to foster an understanding of the interview context for the participant. An accompanying questionnaire to collect the participants' context data can also be of great value.

Another important feature is *data storage*. Depending on what online tool is chosen for data collection (e.g., WhatsApp, Phonic), conducting ANAs is relatively easy and all the data is collected and stored in one place, from where it can be easily saved and transferred to other devices and formats. At the same time, careful reflections on challenges—particularly around data security and practical considerations—must be made.

Possible Challenges of Asynchronous Narrative Audio-Messages

While the last few paragraphs give an extensive overview of the advantages and possibilities of ANAs, there are of course also challenges and disadvantages that must be addressed to ensure proper data collection. Sugie (2018, p. 458) shows that there are "strengths and challenges of smartphones as data collection tools among disadvantaged and hard-to-reach groups" which thus also impact on the conduction of ANAs. The three main challenges that need careful reflection address aspects pertaining to *data*, *the sample*, and *ethics*.

Considerations Regarding Data

Building upon the aspects of data quality and storage mentioned above, a well-suited internet-based data collection tool is of the utmost importance. In the decision-making process, the assurance of *data security* and *data quality* is of major importance for the success of the research project.

In general, *data security* measures do not strongly differ between analogue and digital data collection methods (Wagner-Schelewsky & Hering, 2019). Nevertheless, it is crucial to conduct a critical examination of the regulations regarding the data handling of the chosen internet-based tool.

Thimm & Nehls (2019) point out that there are often significant uncertainties around data ownership, data control, and data analysis, and major concerns arise as large corporations use digital analysis methods to profit from the data. Consequently, ethical and data security considerations must be taken very seriously, especially when sensitive or personal details are involved. These concerns may therefore lead to the exclusion of applications such as WhatsApp in favor of internet-based options that promise more data security. One option is the utilization of the new and fast-growing tool Phonic (2020). Phonic offers a variety of data collection means such as audio, video, and questionnaire formats and is currently one of the very few (or only) providers that facilitate voice and video recordings of both participants and researchers. In the context of the research project presented below, Phonic has also committed itself to the EU data protection regulation, thus fulfilling strict security measures. To ensure the data security of participants, researchers must in general critically examine the provider's data handling regulations.

A second aspect that can be challenging with regard to data is the assurance of *data quality*. Since researchers are not present when conducting ANAs, careful preparation and advance-testing of the tool and the questions proves crucial. Not only should accessibility and technology be extensively examined in advance; the suitability and coherence of the questions must also be ensured. While synchronous and in-person interviews allow interviewees and interviewers to easily ask questions that deepen their understanding of what has been said, this is not possible with ANAs. For this reason, researchers must be precise when formulating interview questions, avoiding inquiries or narration impulses that are too long or complex so that participants do not feel overwhelmed. If the questions are not easy to understand, there is a strong risk of either a high drop-out rate (because participants cannot easily ask for clarification) or that the answers do not meet the research objective (and ad hoc clarification is not possible). In both cases, the data quality would be questionable and research aims may not be met. The interview questions must therefore be particularly clear and concise and ideally lead to extensive and detailed answers from participants. To this end, pre-testing the survey with a heterogeneous sample to assure data quality can be of great value.

Considerations Regarding the Sample

The second set of challenges pertains to the research sample. Issues of recruitment and engagement in particular have major impacts on the research process and its outcome. However, Roberts et al. (2021, p. 2) state that only a "limited body of work addresses recruitment and establishing rapport." In what follows, *recruitment* as well as *engagement* are discussed in more detail.

In terms of *recruitment*, the consequences to be considered pertain to the distribution method, the online format, and language accessibility. It is necessary to critically reflect upon who can and will truly be reached by online surveys, as "[q]uestions remain regarding sample selection, representativeness, and the participation of diverse groups, such as resource-poor and less technologically skilled individuals" (Sugie, 2018, p. 459).

Various distribution methods can be applied to recruit participants, and the choice is strongly connected to the chosen internet-based data collection tool and the envisaged target group. Self-recruitment, the recruitment of personal contacts, and snowballing are some possibilities. The study can be advertised in diverse channels, both analogue and digital, such as via bulletin boards, flyers, social media, and mailing lists. It must nevertheless be noted that even if analogue recruitment is carried out, the online format of the study itself may lead to the exclusion of certain target groups. Following Wagner-Schelewsky and Hering (2019), people who are generally more responsive to online formats are, compared to the total population, younger, wealthier, and more educated, and men are still more involved than women. Moreover, internationally, there are also major disparities regarding Internet use and responsiveness to online surveys. Reflection on the effects of the digital divide (e.g., Ragnedda & Muschert, 2013) and the availability and cost of technical devices, the internet, and the accessibility of specific platforms is therefore important (Weiß et al., 2019). Also, the format of audio messages might have a noteworthy impact on the recruitment process (Howind, 2020). Similarly, the language of recruitment and of the survey can include or exclude certain groups or people. These exclusionary, inclusionary, and participatory effects of the recruitment process are, especially in the context of social science research, particularly crucial.

Another challenge that is directly connected to and merged with recruitment is *engagement*. Engagement can be distinguished into engagement before, during, and after participation. As the asynchronous

interview format does not necessarily support the establishment of rapport, ensuring participant engagement poses a major challenge (Dahlin, 2021; Lannutti, 2017; Roberts et al., 2021).

Before participation, recruitment has already taken place and is followed by the necessity to engage the participants. Before participants get to the actual survey, they already have to overcome several hurdles (Wagner-Schelewsky & Hering, 2019), such as reading important background information, understanding the explanations given, and signing the data security declarations. Potential participants must therefore actively decide whether they wish to participate in a survey, and a non-response is easy and convenient. Due to its asynchronous character, researchers cannot directly support this process and are thus challenged to motivate and engage potential participants in the absence of personal contact. Careful preparation and testing of the survey as well as easily accessible and appealing background material can thus be of great importance. Possible formats include explanatory videos, graphics and pictures, motivating introductions, and short answers to frequently asked questions (see Kleinlein, 2021a). If this pre-engagement process is successful, it is followed by the need to engage during participation. As this process is also asynchronous, the researcher will be absent during participation and, consequently, participants can easily drop out during the survey stage due to lack of time, interest, or motivation (Wagner-Schelewsky & Hering, 2019). Questions can also be easily skipped over or omitted, as "researchers do not have any control over the participant's response behaviour" (Kaufmann & Peil, 2020, p. 238). The drop-out and non-response rates must also be reflected in the outcome of the study. The third aspect of engagement follows the participation stage. After contributing to the survey, it is possible to ask participants to be involved further, such as for follow-up questions or other related future communications. Engagement after participation is not necessarily required, but consideration and possible inclusion of it in the preparation stage might be helpful later (e.g., for data analysis).

Considerations Regarding Ethics

Even though, in general, "literature tends to frame the ethical considerations of virtual qualitative research as comparable to those of in-person research" (Roberts et al., 2021, p. 3), this issue must not be underestimated. Following the considerations, benefits, and challenges mentioned above, the format of ANAs necessitates addressing further ethical

questions. It is especially crucial concerning the characteristics of *digitality* and *asynchronicity*.

Regarding *digitality*, Roberts (2021, p. 3) points out that "virtual methods may […] present new privacy concerns, as researchers may be intruding into participants' personal space, especially if participants are in their own homes and do not use a virtual background or have access to headphones." Researchers are thus urged to reflect on the impact of the digital format (Ragnedda & Muschert, 2013) and on ways to prevent negative effects on the participants. In addition, the *asynchronicity* of ANAs should also be backed by ethical considerations. As the interviewer and interviewee are not necessarily present at the same time and there is no need for a shared space, some research topics may not be appropriate and there is a need to reflect on the extent to which the given answers are meaningful in the research context (Kaufmann & Peil, 2020). In general, the new communication formats that digital and technical innovations facilitate must be critically reflected upon, as "[t]here is growing concern over the actual, concrete, social, and material influence of the digital, which stands in contrast to the tendency to view it as 'virtual', ethereal, and without 'real' consequences" (Jandrić et al., 2018, p. 895).

Simultaneously, participants may also benefit from the digital and asynchronous format of ANAs. As anonymity can be widely maintained, it adheres to a high standard of flexibility, security can be ensured, and dropping out or failing to respond is particularly easy for participants. Accordingly, ethical deliberations must be taken seriously, and the appropriateness of research tools and topics must be critically reflected upon in order to contribute positively to the projects' quality and outcome. The tool presented by Roberts et al. (2021, p. 10) is a helpful guide for these reflections, as it "highlights practical (e.g., software) as well as ethical considerations, and provides recommendations for addressing these considerations."

Asynchronous Narrative Audio-Messages in Practice

Building upon this methodical and methodological introduction to the method in the previous sections, an insight into the practical implementation of ANAs is provided below. The first section offers general practical notes for preparing the conduction of ANAs, while the second illustrates selected aspects of ANAs through an ongoing international research project in the field of teacher education.

Preparing Research with ANAs: Technological Considerations

Certain practical and technological considerations must first be addressed to ensure trouble-free and smooth data collection when conducting ANAs in research. In general, the aspects mentioned above and summarized in Fig. 10.3 must be jointly evaluated in the preparation of an ANA-based study, as must the decision-making process as to which internet-based data collection tool is deemed appropriate. To support the preparation of ANA-based research, Figs. 10.4 and 10.5 illustrate the most relevant questions to be taken into account.

The focus of Fig. 10.4 is on the potential benefits of ANAs as supported by tools. Since it is highly unlikely that any one tool will support all features, the researcher must assess which functions are required for the specific research subject. Hence, not all questions presented have to apply to a tool in order to be suitable for the conduction of ANAs; in fact, it is more important to reflect upon the questions in light of the particular research purpose, question, and target group in the project's focus.

The focus of Fig. 10.5, on the other hand, is on possible challenges associated with how ANAs are conducted. As it is important to find "Strategies to Gain Participant Trust and Protect Privacy" (Sugie, 2018, p. 480), for instance, this must also be considered in the search for a suitable data collection tool (see "Security" in Fig. 10.5). Moreover, ANAs must be implemented in a research project in a way that targets people who understand the aim of the survey (see "Quality" in Fig. 10.5) and who are motivated to participate (see "Recruitment" in Fig. 10.5). Researchers should also draw attention to the design and structure of the survey in order to maintain participant motivation (see "Engagement" in Fig. 10.5). The possibility to take breaks during participation, or to see how many questions are still to come, are two examples (Wagner-Schelewsky & Hering, 2019). Alongside these reflections, ethical questions concerning the digital and asynchronous format (see Fig. 10.5) must also be addressed in order to allow for an appropriate embedding of the ANAs in the research project.

In order to decide which internet-based platform should be used to conduct ANAs in a specific research project, it is therefore necessary to reflect on the specific limitations and strengths that go along with certain tools. As mentioned above, apps such as WhatsApp are promising as "one of the most popular mobile messaging services worldwide" and "a free-of-charge service deemed very reliable and supporting a variety of input

Flexibility & Resource-efficiency	Can participants take part from wherever they want?	YES NO
	Does the tool allow participants to take part whenever they want?	YES NO
	Is it easy, user-friendly, barrier-free, and time-saving to access the tool?	YES NO
Anonymity or Pseudonymity	Can participants stay fully anonymous by sharing no personal data?	YES NO
	Does the tool offer possibilities for researchers to stay anonymous? (ethics!)	YES NO
	Is there a possibility of contacting participants for follow-up questions?	YES NO
In-depth Qualitative Data	Can participants record in-depth audio-messages with the tool?	YES NO
	Does the tool support the collection of other data formats?	YES NO
	Is data storage secure, transparent, and easily accessible?	YES NO

Fig. 10.4 Reflective questions for the choice of a suitable ANA-tool

modes and attachment options" (Kaufmann & Peil, 2020, p. 234). While these benefits of flexibility and resource efficiency are highly positive, their lack of data security and anonymity or pseudonymity can be disadvantageous for some research projects. While other ready-made solutions such as Phonic are not yet as widely known as WhatsApp or Signal, and a hesitant attitude among participants and challenges regarding their engagement may be an issue, Phonic can offer clear advantages that are of major

		What are possible and necessary measurements to ensure that...
Data (9.1)	Security	…the handling of research data before, during, and after data collection meets all requirements and is ethically justifiable?
	Quality	…participants' answers match the targeted research aim despite the asynchronous data collection format?
Sample (9.2)	Recruitment	… the aimed target group will be reached with a matching and ethically justifiable recruitment process?
	Engagement	…engagement of participants is given and maintained before (1), during (2), and after (3) participation?
Ethics (9.3)	Digitality	…the digital format has no negative effects on the participants and is ethically justifiable?
	Asynchronicity	…the asynchronous format has no negative effects on the participants and is ethically justifiable?

Fig. 10.5 Reflective questions for a suitable embedding of ANAs in research projects

importance for certain research projects. The company has agreed to adhere to strict EU data-security measures, supports the gathering of in-depth qualitative data (e.g., different data formats, automated transcription, structured data storage), offers automated transcription, and can, due to its responsive design, be used on computers as well as on mobile devices. A practical example of the implementation of ANAs and conduction with Phonic is given in the following section.

An Example of Research with ANAs in an Ongoing Research Project

The international survey on *Inclusive Schooling Practices of Teachers* (InSpots) is part of an ongoing Ph.D. project in education science (Kleinlein, 2021a). The project addresses inclusive teaching as a cross-cultural challenge that teachers face. As structures, schools, teachers, and

students are highly diverse and differ not only across cultures and countries but also within smaller contexts, practitioners all over the world have already developed a great variety of complex inclusive educational practices (Schallenberg-Diekmann, 2017). These build upon concepts of heterogeneity that are strongly influenced by context-sensitive sociocultural factors (Hummrich & Rademacher, 2013). Consequently, very different approaches have evolved. A qualitative, comprehensive, and transcultural analysis of these inclusive teaching practices is therefore highly intriguing, valuable, and of great importance to the further development of inclusive education. The need for cross-cultural research increases especially in light of current globalization and refugee movements that have led to a blurring of cultures and nations (Fritzsche, 2013).

Seeking to create cross-cultural insights into inclusive teaching practices, the InSpots survey asks teachers around the world in a qualitative online survey to share their experiences of teaching heterogeneous groups of learners. The study aims to (1) identify challenges that teachers perceive in their everyday teaching, (2) explore solutions and ideas that teachers have developed to overcome the challenges and to support their students, and (3) develop a system of inclusive teaching practices and interventions that can be applicable across contexts.

Methodologically, the research project relies on 'Grounded Theory Methodology' (Charmaz, 2006), which adopts an inductive and comparative approach to data and thus allows the researcher to react to the emphases and realities of the fields and actors examined. Following Charmaz (2006, p. 10) "[g]rounded theory serves as a way to learn about the worlds we study and a method for developing theories to understand them." Building on this, the project aims to develop a theory or a system of inclusive schooling practices that is based on teacher experiences and knowledge and which provides adequate options to incorporating the emerging theory into current inclusive educational discourses.

The ANAs method was developed within the framework of this research project. Challenged by the COVID-19 pandemic in my cross-cultural qualitative research, it became necessary to develop a new data collection method that was appropriate for the situation. As audio messages are already strongly integrated into people's everyday lives, this format appeared to be a promising option for short narrative interviews with teachers from contexts around the world. Due to the lack of data security in WhatsApp and other popular IM tools, another internet-based data collection tool had to be found. Phonic appeared to be well-suited as it offers

diverse functions and had been developed only a few months before, with companies and researchers in mind. Since this USA-based tool fortunately complied with EU data security declarations, the InSpots project was able to use the full variety of the tool's features when conducting ANAs.

Conducting ANAs with Phonic allows for an easily accessible, spontaneous, anonymous, and comprehensive collection of qualitative data from participants around the world (Kleinlein, 2021b). Within the framework of the InSpots project, teachers are asked to explain and describe experiences from their professional practice in narrative audio messages. A narrative impulse is given at the beginning in order to encourage the participating teachers to share their experiences of teaching heterogeneous groups of learners. The teachers are then invited to record asynchronous narrative audio-messages (or type in text). So far, it can be observed that participants make use of both options with a tendency toward the audio-format. This step is followed by a semi-open questionnaire collecting sociodemographic data about the participants and their working environments and conditions in order to better understand the contexts they are talking about.

As ANAs are a new method of qualitative data collection, and it was therefore impossible to build upon prior findings by other researchers regarding the use of the method, the preparation proved very challenging. In general, conducting ANAs with Phonic provides a wide range of advantages: Flexibility and Resource efficiency, Anonymity or Pseudonymity, as well as In-depth Qualitative Data (see Fig. 10.4) are all widely applicable and offer major benefits for researchers and participants. However, as this chapter intends to help researchers to plan their own research with ANAs, special attention must be paid to two important difficulties:

The first question in which limitations become clear is: "Is it easy, user-friendly, barrier-free, and timesaving to access the tool?" (see Fig. 10.4). Unlike tools such as WhatsApp or Telegram, which are in regular use by many possible participants, Phonic must be accessed by a link or QR-Code instead of a pre-installed app. This can be seen positively or negatively, as it can raise or lower the effort required to access the survey. Moreover, limitations to the question "Is data storage secure, transparent, and easily accessible?" become evident. While the data storage is secure and transparent (EU-GDPR), the accessibility of the collected data is still lacking in some necessary functions. At the moment, downloading the data and editing the survey is still complicated, rendering further development of the tool necessary.

Even though most of the potential benefits of ANAs are achieved using Phonic, it is important to pay particular attention to certain challenges. Recruitment and engagement proved to be especially challenging for the InSpots survey, which was a consequence of the asynchronous and digital format of ANAs (see Fig. 10.5). One limiting factor of the study is that it requires English communication skills. English was chosen on the basis that it is a world language, but many teachers around the world nevertheless do not speak English and are therefore unable to participate in the study, as are teachers who lack relatively stable internet access.

During the distribution of the study, wide support for the project was perceived, and the survey was shared through various channels (email, flyers, lectures, social media) all over the world by several stakeholders. Nevertheless, the response rates grew only slowly. This showed that it was difficult to engage people in the study strongly enough to prevent them from dropping out in the process that inevitably precedes the survey (reading the invitation, opening the link, reading the overview, accepting the data security declaration, answering the questions). Perhaps the lack of personal interaction is felt at this stage especially. As most people are more used to WhatsApp, for example, and know how it works, the latter might pose fewer challenges in this regard. To overcome the challenges mentioned above in the InSpots project, a welcoming website was constructed to share important information with potential participants (Kleinlein, 2021a). An explanation video by the researcher, graphics and pictures, a motivating introduction, and short answers to frequently asked questions are shared there to support participant engagement. It also seems important to keep the survey as short as possible to prevent participants from losing their engagement during participation. After the survey, participants are asked whether they would like to stay involved and, if so, share their email addresses.

Conclusion and Outlook

Overall, the data collection method of Asynchronous Narrative Audio-Messages offers a new and promising research approach for internet-based, asynchronous, qualitative data collection in the postdigital era. So far, the possibilities of these state-of-the-art research methods in the social sciences are far from fully harnessed, and besides ANAs many other internet-based data collection methods are conceivable and could provide a range of opportunities for diverse target groups and research objectives. A

"conceptual clarification and differentiation of postdigital epistemologies and research practices—which is an urgent task for today's postdigital scholarship" (Jandrić & Knox, 2022, p. 790) is therefore necessary. Further research and methodological reflection on the method of ANAs is also crucial for the method to become established.

Regarding the *data format*, audio-based methods such as ANAs facilitate the participation of people who have difficulties writing, video-based methods accommodate the participation of sign language speakers, and mixed-media methods allow the participant to flexibly use various means of communication (Hector, 2017). Regarding the *time format*, asynchronous interview methods are especially suitable for participants who are short of time, as it enables them to take part in the study whenever it suits them best. For researchers, asynchronous interview methods are promising as they remove the hurdles of time differences and scheduling difficulties. In general, synchronous as well as asynchronous internet-based interview methods enable the inclusion of people who are not available in person, be it because they live in remote areas, because of security concerns, or because of an ongoing pandemic. A myriad of factors may lead to the conclusion that online interviews are most suitable for the project in hand.

There are, therefore, many options and possibilities for internet-based qualitative data collection in the postdigital era. It is necessary to further develop and reflect upon these options so that new methods for qualitative researchers in the social sciences can emerge (e.g., Roberts et al., 2021). In this way, not only can modern technology be increasingly and meaningfully used; participation by a wide range of people who are hard to reach or difficult to involve and are consequently rarely included in research studies can also be improved.

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CHAPTER 11

Postdigital Participation in Education: A Postscript

Felicitas Macgilchrist and Andreas Weich

AW: So, Felicitas, here we are at the end of a fascinating and inspiring project, working together with leading and emerging scholars in the field of postdigital participation to explore the complexities around the term, the practices, and implications for power relations that both influence and derive from the use of technology in education, in society, in culture, in politics. And we want to try to pull together the various strands of the debate explored by the authors here and answer some guiding questions, right?

FM: Yes. These questions point not only to the performative nature of postdigital participation with its mutual contingencies, but also to the 'who' and the 'how'—words that point directly to these power

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relations. Perhaps it makes sense to break down these issues into three guiding questions: How is the postdigital deployed in the chapters of this book? How do contemporary media constellations shape participation? And who participates how in these contemporary media constellations? We have been thinking about these questions for some time now, Andreas, and we repeatedly come to the conclusion that the last two have to be treated together. The contingency and performativity of postdigital media and participation means that one cannot be answered without the other, right?

AW: Absolutely. If we were to treat these questions separately, we would only end up repeating ourselves; these questions themselves bear witness to the intricate entanglements of the postdigital condition.

FM: But firstly, let's begin by considering how the postdigital as a concept is deployed in the chapters of this book. What I found the most interesting here was how all the chapters of this book disrupt binaries in some way. They all refer to traditional binaries such as the technological versus the biological, the material versus the virtual, online versus offline, and so on, but argue that these are so entangled in the postdigital that they can no longer be clearly distinguished from one another.

AW: Yes, we now have heterogeneously interrelated elements.

FM: The chapters also deploy two of the three different senses in which the term postdigital is being used—we referred to this in the introduction (Weich & Macgilchrist, 2023). Most of the chapters in this book understand the postdigital as a condition of current life: how the world is organized today, how technology, sociality, politics, economics, materiality, affectivity, history, biology, and much more are entangled, and how all these elements interact in the present day in which we live. (And the question of who 'we' are is also important here—most of the authors in this book are socialized in Western Europe and so thinking about a 'we' with that orientation.) Most of the chapters also adopt the postdigital as a critical approach, as a scholarly perspective, even if they don't do so as explicitly as in Chap. 6 by Jennifer Grüntjens, Maike Altenrath, Sabine Schaper, and Sandra Hofhues, for example, which takes an explicitly critical stance on the world today (Grüntjens et al., 2023). So what we don't see in this book is a third stance that sees the postdigital as a goal to be striven for—in the sense that the 'purely digital' is now 'out' or 'old-fashioned' and that the 'postdigital' is

more desirable. That's a position we can observe in some of the recent public or policy discourse around the postdigital.

AW: That's true—none of the chapters takes that position, but this is not really surprising. What I think works very well here concerning the term 'postdigital' is that all the chapters share a common ground regarding how technology is positioned within a mapping of the world: entangled, as you said, Felicitas, but also a critical view of those entanglements. And even if the chapters don't explicitly welcome the postdigital as a 'goal' per se, they certainly share the objective of reflecting critically on these entanglements. It's interesting that the chapters seem to share this critical approach to postdigitality although they come from different academic disciplines. I think this was also one of our main visions for this volume—that the postdigital might function as a connecting concept—and a catalyst for debate perhaps?

FM: Yes, the term postdigital has brought together scholars from multiple disciplines with similar interests; it's perhaps an overarching umbrella term that encompasses a shared critical approach. And I think this also holds true for much of the writing in the field around the postdigital, including the *Postdigital Science and Education* journal and the Springer book series on *Postdigital Education*; work in this area always moves beyond education in the narrow sense to inspire conversations between people from very different fields.

AW: Absolutely. I hope that the volume might also serve to take the concept of postdigitality back into the disciplines that its authors come from and perhaps help to include more scholars in the conversation. I think the various concepts of *Bildung* explored in this volume, particularly in Chap. 4 by Marlene Pieper, Till Neuhaus, and Michaela Vogt, open up a fascinating conceptual space that might serve as an inspiring common denominator for scholars from multiple fields (Pieper et al., 2023).

FM: *Bildung* flags one thing I was wondering about while reading the chapters, though. Most of the chapters place a clear emphasis on reflection, seeking to strengthen and support reflexive practices—or critical engagement—among students, teachers, and other actors, who are called upon to develop a critical and reflexive mindset. There is a strong focus on reflecting, talking, thinking, on narratives and discourse. They do so to the extent that I wonder

whether this might be *too* cognitively oriented—too cerebral. And I wonder what that means for the debate around the postdigital; what does this mean for current engagement with this term in scholarship?

AW: But not all chapters have that focus.

FM: Right—the first two chapters, for instance, break away from this to a certain extent and show different approaches. Nina Grünberger (2023), in Chap. 1, for example, speaks about infrastructures and architectures—the materialities if you like—which shifts the debate away from the cognitive, epistemic focus. And the authors of Chap. 2, Petar Jandrić and Sarah Hayes, discuss the biological or bodily aspects of the postdigital—which they refer to as the "postdigital-biodigital age" (Jandrić & Hayes, 2023).

AW: Yes, looking at experience, or affective media theory—a discourse from media studies that might be a promising approach to looking at other ways of engaging with the postdigital beyond the cognitive focus on knowledge production. This might be a channel to address the affective dimension around experience, empathy, and involvement. I think the idea of the postdigital has the potential to build bridges in that direction too. I agree that Petar Jandrić and Sarah Hayes are pointing us in that direction, but I think there is great untapped potential there for thinking about the postdigital in the directly experiential sense. And as I said just now, the diverse concepts of *Bildung* open up a productive space in this regard, with the potential to build bridges to cultural education—or what we call *kulturelle Bildung* in German—which focuses on the idea of formation and process rather than output and product.

FM: Yes, absolutely—and the concept of *doing*; the materialities of *doing*—rather than "only" thinking and reflecting. All the chapters nod toward materiality. But I wonder whether, by thinking about participation, we are being drawn back too strongly into the idea of *participation as doing* by a person, by humans—rather than a posthumanist, new materialist approach that moves beyond that to include the more-than-human and indeed which has always played a part in research on the postdigital. How might we think about *doing* the postdigital beyond that—doing the practices that don't necessarily need a person, or where the human subject is at least decentered? This seems to be an especially interesting challenge for

research on postdigital participation: a posthumanist, new materialist approach.

AW: Yes, that's true, perhaps especially in the stronger sense of participation that pertains to decision-making, or actively shaping processes. But the other, more all-encompassing concept of participation, with its focus on taking part in the postdigital, in the entanglements described so poignantly in this volume, moves beyond *doing* the postdigital as a human to include simply *existing* like other entities as part of these "messy" and complex entanglements.

FM: Yes, and the first chapter by Nina Grünberger really emphasizes the structures, the structures of capitalism and monopoly capitalism, the architectures, infrastructures, equipment, and environments of what we might call media constellations. These are shaping how participation can unfold. And this brings us very neatly to our second and third questions, which can only be considered together: How do contemporary media constellations shape participation? And who participates how in these contemporary media constellations? What would you foreground from the chapters about this?

AW: I think Grünberger's chapter addresses both levels of participation. How can we participate in postdigital culture? Where are the places where we are not only taking part in it but also contributing to its unfolding? And she also talks about the limited opportunities for individuals to actually participate in shaping this condition due to exclusionary structures such as large IT companies and other neoliberal orientations that prevent certain people from having a voice.

FM: Absolutely. Chapter 7, by Tim Fawns, Gill Aitken, Yathu Maheswaran and Kanastana Yasotharan, also addresses the limitations and constraints on participation due to the design of the online environment, but also due to the materialities and socialities of that online environment in which participation happens (Fawns et al., 2023).

AW: And Anke Redecker (2023), in Chap. 5, also describes the various scenarios in distance learning that shape and restrict the ways in which participants can interact and communicate with each other. She describes drill-and-practice scenarios, for instance, which are highly individualized and offer little space for dialog. There is limited room for negotiation; either one fits in or one doesn't. She also speaks about e-portfolios, which seem at first glance to be a

more open and progressive structure for self-expression but at the same time foster a disciplinary practice of self-reflection without dialog or interaction. And so Redecker ultimately comes to the conclusion that video conferencing is actually the most dialogic means of distance learning, offering a positioning that allows for participatory learning practices.

FM: I thought there was an interesting power aspect in play in this sociotechnical constellation. Redecker refers to the option students have of turning off their video cameras and thus escaping monitoring, for instance. This enables students to seize back the power to make decisions for themselves around their own participation in this moment: whether they wish to be visible or invisible, to participate or abstain from participation. So what looks like perhaps the most straightforward and uncreative mode of using digital technology (especially after three years of a pandemic situation, which is the case at the time of writing) is actually a much more radical educational constellation.

AW: Yes, and the chapters address similar aspects on a range of levels. On the one hand, Grünberger talks about changing structures and capitalist modes of production; on the other, reflectivity and critical pedagogy are also about shaping and enacting change. It is a kind of double move of being reflexive and developing an education system that enables learners to shape and change these structures through their own participation.

FM: While at the same time not putting too much emphasis on the role of each individual in overcoming these huge structures. I do sense a big open question in Grünberger's chapter though. Researchers have done so much work in the area of reflection and critical engagement over the years; how can we expect fostering more reflection to change the capitalist architectures of our society?

AW: Yes, the authors of Chap. 7, Tim Fawns, Gill Aitken, Yathu Maheswaran and Kanastana Yasotharan, also look at a specific course that fosters critical engagement while analyzing the complex power structures of higher education in which everything is entangled. So there is a huge ambivalence there.

FM: These ambivalences are key to many of the chapters. When Marlene Pieper, Till Neuhaus, and Michaela Vogt reflect on *Bildung*, inclusion and Open Educational Resources (OER), for instance, in Chap. 4, they ascertain that even OER are not necessarily inclusive;

the authors thus untangle the complexities around the concept of openness. Looking at how exactly the practices unfold reveals the messiness and co-constitutiveness of how it all works. And in these reflections, how do media constellations and participation mutually shape one another? The sociotechnical world of today is all a big mess. Not in a bad sense, but in a constitutive sense, where learners' agency and critical engagement can shape what this mess looks like—what media constellations look like—and how learning materials are put into the world, how they are designed, used, and circulated.

AW: A similar ambivalence is perceptible in Chap. 8, which I wrote with my colleagues Ina Schiering, Michael Friedewald, Philipp Deny, and Marvin Priedigkeit (Weich et al., 2023). On the one hand, it is about the production of meaning in a space that is concerned with privacy and individual freedoms; on the other, it is about participation and shaping the postdigital condition.

FM: What I really appreciate about that chapter, and also Chaps. 4 and 5, is that the situatedness of our question becomes clear: Different elements of different contemporary media constellations are most relevant for different participatory settings. Media constellations only become those constellations in the specificities of the setting. In Chap. 8, this interplay—or, drawing on Karen Barad as you do, this intra-action, a very physical *doingness* between design, reflection and critical observation of the design—shows how situated and context-dependent these considerations are. Because it is all so messy and entangled, two words that pop up throughout the chapters. And so the extent to which participation also shapes media constellations is dependent on such interactions.

AW: Chapter 9, by Marko Teräs, Hanna Teräs, and Juha Suoranta, also addresses those dominant discourses about what we would call the postdigital condition but also about digital media in general and how they have changed the world (Teräs et al., 2023). These discourses are relevant in many media constellations because they shape not only how the various materialities are formed, but also how practices evolve within those media constellations. There are dominant discourses that tell people what is 'legitimate' or 'right' or 'good,' and Chap. 9 discusses other ideas, other knowledges, other visions of a digital—or postdigital—future. The chapter is

forward-looking to other, productive, visions for shaping today's media constellations.

FM: Yes, in the sense of what Donna Haraway or Eve Sedgwick have called reparative or generative critique. They refer to it as a 'utopia,' but it is not a naïve utopia in which everything is simply wonderful, but a complex utopia which is simultaneously a critique of the present. This is why new narratives are so important—because of the dominant discourses that constrain our visions of the future today.

AW: True. Visions, and also voices. The question 'who participates how' has a lot to do with whose voice is being heard.

FM: This notion of whose voice is included—in Chap. 9, it's about whose voice is included in shaping futures. But it's a theme that permeates all the chapters; it's about whose voices are gathered, curated and perhaps also acted upon. When students are networking, reflecting on and organizing in their research practices rather than following notions of absorbing knowledge, they are shaping the postdigital messiness in which they have to operate. Chapters 6 and 7 are both about how students make their own decisions about their own learning, discourses, and futures. Chapter 10 by Eva Kleinlein (2023), about asynchronous audio messaging, is also about using technology to include people who struggle with basic reading and writing tasks in research projects, thus expanding research data to include their perspectives. This lowers barriers to participation in research projects.

AW: Yes, what I really like about Eva Kleinlein's chapter is that it is built on the question of what kind of media practices are emerging in contemporary media cultures, and how these can be made productive for research. So if you consider research to be something that articulates voices and renders them relevant in some way, we are looking at those two levels of participation combined: on the one hand, being able to take part in everyday media practices and on the other, shaping those very media practices. It is mediated by research, so not a direct decision-making process, but the scholarly discourse is likely to have an effect on shaping our everyday world. Or is that too optimistic a view of research?

FM: It probably is, but we need to be hopeful! Research has to at least try to diversify the discourse in this way. This brings us back to the

notion of materiality as well; asynchronous audio messaging is a simple everyday practice that is increasingly used to communicate and it's through the very materiality of the hardware that we use for this practice that this research becomes possible. This is deeply entangled with capitalist structures as well, of course. Using WhatsApp to include more voices in research also means that research is using structures of huge tech monopoly capitalism. We need to constantly be aware of these complexities.

AW: Yes, and the chapter reflects explicitly on that aspect. Eva Kleinlein's chapter is a great match with Chap. 2; the final and the first full chapter creates a circle and connect up the dots in this regard.

FM: And this brings the interplay between micro-structures and what are referred to as macro-structures to the fore.

AW: So what thoughts for future research has this volume opened up for you?

FM: I think we can see many traces of generative critique here, in the sense of designing new elements, particularly in Chaps. 4, 5, 7, and 8. These are chapters that specifically address design—workshops, learning scenarios, materials and so on—with a view not to creating best practices or next practices, but to critiquing the current conditions. Current planetary injustices are a disaster, and this is the background to creating new modes of learning. So generative critique in this sense—not in a naïve understanding of making the world a better place—but by critiquing not only inequality per se but specific elements to be removed, overcome, or re-designed. I might be biased because I've been thinking with this concept for a few years now, but I do think this notion of generative critique will be extremely important for postdigital research in the future around participation and contemporary media practices.

AW: I agree. Another important aspect for future research in my view is the role educational media research can play in understanding media constellations more broadly. Most of the chapters address—implicitly or explicitly—how the design of educational media is intrinsically linked to the design of media culture itself and the structures on which it is built. Educational media research is a specific area of work, yes, but in my experience, reflecting on educational media and considerations around their design are always relevant for media constellations outside the educational sphere too.

FM: Your words here are a wonderful conclusion for our volume. They show how specific educational media constellations provide an analytical channel to looking at issues of inclusion, democracy, equality, planetary justice, sustainability, peace, and so many pressing issues of our contemporary and crisis-ridden world. As Nina Grünberger says, some work raises more questions that it can answer. She wonders whether that is a failure of research. But is this raising of questions that we cannot answer perhaps precisely the role of research and part of the process of co-constituting and co-designing our postdigital world?

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Index[1]

[1] Note: Page numbers followed by 'n' refer to notes.

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