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| Georg-Eckert-Institut

# Digital Methods in (International and Comparative) Educational Research

**Felicitas Macgilchrist**

**Leibniz-Institute for Educational Media | Georg-Eckert-Institute**

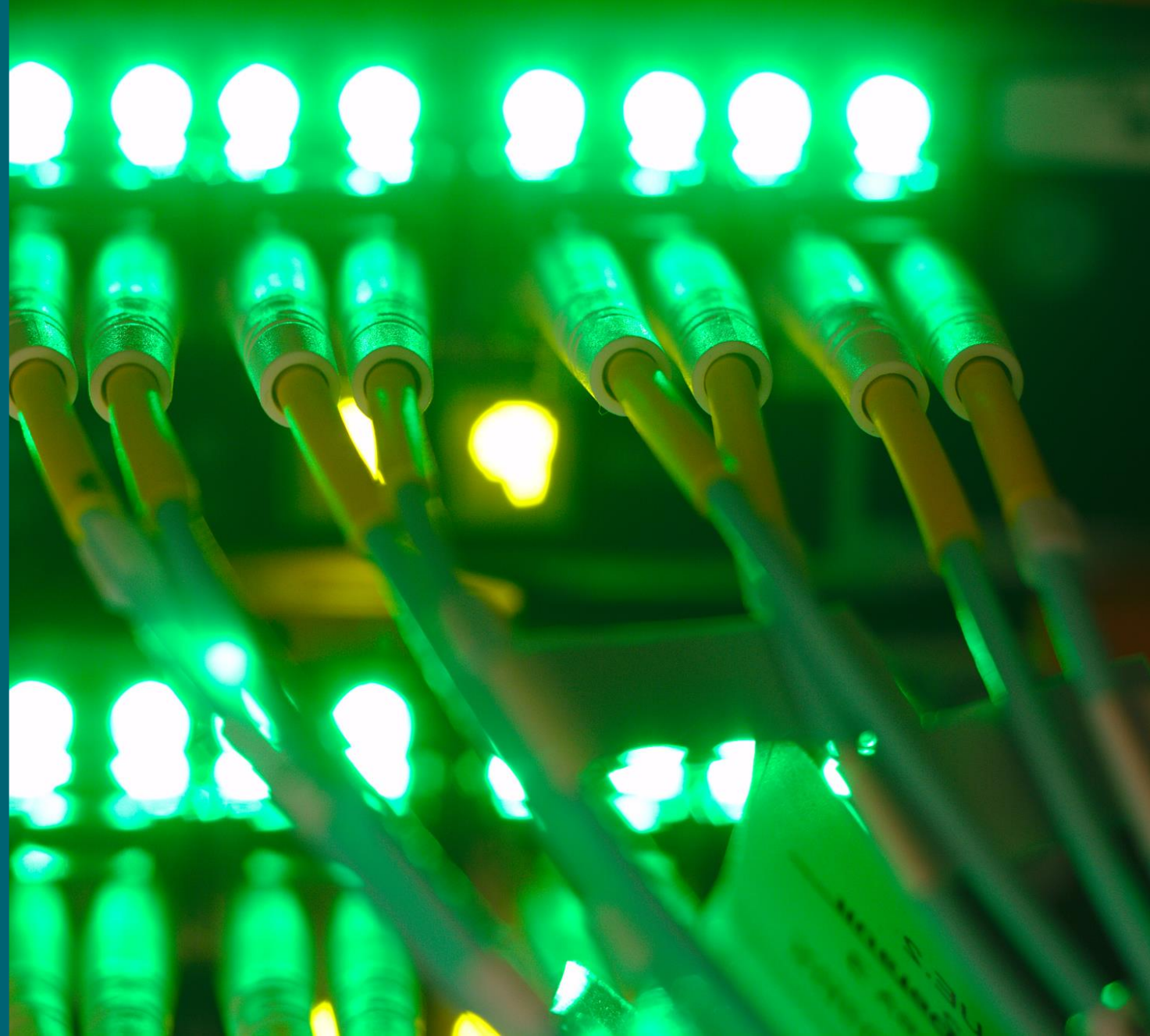
**Georg-August-Universität Göttingen**

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**VIE Winter School, 10 December 2021**

What do you  
associate with  
“digital methods”?



# Digital methods

“Digital Methods can be defined as the repurposing of the inscriptions generated by digital media for the study of collective phenomena.”  
(Venturini et al 2018)

“By digital methods we mean a series of novel computer-aided methods for the analysis of digital traces, as they are increasingly applied within communication and media research.” (ZeMKI, Bremen)

Digital methods ... seek to learn from the methods built into the dominant devices online, and repurpose them for social and cultural research.”  
(Digital Methods Initiative Amsterdam)

“At its most basic level [using digital methods] can include the use of digital audio recorders for interviews”  
(Savin-Baden & Tombs 2017)

“In this collection, we define digital methods as the use of online and digital technologies to collect and analyse research data.” (Snee et al, 2016)

Not just platform dynamics

Please interrupt,  
raise questions!



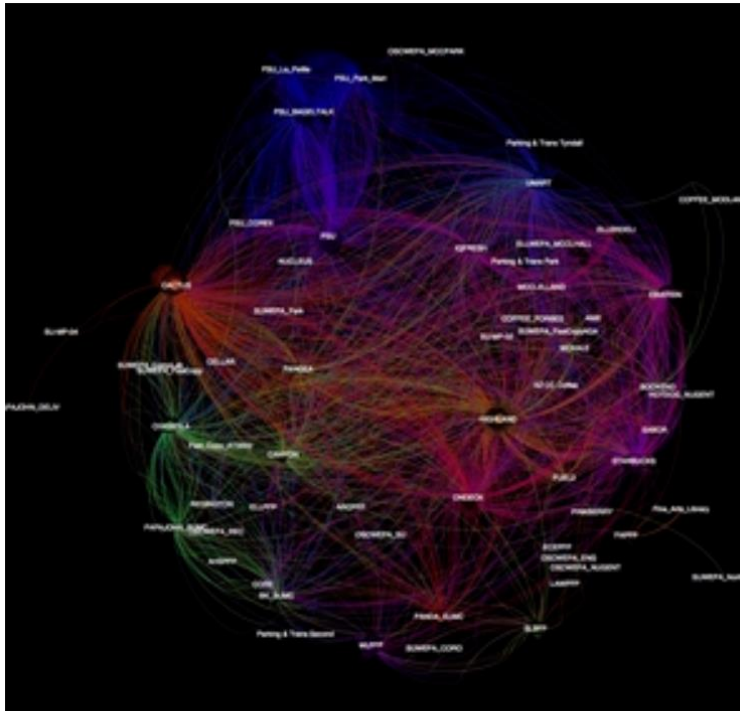
- I Computational approaches
- II Qualitative approaches
- III Post-qualitative approaches



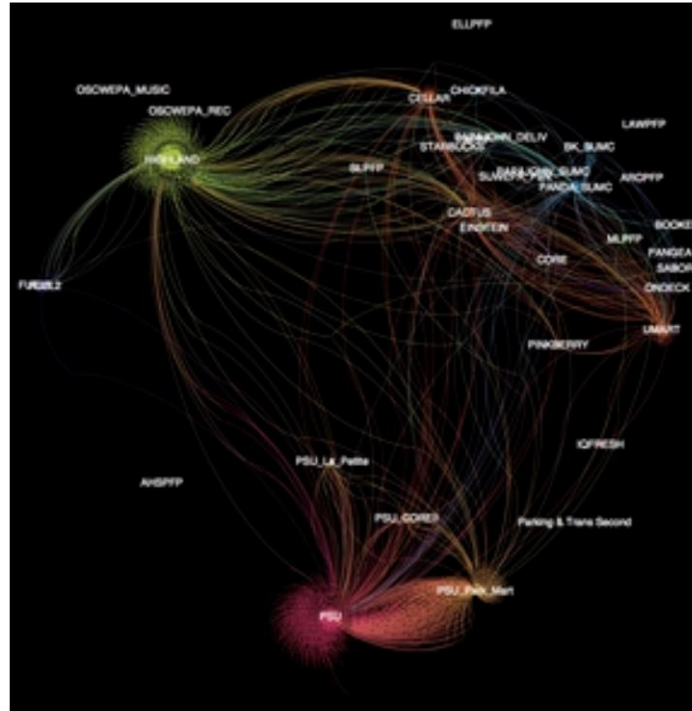
# University of Arizona's Smart Campus



# University of Arizona's Smart Campus



This data visualization shows the traffic patterns of UA freshmen, as told by their CatCard usage, in a select area of campus between 10 a.m. and 2 p.m. on a weekday. (Image courtesy of Sudha Ram)



The traffic patterns of UA freshmen, as told by their CatCard usage, in a select area of campus between 6 a.m. and 10 p.m. on a weekday (Image courtesy of Sudha Ram)

**“Of all the students who drop out at the end of the first year, with our social integration measures, we're able to do a prediction at the end of the first 12 weeks of the semester with 85 to 90 percent recall,” [Sudha] Ram said. “That means out of the 2,000 students who drop out, we're able to identify 1,800 of them.”**

# I Computational approaches

## Social network analysis

Förschler, A. (2018). Das "Who is who?" der deutschen Bildungs-Digitalisierungsagenda - eine kritische Politiknetzwerk-Analyse. *Pädagogische Korrespondenz*, 58, 31-52.

**Software:** UCInet, NodeXL, Gephi or programme with R (e.g. igraph)







# I Computational approaches

Social network analysis

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Knowledge graph

Davies, H. C., Eynon, R., & Salveson, C. (2020). The Mobilisation of AI in Education: A Bourdieusean Field Analysis. *Sociology*, 55(3), 539-560.





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Social network analysis

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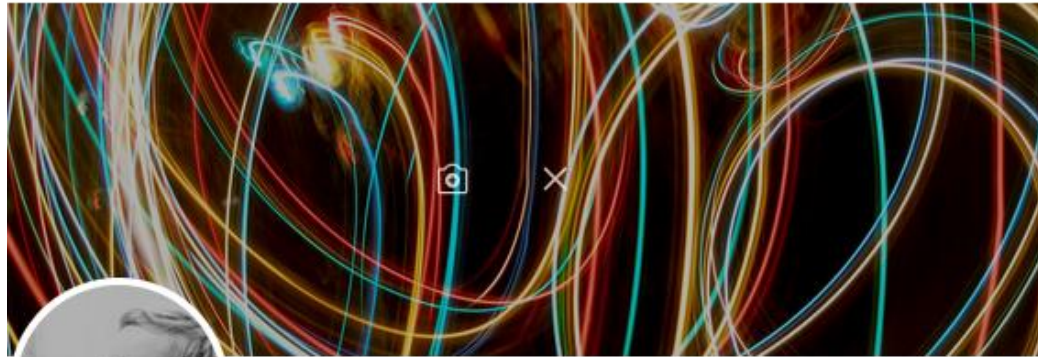
Social media analysis

Karsgaard, C., MacDonald, M., & Hockenull, M. (2021). Rename and resist settler colonialism: Land acknowledgments and Twitter's toponymic politics. *First Monday*, 26(2).

DMI, Amsterdam: <https://wiki.digitalmethods.net/Dmi/ToolDatabase>

✕ Edit profile

Save



Name

Felicitas Macgilchrist

Bio

Discourse ethnographer, educationalist, occasional media theorist, fan of messiness - especially in research.

Location

In the air







digital methods  
un-typology  
critical toponymy

We describe our analysis of Twitter toponymics as an “un-typology” in an effort to follow the resistant practices of the Twitter users we are tracing, as well as to ourselves resist the violent standardization, recognition, and categorization inherent to colonialism, which draws land and people into settler structures. [...] In keeping with users’ resistant and flexible usage of the free-form field, we here describe loose clusters of toponyms, rather than outlining strict categories or precisely quantifying toponymic practices, both of which risk reifying categories rather than expressing the fluidity of toponymic resistance [...].

# I Computational approaches

Social network analysis

Förschler, A. (2018). Das "Who is who?" der deutschen Bildungs-Digitalisierungsagenda - eine kritische Politiknetzwerk-Analyse. *Pädagogische Korrespondenz*, 58, 31-52.

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Data packet sniffing

Tools and Workshops from University of Gothenburg: <https://github.com/paddlelab>

Hillman, T. (2021) <https://www.edu-digitalinequality.org/2021/07/23/shining-a-light-behind-the-gui-of-digital-services-used-in-schools/>

Jornitz, S., & Macgilchrist, F. (forthcoming). Datafizierte Sichtbarkeiten: Vom Panopticon zum Panspectron in der schulischen Praxis. *MedienPädagogik*.



Exclude host

method



Heatmap  Trajectories  Packets



- 43 clients
- 1 2 3
  - 4 5 6
  - 7 8 9
  - 10 11
  - 12 13
  - 14 15
  - 16 17
  - 18 19
  - 20 21
  - 22 23
  - 24 25
  - 26 27
  - 28 29
  - 30 31
  - 32 33
  - 34 35
  - 36 37
  - 38 39
  - 40 41
  - 42 43

Packets - 21733

|                       |          |
|-----------------------|----------|
| adservice.google.com  | 14:03:58 |
| adservice.google.de   | 14:03:57 |
| ice.360yield.com      | 14:03:56 |
| htlb.casalemedia.com  | 14:03:56 |
| tix.3lift.com         | 14:03:56 |
| mp.4dex.io            | 14:03:56 |
| www.google.com        | 14:03:55 |
| www.google.com        | 14:03:55 |
| maps.gstatic.com      | 14:03:55 |
| www.gstatic.com       | 14:03:55 |
| c.amazon-adsystem.com | 14:03:55 |
| c.amazon-adsystem.com | 14:03:55 |
| c.amazon-adsystem.com | 14:03:55 |

< 1 2 3 4 5 ...

# I Computational approaches: Some challenges

## Computational methods

...can seduce into tech-led research

...look too good

...can decontextualize

...suggest “objectivity”

...raise ethical issues of “found data”

...are (semi-)fictional:

“Networks are both science fiction and the historical present. They describe future projections as though they really existed; they relay past events as if they were unfolding in the present. [...]

Technical networks cut continuous space and time into slices of connectivity: they project links and cut noise to create neat lines between transmitters and receivers.” (Chun 2016: 50)



# I Computational approaches

Computational methods

Combined with

... reflexivity

... educational (sociological, media, philosophical and/or theoretical, conceptual, etc.) questions

... interdisciplinarity (?)

# Questions & Comments



- I Computational approaches
- II Qualitative approaches
- III Post-qualitative approaches





# II Qualitative approaches

Walkthrough

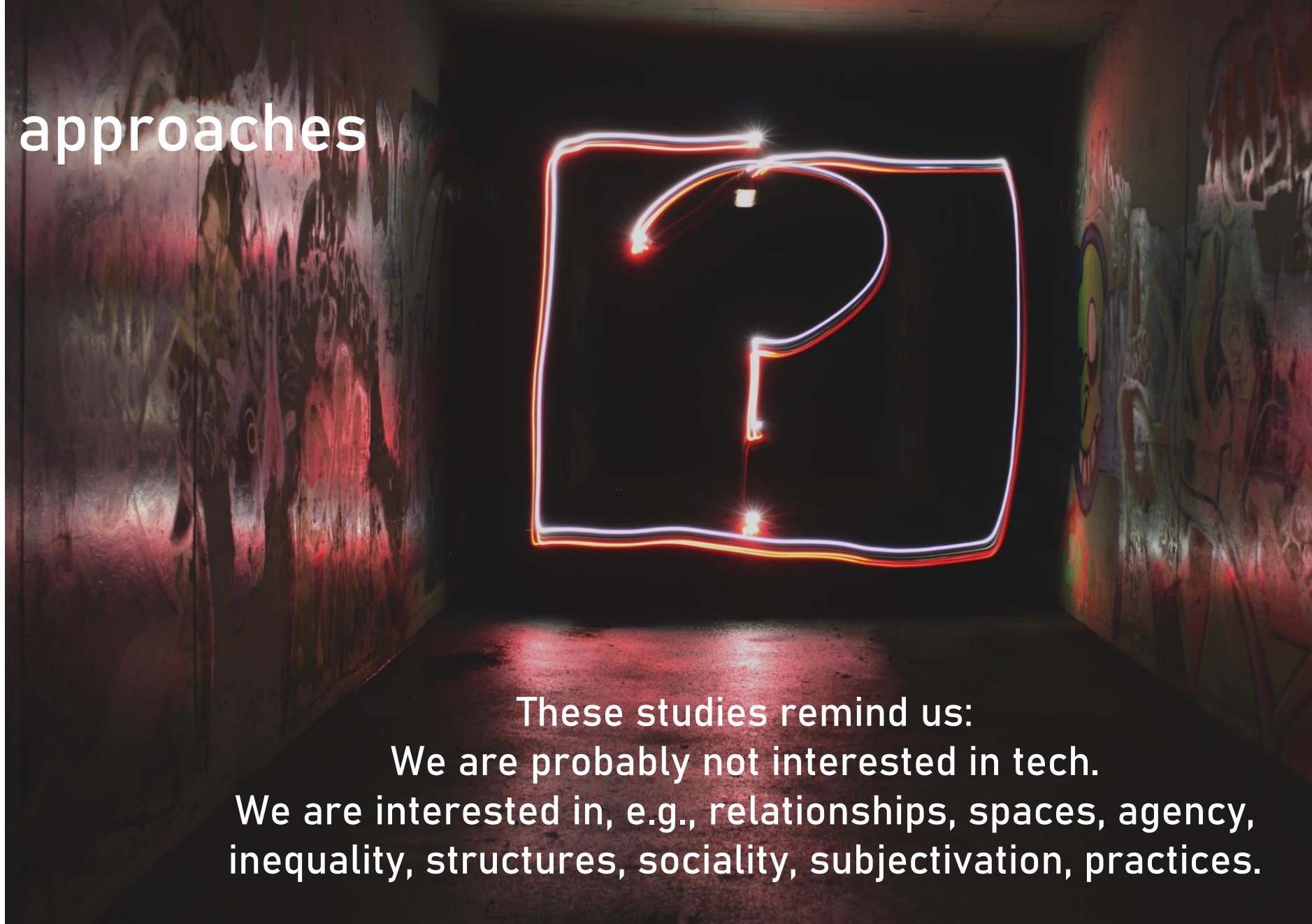
Digital storytelling

Design-Based Research

Online interviewing

&

content analysis,  
corpus analysis,  
discourse analysis,  
thematic analysis,  
narrative analysis,  
grounded theory,  
etc. etc. etc.



These studies remind us:  
We are probably not interested in tech.  
We are interested in, e.g., relationships, spaces, agency,  
inequality, structures, sociality, subjectivation, practices.

# II Qualitative approaches

## (Post)digital ethnography

Wang, T. (2013). Why big data needs **thick data**. <https://medium.com/ethnography-matters/why-big-data-needs-thick-data-b4b3e75e3d7>

Kozinets, R. V. (2020). **Netnography: The Essential Guide to Qualitative Social Media Research**. Sage.

Pink, S., Horst, H., Postill, J., Hjorth, L., Lewis, T., & Tacchi, J. (2016). **Digital Ethnography. Principles and Practice**. Sage.

Hine, C. (2015). **Ethnography for the Internet: Embedded, Embodied and Everyday**. Bloomsbury.

# II Qualitative approaches

## (Post)digital ethnography

## Devs: Unpacking the underpinnings

Wang, T. (2013). Why big data needs thick data. <https://medium.com/ethnography-matters/why-big-data-needs-thick-data-b4b3e75e3d7>

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Hine, C. (2015). *Ethnography for the Internet: Embedded, Embodied and Everyday*. Bloomsbury.

Dixon-Román, E., Nichols, T. P., & Nyame-Mensah, A. (2020). The racializing forces of/in AI educational technologies. *Learning, Media and Technology*, 45(3), 236-250.

Perrotta, C., & Selwyn, N. (2020). Deep learning goes to school: toward a relational understanding of AI in education. *Learning, Media and Technology*, 45(3), 251-269.

Williamson, B. (2015). Digital methodologies of education governance: Pearson plc and the remediation of methods. *European Educational Research Journal*, 15(1), 34-53.

Weich, A., Deny, P., Priedigkeit, M., & Troeger, J. (2021). Adaptive Lernsysteme zwischen Optimierung und Kritik. *MedienPädagogik*, 44, 22-51.

Macgilchrist, F. (2019). Cruel optimism in edtech: When the digital data practices of educational technology providers inadvertently hinder educational equity. *Learning, Media and Technology*, 44(1), 77-86.

## II Qualitative approaches: Some challenges



Translating methods into online spaces

...can overlook the “mediality” of the exchange

...faces issues of building visibility, trust and intimacy

...needs curating (e.g., music at start of online sessions)

...requires infrastructure (proprietary, open access, storage, GDPR, climate)

...can come with high expectations of digital smoothness

# II Qualitative approaches



Translating methods into online spaces

...can also open spaces for exploration, for trial and error experimentation, for embracing uncertainty and for rejoicing in “good enough” data!

# Questions & Comments



- I Computational approaches
- II Qualitative approaches
- III Post-qualitative approaches  
(incl. speculative methods)



# III Post-qualitative approaches / speculative methods

„[D]igital education practice, policy and research over-emphasise control, efficiency and enhancement, neglecting the ‘not-yetness’ of technologies and practices which are uncertain and risky.” (Ross 2017: 214)

Ross, J. (2017). Speculative method in digital education research. *Learning, Media and Technology*, 42(2), 214-229.  
and see Donna Haraway on SF (string figures)



# III Post-qualitative approaches

## Design oriented methods

Allert, H., & Richter, C. (2020). Learning Analytics: subversive, regulierende und transaktionale Praktiken. In S. Iske, J. Fromme, D. Verständig, & K. Wilde (Eds.), *Big Data, Datafizierung und digitale Artefakte* (pp. 15-36). Springer VS.

## Speculative ethnographies

Dai, Y., & Arnberg, B. (2021). "We Have to Survive, First": Speculative Ethnographies of Chinese Student Experience During COVID-19. *Cultural Studies <-> Critical Methodologies*.

## Social science fiction

Costello, E., Brown, M., Donlon, E., & Girme, P. (2020). 'The Pandemic Will Not be on Zoom': A Retrospective from the Year 2050. *Postdigital Science and Education*.

## Digital fieldwork

Gabrys, J. (2021). The Forest That Walks: Digital Fieldwork and Distributions of Site. *Qualitative Inquiry*.

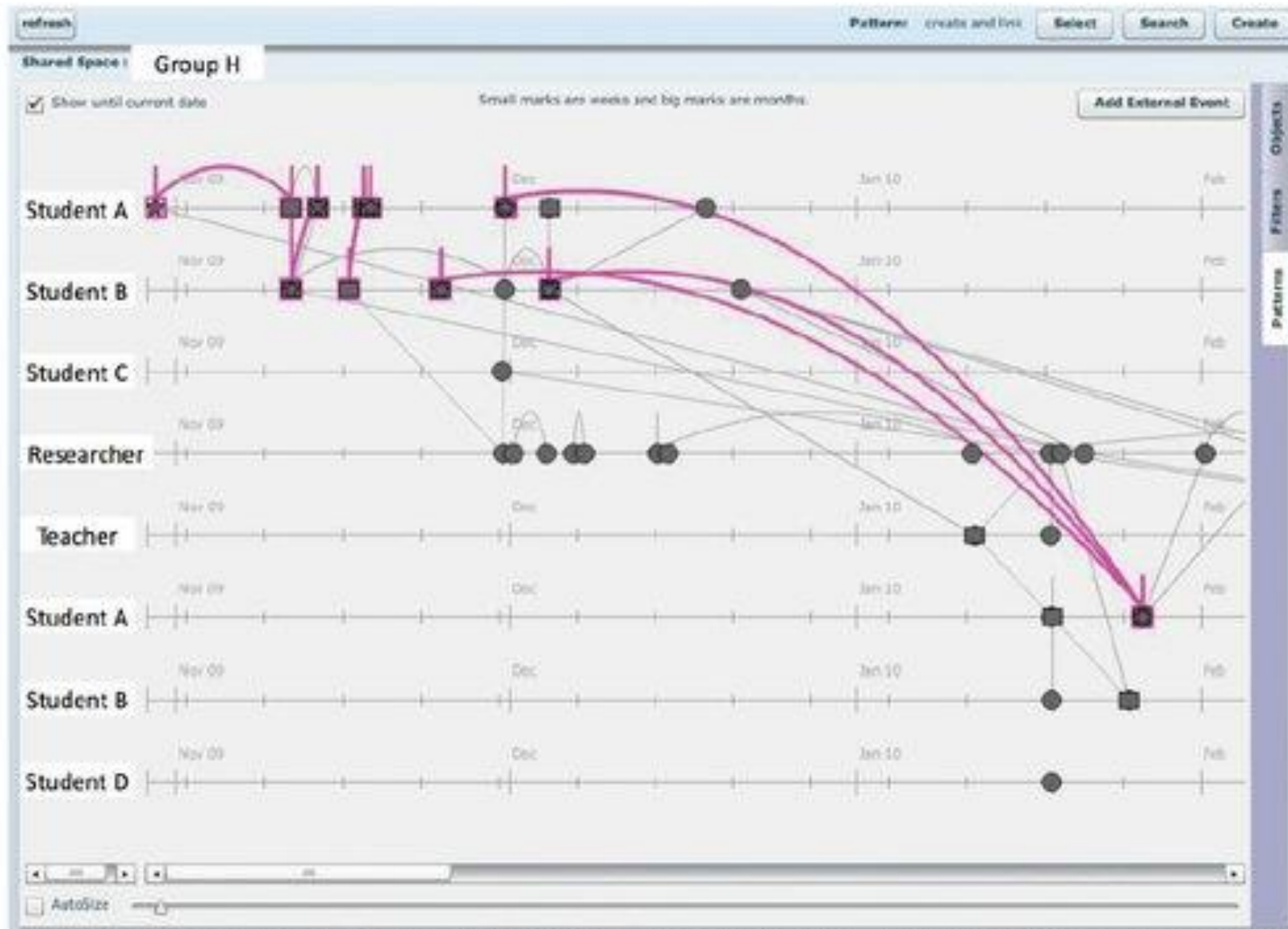


Figure 2: Screenshot of the Timeline-Based Analyzer (TLBA), highlighting a user-defined pattern.

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Gabrys, J. (2021). The Forest That Walks: Digital Fieldwork and Distributions of Site. *Qualitative Inquiry*.

## The Pandemic Will Not be on Zoom

The Pandemic will not teach you algebra when old people equal zero

The Pandemic will not prepare you for jobs that do not exist yet when jobs do not exist

The Pandemic will not give you tenure

The Pandemic will not be graded

The Pandemic will not be sponsored by TurnThemIn,  
RetinaScanMyEssay or X-RayedLearner

The Pandemic will not cite your work

The Pandemic will not be patented, copyrighted, contained or explained

The Pandemic will not be described in 500 words by next Friday  
because the Pandemic will not be on Zoom

# III Post-qualitative approaches

## Design oriented methods

Allert, H., & Richter, C. (2020). Learning Analytics: subversive, regulierende und transaktionale Praktiken. In S. Iske, J. Fromme, D. Verständig, & K. Wilde (Eds.), *Big Data, Datafizierung und digitale Artefakte* (pp. 15-36). Springer VS.

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# Forest Monitoring Designed for Action

Global Forest Watch offers the latest data, technology and tools that empower people everywhere to better protect forests.



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# III Post-qualitative approaches: Some challenges



Post-qualitative / speculative methods

...can lack rigour for some scholars (has been called “methodologically generous”, “methodologically imprecise”, Truschkat & Bormann 2013)

...can lapse into manifestos

...have to remember their research question

# III Post-qualitative approaches



## Post-qualitative / speculative methods

...can also open spaces for exploration, for co-creative trial and error experimentation, for embracing uncertainty, for rejoicing in “good enough” data and for researching otherwise!

...can decentre humans and “dismantle the usual understanding of bodies in sites that lead to unexamined understandings of sensing and knowing” (Gabrys 2021)

...can enable a postdigital overcoming of online/offline, real/virtual, analogue/digital binaries

...are attractive to schools as project partners



# Questions & Comments



# Digital methods

turn the volume up or  
down on computational  
methods

add more or less  
interpretive and  
contextualising  
reflexivity

play more or less with  
postdigital constellations

invite everyone to  
media studies

- How can digital methods be made visible for comparative and international education research?
- How can we use computational methods without chunking too neatly; how to retain the “leaks” (Chun 2016)?
- How to account for the "mediality" of (online) spaces of exchange?
- How to document “how users may shift their worldviews to accommodate the underlying logics and implicit presumptions of the algorithms they use regularly” (Gillespie et al 2014: 187)
- How to make yourself visible as a "participant" in online participant observation / ethnography?
- How to build trust in online settings?
- How to create "gaps" and openings in online settings preceding an online interview?
- How to find methods courses or curricula? E.g. <https://wiki.digitalmethods.net>
- Should we orient to other disciplines for inspiration? If so, which ones?

- What key methodological competencies should educational researchers develop today?
- How can these be taught / learnt?
- Do we need theory first?



- How to centre ethics?
- How to contextualise and theorise?