Chapter 15
Conclusion: Emerging Themes in Sustainable Networked Learning

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Abstract In this concluding chapter we point to themes that emerge from the chapters in this book on sustainable networked learning. The themes cut across different sections of the book, indicating their wider significance. These themes are Lasting effects of lockdown online teaching; Digital sustainability for the future; Future roles of networked learning in society; Balancing utopia and dystopia in visions of AI and open data; Speculative methods in research, education and design; and Balancing qualitative and quantitative data in the research of networked educational settings: Studies at the community and project levels.

Keywords Covid-19 · Lockdown teaching and learning · Digital sustainability · Future · Networked learning research · AI · Open data · Speculative methods · Qualitative data · Quantitative data

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N. B. Dohn et al. (eds.), *Sustainable Networked Learning*, Research in Networked Learning, https://doi.org/10.1007/978-3-031-42718-3_15

Introduction

This book is focused on sustainable networked learning. The body of the book deals with individual, sociological and design perspectives on this issue through a set of chapters, organised around four main themes: *Data and datafication*, *Sustainable learning design*, *Sociological perspectives on Networked Learning*, and *Networked learning in times of lockdown.* The aim of the concluding chapter is to point out further themes that emerge from the chapters in the book as questions to be explored in the future, at the next Networked Learning Conference in 2024 and beyond. We have identified a set of themes that cut across different sections, indicating their wider significance. These themes are *Lasting effects of lockdown online teaching and learning?*; *Digital sustainability for the future*; *Future roles of networked learning in society*; *Balancing utopia and dystopia in visions of AI and open data*; *Speculative methods in research, education and design*; and *Balancing qualitative and quantitative data in the research of networked educational settings: Studies at the community and project levels.*

Lasting Effects of Lockdown Online Teaching and Learning?

Looking across the chapters in this book, one immediately striking observation is the number of times the terms "COVID-19", "the pandemic", and "lockdown" are mentioned. It is, of course, not surprising that the terms are mentioned in the two chapters in "Part 4. Networked learning in times of lockdown", as this part reports research on Networked Learning during the COVID-19 lockdowns. It is noticeable, however, that more than half of the chapters – in a book published more than 3½ half years after the first lockdowns were initiated – also reference this situation. Now, the production history of the chapters – and the timeframe of book publishing – could be brought forward as an obvious explanation: Chapters were initially, in a prior version, submitted as papers for NLC 2022, 6 months before the conference (October 2021). At that time, lockdowns were still in effect in many countries and a realistic possibility in others in the months to come. Still, these original papers have been revised over several rounds, and many other initial formulations have been substituted in that process, before the acceptance of the final version as a chapter in Spring 2023. At the very least, the perseverance of references to the pandemic is indicative that the months of remote teaching have for many become a focal point and outset in reflecting on and designing for teaching and learning, as well as for investigating the opportunities and risks that technology poses for this. Moving beyond the immediate context of this book, a simple Google Scholar search points in the same direction: At the time of writing, the search for *post-pandemic learning* gave 64,300 hits and for *learning "after COVID"* 59,100. Of these hits, 17,400 *post-pandemic learning* and 17,500 for *learning "after COVID"* were from 2022 until day of search (March 23, 2023). Similarly, *post-pandemic teaching* and *teaching*

"after COVID" gave 40,300 and 27,700 results, respectively, with 16,700 for *post-pandemic teaching* and 13,400 for *teaching "after COVID"* being from 2022 until day of search.

A closer, more qualitative look at what is said in the chapters in this book, upon mentioning COVID-19, further supports the interpretation. Thus, Carbonel explicitly introduces her research as "part of the movement towards re-thinking the university of the future following the upheaval of emergency remote teaching during the COVID-19 pandemic" (Carbonel, this volume, p. 107). Similarly, one of the case studies reported by Wichmand et al. concerns a course entitled "Leadership, education and technologies – Post COVID-19". The course builds on – as the authors phrase it – the fact that "[d]ue to COVID-19 and the shift to remote learning, educators and educational institutions have gained much experience with teaching with technologies" (Wichmand et al., this volume, p. 152). And Lee and Bligh feel compelled to explain that, "the description [of the educational programme they investigate] reflects the situation before the COVID-19 pandemic" (Lee & Bligh, this volume, p. 176). On the critical side, Ross and Wilson, with reference to Beetham et al. (2022), point out that "the pivot to online teaching, learning and assessment during the COVID-19 pandemic has exacerbated many existing issues [of surveillance] and ushered in new forms of surveillance" (Ross & Wilson, this volume, p. 23). Likewise, Jandrić and Hayes emphasise that the advent of the pandemic have brought postdigital-biodigital challenges to the fore that have hitherto had only an implicit (albeit strong) focus within Networked Learning research (Jandrić & Hayes, this volume).

On the other hand, Matthews grounds his argument for the Modus 3 university (i.e., the university as networked and entangled with society) in part on the observation that "the hopes of many coming out of the 2020 COVID-19 pandemic following the reliance on networked communication technologies have arguably (at least not yet) failed to be realised" (Matthews, this volume, p. 189–190). Certainly, as pointed out repeatedly throughout the book and as we discuss in the Introduction, the use of networked technologies to support teaching and learning has a decades-long history prior to the lockdowns in 2020. Indeed, the "emergency remote teaching" (Hodges et al., 2020) set in place to accommodate the sudden need for online teaching in many instances had a fairly "broadcast" disseminative nature, with little support of individual students' learning process, let alone of their collaborative development of understanding. In this sense, "emergency remote teaching" often had little to do with the communicative practices recommended by research within Networked Learning, Computer-Supported Collaborative Learning, Technology-enhanced Learning and similar fields. However, it is worth noting in the two chapters of "Part 4. Networked learning in times of lockdown" which deal specifically with the COVID-19 lockdown, that there are also nuances to this broader picture. Acuyo Cespedes and Lee, investigating a teachers' perspective, noticed how teachers relied on or established forms of networked learning together, for instance by relying on peers and engaging in online communities to learn from others to develop their teaching. Likewise, Hachmann et al. show how students established new patterns of participation via establishing new structures and ways to collaborate.

For example, a nursing student latched onto an existing hashtag on Instagram initiated by the Nursing Students' organisation and used it to share stories of the experience of studying online. Other nursing students began contributing, and the hashtag became a "learning network agent" (p. 233) and an "online space for exchange and community, where she and her fellow nursing students could share everyday 'lockdown moments' and promote academic dialogue organized through hashtags" (p. 234). The hashtag thus became what Acuyo Cespedes and Lee refer to as a good example of networked learning where peers engage in "maintaining and developing a sense of belonging to different academic communities" (p. 241). In both the chapters of "Part 4. Networked learning in times of lockdown", it is worth noting that these learning networks were often formed outside institutions and engaged members of different institutions, rather than being institutionally initiated and curated. For Acuyo Cespedes and Lee, this leads to the reflection that the experiences from the COVID-19 lockdown should lead to rethinking the dominant forms of professional development within higher education. Thus, focus arguably should shift from formal courses towards an appreciation and support of teachers' collegial networking and access to valuable learning resources. Likewise, Hachmann et al. note that the students' alternative ways of forming networks "suggest that the university could utilize a more ad hoc and asymmetric approach to establishing networks" (p. 236).

These considerations raise the question what (if any) the long-term effects of online teaching and learning during COVID-19 lockdowns will be. Clearly, a multitude of teachers and learners have gained experience with utilising technology for educational purposes. The lockdowns have resulted in "existence-proof" across all academic domains that online teaching (and usually also learning) is possible. Pragmatic and creative solutions were invented to allow learning activities to take place that many teachers would under other circumstances have judged to "necessarily" require physical presence (e.g., for sports, art and music lessons). Many teachers ended up being quite proud of the teaching they managed to do (Bartolic et al., 2022). Others noted their experience of the online format as supplying different communication possibilities, not least for shy and sensitive students, and of allowing them to get to know their students in "new and good" ways (Qvortrup & Lykkegaard, 2023). Still, as Bartolic et al. level-headedly end their article "Pragmatic responses to an abrupt pivot are unlikely to provide a solid plan on which to build back better" (Bartolic et al., 2022, p. 530). And for many, the existence proof may only have concerned the *possibility* of online learning, but not its quality or viability as compared to established practices building on physical presence. Some teachers even had such a bad experience with remote teaching that they express the wish to never have to teach online again (Ní Fhloinn & Fitzmaurice, 2021). For these teachers, the existence proof definitely was the negative one that online formats provide possibilities of completely undesirable modes of teaching and learning.

Summing up, it is hard at this point to gauge whether the familiarity with technologically mediated teaching and learning developed during lockdowns will affect the future of networked learning positively or negatively. Even the positive experiences were in most cases not the result of educational formats informed by

research, as they were installed as emergency responses, and others – as explored in "Part 4. Networked learning in times of lockdown" – were more often than not initiated and living outside institutions. Thus, the question remains whether these positive experiences will provide impetus to seek research-based knowledge for future educational developments, or whether the experiences will themselves form the only foundation. The latter could well result in networked learning research not gaining the momentum after COVID-19 that one would unreflectively expect it to get. Put differently, the degree of sustainability for the future of learning designs based on the experiences of COVID-19 is difficult to assess at this point in time.

Digital Sustainability for the Future

Broadening the concern of sustainability for the future beyond the last section's focus on lasting effects of lockdown, in this section we look at how the chapters in the book contribute to the overarching theme of sustainable networked learning. All of the chapters offer insights into how Networked learning can provide opportunities for designing sustainably. They conjoin in viewing Networked Learning as providing prerequisites for designing for teaching and learning in the form of new sustainable spaces.

Wichmand et al. (this volume) see new materialised Networked Learning spaces as a part of professional development processes. These processes encourage the participants to implement the newly learned methods into their teaching practices after the formal courses. This involves broadening the scope of teacher professional development programs. Here, perhaps a space could be developed which avoids choice or embracing dualistic positions between strong, centripetal networked relationships and weaker, centrifugal ones, but rather acknowledge the messiness of Networked Learning processes. This would support teachers in developing sustainable designs across their strong and weak network connections.

This is in line with Acuyo Cespedes and Lee's emphasis on a space which focuses, legitimises and values teachers' personal and informal interactions of networked learning (Acuyo Cespedes & Lee, this volume). The authors highlight teachers' use of their network for flexible access to resources and for supporting interactions with colleagues and students and for removing barriers of time and space. These ways of interacting may provide potential for designing sustainably for the future by facilitating the transition towards the digitisation of Higher Education, moving beyond practices which are limited and bound by physical spaces to Networked Learning-based practice.

A space for sustainable designs is also described by Godsk et al. (this volume) as a sustainable Learning Design practice for Networked Learning. This design space supports educators' design decisions by highlighting the development of online activities that connect students' learning activities with educator feedback. Designing in this space provides ways to support educators' networking on module work and their reuse of designs. Relating to the points of Petersen et al. (this volume), this

Networked Learning space could also be benefitted by unboxing revision processes. This would work towards furthering an iterative progression in design-based intervention studies.

Lee and Bligh (this volume) contribute to the ongoing community effort to redefine Networked Learning towards the current postdigital context. They argue for a re-establishing of the community identity around the ideas of transformative Networked Learning and expanded Networked Learning design, applicable to formal educational settings, for teachers as well as educators, designers, trainers, tutors, and critical pedagogues. Such a re-establishing will involve creating new, sustainable spaces through empowering educators to initiate, deploy and expand new ways of being networked within established institutionalised infrastructures. Such spaces for sustainable design further resonate with Carbonel's ideas which emphasise the opportunities created through rethinking the university. Designing for a university for the future, she stresses, involves imagination about ways of being present in online education, and requires collaboration with teachers and educational designers (Carbonel, this volume).

In their study of the project Open Data, Wilson et al. (this volume) put forth the need to value equity and sustainability above economic productivity. Here, the creation of a sociotechnical system could enable access and actively encourage increasingly sophisticated and critical use of, ownership of and production of open data. However, if Networked Learning is to fulfil practitioners' aims and ambitions to develop educational spaces, practices and systems that work towards sustainable, socially just futures, there is a need to reflect critically on the technologies used.

Koole and Beaumier (this volume) follow this suggestion in their investigation of the ontological and epistemological – digital and analogue – characteristics of AR and VR. These technologies provide new ways to represent the physical world around us, thus widening the human-technology relationship and associated spaces for learning. A postdigital analysis of these spaces can open up understanding of the freedoms and constraints relative to sites of learning, activities, learner configurations, datafication, and representations of learning. Further, such a postdigital analysis could shift work and learning between the analogue and digital. In this shift, challenges such as failures or lack of resources may come about as well as new possibilities.

In designing sustainably for the future, Ross and Wilson (this volume) note that space should be given to investigating how personal, educational and institutional values intersect. Data Stories, for example, can allow people insight into different perspectives and relationships through collective action. Work in this intersection could support sharing and networking, providing knowledge about the different perspectives and thereby supporting design sustainability. Brandén's chapter further highlights the significance of investigating this intersection. Thus, Brandén (this volume) discusses that if practitioners and researchers investigate society as a distorted reality, this would open for the development of a combined theory that warrants both consensus and conflict, and both slow and rapid change. Researchers and practitioners with different backgrounds would contribute, which could promote collaboration in a new space that may support sustainability. According to Mathews

(this volume), new materialisms offer a perspective with which to analyse, theorise and influence practice in Networked Learning environments. Understanding the becoming of a networked learning environment in higher education comprises depicting how ideas and different modes that have developed historically can clash and entangle. Here, collaborative inquiry and joint action has particularly underpinned networked learning research and practice. In line with this, Hachmann et al. (this volume) discuss examples of how new structures and collaboration forms became established and sustained for students during the lockdown. This involved the expansion of networks, which encompassed new requirements for participation and social configurations. These changes result in new spaces which may be of importance when designing networked learning for a sustainable future for students.

Finally, Jandrić & Hayes (this volume) see Networked Learning as implicitly holding a long history of deep and successful engagement with postdigital-biodigital challenges in theory. The concept of convergence may help to focus research efforts on Networked Learning in a postdigital-biodigital age, which in turn could provide research contributions for a Networked Learnings space, and support designing sustainably for the future.

Future Roles of Networked Learning in Society

As a more specific focus of sustainability, many of the chapters in this book also directly or indirectly address the role of networked learning in today's society and beyond. Given the rapid digital transformation that we are currently witnessing in our societies, it is common for organisations, including educational ones, to attempt to integrate a wide range of technologies to support human action and learning. Ongoing digitalisation means that we not only need to reflect on how we use digital information and data (Wilson et al., this volume; Jandrić & Hayes, this volume) but equally as important how technologies impact the way we design, implement, structure and analyse our processes (Petersen et al., this volume; Wichmand et al., this volume; Blackmon & Moore, 2023). The integration of cloud technology for example has meant people have access to their digital assets and resources 24/7, regardless of their location. Instant availability has paved the way for media offerings like Netflix, transforming how people experience television, from an event located in the time and space of the living room to an event that is always-available, everywhere and on demand.

Over the past years, this on demand delivery model has then affected our experiences and anticipations within other areas of our lives, leading to a backwash effect on our expectations for societal institutions and private businesses alike. Correspondingly, this delivery model has already been applied widely to online education where people are joining online degree programs and MOOCs at their own leisure for learning and professional development (Eradze et al., 2023). Broadly speaking, the preferred approach these days is to have access to what I want, where I

want and when I want. This poses obvious challenges to networked learning designs focused on collaboration and shared knowledge creation.

Another recent development affecting the future role of networked learning is artificial intelligence. Since the start of 2023, in education especially, there has been a global debate on how to respond to generative pre-trained models, like ChatGPT (see Bozkurt et al., 2023). The question behind this debate as well as behind discussions of digitalisation and datafication is if and how do we combine human and non-human machine intelligence to support and/or advance the way we work, teach and learn. A recent definition of Networked Learning (NLEC, 2021) supports the idea of learning and knowledge action where, when and what I want, but, crucially, not in soliloquy, but instead through collaboration with other learners, in respect for and negotiation with their wishes of where, when and what. Thus, a defining characteristic of Networked Learning according to NLEC (2021) is that learning must be underpinned by trusting human and non-human relationships, which, further, requires convivial technologies (i.e., technologies that support human dialogue and flourishing, rather than, for instance, surveillance and control). Ongoing experimentation, research and the realisation of digitalisation in our society is driven equally by evolving technological possibilities and our imagination to use these technologies to advance our capabilities. This transformative process and the roles that networked learning can take to advance it positively requires ongoing reflection, and, in particular, engagement with critical theory to unveil – and preferably prevent – unforeseen and unwanted consequences (see for example Eguara, 2022; Brandén, this volume).

Balancing Utopia and Dystopia in Visions of AI and Open Data

Out of the previous section's considerations of digitalisation, datafication and AI, the further question arises how we can balance our visions for the future between utopia and dystopia. Many of the authors in this book aptly refer to our present era as postdigital (Koole & Beaumier, this volume), biodigital, and postdigital-biodigital (Jandric & Hayes, this volume). Certainly, the aggregation of data has had an exponential growth. There is no exact definition of "Big Data", but what earlier mainly was measured in terabytes is now sometimes measured in petabytes, huge amounts of data that the human brain can hardly visualise. Here, as with many other digital phenomena, Big Data combined with its extension, Artificial intelligence (AI), is a double-edged sword that could be beneficial as well as destructive at the same time. The more utopian vision of big and open data is presented in the chapter by Wilson et al. (this volume). In a society with digital literate citizens engaged in participatory design, the social justice ideals would be closer than in a society without transparency.

Conversely, in the speculative data stories that were gathered by Ross and Wilson (this volume), the darker and dystopian aspects of Big Data and AI are brought up. The findings are based on what the authors define as "Speculative methods for

researching networked learning futures" (p. 24), but this does not detract from the importance of the questions they ask about surveillance and scrutinising data. Quite the contrary, one may ask whether such questions could be raised without the epistemological distance provided by speculation. In particular, the authors pinpoint the need to query "What is being scrutinised/quantified?", "What technologies enable scrutiny?", "What is the purpose – e.g., monitoring, audit, resource allocation, control, comparison, correlation?", and "Who benefits?" (p. 27) At the same time, "[D]ystopian imaginings are not the same as resignation and not the opposite of hope" (p. 30). Rather, such imaginings are ways in which we can negatively inform our design practices: they form the constraints or boundaries that our designs cannot cross without becoming ethically, socially, organisationally and/or personally inappropriate.

Speculative Methods in Research, Education and Design

Speculative approaches to research such as the one employed by Ross and Wilson (this volume) have been used in the Social Sciences since the 1990s. In general, they provide a way of being structured in our proceedings, when we want to explore, investigate and imagine possible futures. According to Suoranta et al. (2002), the first examples within education are found in early 2000. The authors also describe a trend of engaging teachers and students in imagining futures as a step in developing new educational ideas. Such imaginaries often include digitalisation of education. Further, Lindberg (2023) points out that there seems to be "an accumulation of initiatives" aimed at understanding digital futures. Therefore, it is not surprising that the use of speculative methods has also emerged in the networked learning community. Ross (2022, p. 57) argues that the "complexity of learning requires creative approaches, including speculative methods". Speculative methods are a form of future(s)-oriented methods described by Cerratto-Pargman et al. (2023), p. 178) in the following way: "Future(s)-oriented methods aim to generate speculative accounts of users' educational experiences with technologies where the past is blended with the future points in time. They aim to reflect on our constitutive relationships with our present and past." Speculative methods can be used both pedagogically and as a research approach, according to Ross (2022). Within three of four themes in this book, we find examples of the use of speculative approaches or something very similar.

Thus, Petersen et al. (this volume) start their chapter by arguing that "fundamentally, research on networked learning is interested in finding new and productive ways of connecting people and their practices across boundaries in different contexts" (p. 126). Their emphasis on the continued interest in "finding new and productive ways" is noteworthy, because it indicates that design, design-based or design-oriented methods may always have been a valued methodological approach in the Networked Learning community. Another chapter engaging with speculative methods is the one by Brandén (this volume). The author offers four metaphors as a

foundation for four different frames that can be used for both the study and the design of networked learning. In particular, "frames can be used both to capture past and ongoing activities within a field and to directing attention in new directions and to put forward new questions" (p. 214). This interrelation of future direction with the past connects his approach to speculative methods as described by Ross (2022 p. 59). Thus, she proposes the complex interplay between the past, the present and the future as indicative of speculative methods. However, it is important to note that not all design approaches involve speculative methods, as there are further defining features of the latter in addition to the shared focus on the not-yet-existing. This is well articulated in the chapter by Ross and Wilson (this volume) who state that "speculative methods are not solely about designing preferable futures, but about revealing and developing insights about our current situation, what has led to it, and what might (conceivably) be different." (p. 25).

Finally, there are two chapters that already in the title include speculative methods, namely "Reconfiguring surveillance futures for higher education using speculative data stories" (Ross & Wilson, this volume) and "The future of presence in online education, a speculative design approach" (Carbonel, this volume). Ross and Wilson applied speculative methods to create and share stories about what the future of surveillance in higher education might look like from the perspective of students and staff. The speculative method was crucial for understanding different values around surveillance. The authors note that surveillance is sensitive and that for this reason, they collected the stories in ways that allowed the participants to be anonymous. For instance, problems such as digital resignation and fears about repercussions are sensible (both meanings of the term) issues that necessitate the development of new research methods. As concerns the chapter by Carbonel (this volume), she presents the result of six speculative design workshops where teachers and staff developed prototypes focusing on what presence and affective closeness could look like in future online education. Her main argument for choosing a non-traditional approach was that it enabled the experimentation with new ideas of the future that include "different beliefs, values, ideas, hopes and fears from today" (p. 108). She argues that if our beliefs and ideas do not change, it will also be impossible to change the future. Carbonel's evaluation of the use of speculative methods centres on the possibility they afford for broadening participants' ideas and opening a discussion vital to possible futures.

To sum up, speculative methods are one way to balance the dystopia and the utopia versions of the future of networked learning. There are probably several reasons why this specific volume contains a high number of interesting contributions utilising speculative methods. We have recently gained a lot of new experiences of online teaching due to COVID-19, and the development of tools like ChatGPT creates new waves of wanting to discuss the future of learning. Within the networked learning community, speculative methods could be useful in imagining and foreseeing for example how interactions between networked learners could change, as well as in fostering ideas for rethinking the interaction also between humans and machines.

Balancing Qualitative and Quantitative Data in the Research of Networked Educational Settings: Studies at the Community and Project Levels

Turning to the question of methodology, the chapters of this book include analyses of qualitative and quantitative data from networked educational settings in the early 2020s. In these chapters, the balance between qualitative and quantitative categories of data can be discussed at two distinct levels, at least: the project level and the networked learning research community level. To expand on the earlier reached grounds in the field, both these levels are important to take a closer look at and relate to.

Starting with the community level, this level is addressed by several studies in this volume. These studies tend to be discursive analyses of the concept of Networked Learning and its relationship to other ideas. The community level studies have a philosophical character and are built either on pre-existing data available in other scholars' publications or on reflections on the practice of networked learning (e.g., Brandén; Jandrić & Hayes; Lee & Bligh; Matthews, all this volume). This kind of analysis of networked learning has been part of the community since its inception and is valuable in bringing insights to the field, for example, concerning design aspects, frameworks, or ontological issues of networked learning. Such discussions afford an understanding of the qualities of human-human networks as well as human-nonhuman networks. Generally, these studies relate to the ongoing discussion of the definition of networked learning and particularly to the recent discussion in the last NLC conferences (e.g., Dohn et al., 2020; Jaldemark et al., 2022) and in two articles published in *Postdigital Science and Education* (NLEC, 2021; NLEC et al., 2021). Future work needs to consider whether specific methodologies are definitional of Networked Learning, and in particular whether and how data sources generated from AI-supported settings and learning analytics should change the definition. As mentioned by Jandrić and Hayes (this volume), bio-digital technology is a part of the networked learning field. Therefore, future biological and digital technological development may strongly impact the human-nonhuman intersection of networked educational settings and the possible data available from such settings. The community of networked learning researchers need to embrace and reflect on this development to be able to push the boundaries of our understanding of learning in networked educational settings. To fulfil the potential of this, it is necessary to include many categories of data. Thus, we expect that future publications within the networked learning community will combine the strength of artificial intelligence and learning analytics with in-depth analyses of semi-structured interviews.

At the project level, some studies in the present book use the latter data collection method, semi-structured interviews, in a single data category approach (Acuyo Cespedes & Lee; Hachmann et al.; Wilson et al., all this volume). Here, the authors have worked with transcribing oral data to print, a method commonly applied in educational studies. Interviews and their transcription will surely also have a place in future studies of networked learning, because of their potential to

reach deep insights into human attitudes and perceptions. In the chapters presented here, the data collection method was applied in the design of a convivial tool that should support open data in terms of networked data commons (Wilson et al., this volume); to reveal how rhizomatic networks of students emerge (Hachmann et al., this volume) and to collect university teachers' perceptions of networked learning and emergency remote teaching (Acuyo Cespedes & Lee, this volume).

Other studies at the project level applied several data collection methods, building on different approaches, such as case studies or mixed methods. It follows that these studies worked with several categories of data (e.g., Carbonel; Godsk et al.; Ross & Wilson; Wichmand et al., all this volume). Moreover, they also included a rich plethora of data in their analyses. Particularly the design-based and speculative studies benefitted from such a complex assemblage of data. The speculative approach of Ross and Wilson included hyperlinks, images, text and social media objects. In Carbonel's speculative approach, workshops generated data such as collaborative creation of written definitions, individual problem solving and development of prototypes (e.g., drawings, collages, a set of instructions), and oral and transcribed group discussions of the developed prototypes. In Godsk et al. (this volume), interventions were studied by including data from an assessment rubric with a 5-point Likert scale to assess the learning designs; semi-structured interviews with educators; and learner data in terms of time allocated for online activities, pass rates, perceived learning outcomes and their preferences for and against online materials. These studies are examples of the complexity of studying networked learning educational settings.

The Networked Learning community will continue to thrive if it finds a balance of studies that analyse qualitative and quantitative data. This does not necessarily mean that all studies should work with complex datasets: single-method studies will have a place, as well as studies that combine several data categories. Achieving a balance is important for pushing the boundaries of understanding networked educational settings and for building a strong networked learning community.

Final Remarks

In this concluding chapter, we have provided an initial discussion of questions that emerge from the chapters of the book as focus areas for future research: *Lasting effects of lockdown online teaching and learning?, Digital sustainability for the future, Future roles of networked learning in society, Balancing utopia and dystopia in visions of AI and open data, Speculative methods in research, education and design*, and *Balancing qualitative and quantitative data in the research of networked educational settings: Studies at the community and project levels*. For several of these questions, though the primary basis for articulating them can be found in a (varying) specific section, they appear more widely across the book. We take this as an indication that they are reflections on – and of – the contemporary state of affairs, societally, politically, and educationally. As Jandrić and Hayes put it in their chapter,

"Scholarly research is always closely related to its *Zeitgeist*" (Jandrić & Hayes, this volume, p. 44). More particularly, the issues, for instance, of developing sustainable ways of living; of meeting the lasting consequences of COVID-19 lockdowns (personally, socially and societally); and of adequately harnessing AI in the pursuit of valuable outcomes; permeate public discourse way beyond the realms of education and networked learning. In this sense, it is no surprise that they are also echoed in the themes highlighted for the next Networked Learning conference, to be held in Malta in May 2024: Under the overarching theme of *Networked Learning as a pedagogy of hope*, several sub-themes are articulated, including *Digital futures and environmental renaissance*, *Artificial intelligence, learning analytics and emergent digital technologies* and *Ethical and responsible innovation and research*. These sub-themes would seem to pick up where this book ends, and therefore, we hope, to development of this book's topics in submissions and discussions at the conference.

Further questions could have been emphasised as cutting across the books' chapters; both some that identify other contemporary *Zeitgeist* issues and some that point to more specific debates that persist in our networked learning community. An example of the former would be how hybridity of communication formats can be fostered and maintained continuously *in practice* – that is, how the potentials of hybridity can become sustainably realised in and for the future. Paraphrasing Wichmand et al., the question is: How can we design for the materialisation of hybrid communication? (Wichmand et al., this volume). As we discuss in the Introduction regarding NLC 2022 which was held as a hybrid conference, many issues arise in the realisation of hybrid formats. Given enough experience, some of these can presumably be anticipated and designed for in advance, such as the practical need for space onsite in which to participate in online sessions without disturbing other participants. Other challenges must be tackled every time – in situ, in the process – such as the issue of ensuring that online and onsite participants *actually* have equal participation opportunities. Not just in the set-up of the hybrid format, but in the communication patterns that emerge *in the use* of the hybrid format. Though a lasting effect of the COVID-19 lockdowns may well be a more general uptake of hybrid communication formats, it is an open question for our time what sustainable hybrid communication patterns can be, and how their development can be supported.

As regards specific debates that persistently arise in our networked learning community, an obvious example is the question of how to define the field of Networked Learning. Several of the chapters in the book reference this debate – and rightly so, as it is ongoing and (as alluded to above) was recently reinvigorated by the invitation for redefinition set out by the Networked Learning Editorial Collective (NLEC, 2021) and the subsequent combined community response in NLEC et al. (2021). However, for the purpose of a few last remarks; rather than pursue the question in full, we wish to highlight one aspect of it, which has received somewhat less attention: As Lee and Bligh note (this volume), focus in the discussion tends to be on the term "network" – what it means and how to support it – at the expense of the term "learning". A similar comment was made by Öztok in the previous volume in this series (Öztok, 2021). Referring to the characterisation by

De Laat and Ryberg (2018) of networked learning as underpinned by a range of theoretical outlooks, Öztok argued that "there is a need for more discussion on learning... since designing networked learning should ... be ... a careful pedagogical design, distilled through a clear understanding of what learning is." (Öztok, 2021, p. 12).

We agree with Öztok that specific designs require specific understandings. We also agree with Lee and Bligh that we need to focus on "learning ([as] the end)" rather than (only) on the "network ([as] the means)" (Lee & Bligh, this volume, p. 175). As our final comment, we would like to call upon the significance of exploring this issue more thoroughly: Is it possible to condense theoretical understandings of learning within the Networked Learning field into a common delineation? What would that delineation encompass – and what would it leave out? Would it mean that some activities previously categorised as "networked learning" should then not have that label – not because they didn't live up to the criteria of being networked, but because they were not activities of "learning" in the delineated sense? Alternatively, if a common delineation cannot be found, how do we expect specific designs to be useful across the multitude of theoretical underpinnings? Or is a variety of theoretical outsets in itself a way to facilitate the development of new designs for learning that can inspire and show their worth in practice, complementing rather than surpassing each other? We hope that questions such as these will be picked up in future discussions aimed at defining the role of "learning" within Networked Learning. Equally important, we hope they will spark metatheoretical reflection on how the three constituents of theory, design and practice interact within our field – and on whether and how these constituents combine to move the field forward.

References

Bartolic, S. K., Boud, D., Agapito, J., Verpoorten, D., Williams, S., Lutze-Mann, L., Matzat, U., Moreno, M. M., Polly, P., Tai, J., Marsh, H. L., Lin, L., Burgess, J.-L., Habtu, S., Rodrigo, M. M. M., Roth, M., Heap, T., & Guppy, N. (2022). A multi-institutional assessment of changes in higher education teaching and learning in the face of COVID-19. *Educational Review, 74*(3), 517–533. https://doi.org/10.1080/00131911.2021.1955830

Beetham, H., Collier, A., Czerniewicz, L., Lamb, B., Lin, Y., Ross, J., Scott, A.-M., & Wilson, A. (2022). Surveillance practices, risks and responses in the post pandemic university. *Digital Culture & Education, 14*(1), 16–37. https://www.digitalcultureandeducation.com/volume-14-1

Blackmon, S. J., & Moore, R. L. (2023, online ahead of print). Using networked learning to improve learning analytics implementation. *Journal of Computing in Higher Education*, 1–19. https://doi.org/10.1007/s12528-023-09362-5.

Bozkurt, A., Xiao, J., Lambert, S., Pazurek, A., Crompton, H., Koseoglu, S., et al. (2023). Speculative futures on ChatGPT and generative artificial intelligence (AI): A collective reflection from the educational landscape. *Asian Journal of Distance Education, 18*(1), 53–130.

Cerratto-Pargman, T., Lindberg, Y., & Buch, A. (2023). Automation is coming! Exploring future (s)-oriented methods in education. *Postdigit Science Education, 5*, 171–194. https://doi.org/10.1007/s42438-022-00349-6

De Laat, M., & Ryberg, T. (2018). Celebrating the tenth Networked Learning conference: Looking back and moving forward. In N. Bonderup Dohn, S. Cranmer, J. A. Sime, M. de Laat, & T. Ryberg (Eds.), *Networked learning. Reflections and challenges* (pp. 1–20). Springer. https://doi.org/10.1007/978-3-319-74857-3_1

Dohn, N. B., Hodgson, V., & McConnell, D. (2020). Can networked learning be defined – And should it be? In S. B. Hansen, J. J. Hansen, N. B. Dohn, M. de Laat, & T. Ryberg (Eds.), *Proceedings for the twelfth international conference on Networked Learning 2020* (pp. 348–350). Aalborg University.

Eguara, O. (2022). Becoming a networked learner: Unpacking identity development in networked learning communities. *Studies in Technology Enhanced Learning, 2*(3), 1–16.

Eradze, M., De Martino, D., Tinterri, A., Albó, L., Bardone, E., Sunar, A. S., & Dipace, A. (2023). After the pandemic: Teacher professional development for the digital educational innovation. *Education Sciences, 13*(5), 432.

Hodges, C., Moore, S., Lockee, B., Trust, T., & Bon, A. (2020). The difference between emergency remote teaching and online Learning. *EDUCAUSE Review Magazine*. https://er.educause.edu/articles/2020/3/the-difference-between-emergency-remote-teaching-and-online-learning

Jaldemark, J., Håkansson Lindqvist, M., Mozelius, P., Öberg, L.-M., De Laat, M., Bonderup Dohn, N., & Ryberg, T. (2022). *Proceedings for the Thirteenth International Conference on Networked Learning* 2022 (NLC2022), Sundsvall, Sweden, May 16–18, 2022. Sundsvall, Sweden 2022.

Lindberg, Y. (2023). Review of Jen Ross (2023). Digital futures for learning: Speculative methods and pedagogies. *Postdigital Science and Education (2023)*. https://doi.org/10.1007/s42438-023-00396-7

Networked Learning Editorial Collective (NLEC). (2021). Networked Learning: Inviting redefinition. *Postdigital Science and Education, 3*(2), 312–325. https://doi.org/10.1007/s42438-020-00167-8

Networked Learning Editorial Collective (NLEC), Gourlay, L., Rodríguez-Illera, J. L., et al. (2021). Networked learning in 2021: A community definition. *Postdigital Science and Education, 3*(2), 326–369.

Ní Fhloinn, E., & Fitzmaurice, O. (2021). Challenges and opportunities: Experiences of mathematics lecturers engaged in emergency remote teaching during the COVID-19 pandemic. *Mathematics, 9*(18), 2303. https://www.mdpi.com/2227-7390/9/18/2303

Öztok, M. (2021). Tracing the definition of Networked Learning in Networked Learning research. In N. B. Dohn, J. J. Hansen, S. B. Hansen, T. Ryberg, & M. De Laat (Eds.), *Conceptualizing and innovating education and work with Networked Learning* (pp. 1–15). Springer International Publishing. https://doi.org/10.1007/978-3-030-85241-2_1

Qvortrup, A., & Lykkegaard, E. (2023). Building back better: Lessons learned from a year with COVID 19 caused changes to school and teaching. *Education, 3–13*, 1–19. https://doi.org/10.1080/03004279.2023.2186975

Ross, J. (2022). *Digital futures for learning: Speculative methods and pedagogies*. Taylor & Francis.

Suoranta, J., Teräs, M., Teräs, H., et al. (2002). Speculative social science fiction of digitalization in higher education: From what is to what could be. *Postdigit Science Education, 4*, 224–236. https://doi.org/10.1007/s42438-021-00260-6