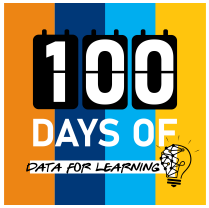

Further reading and/or Interesting resrouces:

- Biesta, G. (2005). Against learning. Reclaiming a language for education in an age of learning. *Nordic Studies in Education*, *25*(1), 54-66. Read here.
- Gašević, D., Dawson, S., & Siemens, G. (2015). Let's not forget: Learning analytics are about learning. *TechTrends*, *59*(1), 64-71. Read here.
- Kitchin, R. (2014). *The data revolution: Big data, open data, data infrastructures and their consequences*. Read here.
- Maier, M., Bartoš, F., Stanley, T. D., Shanks, D. R., Harris, A. J., & Wagenmakers, E. J. (2022). No evidence for nudging after adjusting for publication bias. *Proceedings of the National Academy of Sciences*, *119*(31), e2200300119. Read here.

Food for thought

THINGS TO EXPLORE... NEXT STEPS; WAYS TO GO FORWARD;

- How could Intelligent systems / Machine Learning / Learning Analytics help in (the decision making process of) education? Both for students as educators?
- How can machine learning in education help out with heavy lifting? Is this something we want? Why?
- How to create a balance in the efficiency that datafication has to offer and the human factor that is inherently connected to education?
- What are the effects of datafication and self-regulated learning on students their (development of) autonomy, self esteem, and self-efficacy?
- What are the downsides of datafication in education? In this article, this was quite underrepresented: ethics, agency, privacy & security, other...

WHAT DOES THIS LEARN US ABOUT DATA FOR LEARNING

- As humans, we have the tendency to **not** be **good at making short term decisions** in learning (but also in other fields). This holds true for **students**, but also for **educators** (focus on passing this course instead of really understanding this subject). Maybe data can help out in this: e.g. learning **dashboards** generated by analytics or **nudging** by intelligent systems?
- Next to how machines can help out in helping with our 'blind spot' they could also help in doing '**heavy lifting**' in times of growing students. If 'tasks' are being split up between human teachers and supporting AI, we could create a more **efficient workflow** in which teachers have more time and headspace to transfer knowledge and guide students. Machine Learning is ready for this (we have the know how to build such intelligent tools) but **are we ready for this**? What **challenges** lie ahead of us?
- How do we want to use ML and AI in learning. Should we always take **intelligent advise**? Or should we think of another **human factor** in this chain to make/keep education **human** instead of **efficient**?
- How does data for learning relate to **autonomy**, **agency** and **feeling outnumbered** by data/AI. What is the effect of this on **learning experiences and -outcomes**?
- "In the beginning I felt frustrated by this article because of the dystopia feel of it. But now that we have this discussion, I realize it is more about how we just the data: combining it with education science and pedagogy. (Luckily) we are still at the starting point and we are not as lost as I felt when i began to read the article."

What do we learn from this?

Responses to the article

RESPONSES TO THE ARTICLE

- "The article provides a nice **overview** of the **landscape**: how humans use data in learning, but also how machines use data to learn.
- "The content of the article is nice, but how it is presented is not: **why is it not addressed** that data can also lead to **bad things** (**privacy, security, ethics...**)"
- "The article is full of **jargon**; which starts to make sense along the ways when you continue reading. Although it is quite **comprehensive**, it might be the case that already **a lot has changed** in this field since 2019."
- "The article is quite **provocative**. Not only on data for learning. But also learning in general. I like it: it **shakes things up** and sparks this discussion."
- "What I missed actually is a (side) note that **machine learning is not (exactly) how we as humans learn.** I would have liked to read more about how we can use machine learning (learning analytics) to better understand how students learn; and thus how we can offer them better education"
- "Next to the **behaviorism approach**, I really liked how the article underlines that we as **humans** are **biased** in making rational decisions. Machines can help out in that: e.g. through **learning analytics**: helping us to **make decisions the best way instead of making the best decisions**.
- "Instead of the machine being the **expert** (telling the students what to learn or study) we should aim for machines presenting a **mirror** to the learner: 'As the intelligent system, this is my observation - please draw your own conclusion and plan your next steps.' By taking this approach, machine behaviorism becomes **more than nudging** but turns really into a **means empowering** people to learn."
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100 DAYS OF...
Data for Learning
Journal Club
27-09-2022

About the article

ABOUT THE ARTICLE

1) The paper explores some of the ways **'learning'** is being defined, promoted, and practiced in educational activity through the use of **contemporary data-driven technologies**.
2) The purpose of it is to analyze how methods associated with **'data science'** are involved in (re)formulating, both conceptually and materially, what has become the central concern of contemporary education: 'learning'.
3) The paper considers specific techniques of **'machine learning'** that describe software which is 'trained' to perform specific tasks, either through exposure to **large data sets** or with **rewarding systems**. E.g. how machine learning exemplifies how data driven technologies are beginning to influence educational activity (**reinforcement learning**). But also, how **behavioral economics** are increasingly utilized in educational software design to **frame learner choices** in ways that influence decisions towards optimal outcomes (**persuasive computing**, **hypernudging**).
3) These techniques illustrate the escalating dominance of 'data science' in education, through which behaviorist psychology is powerfully invested in **future educational practices**.
4) Future education may tend toward very specific forms of behavioural governance – a **'machine behaviourism'** – entailing combinations of radical behaviorist theories and machine learning systems, that appear to **work against** notions of **student autonomy** and **participation**, seeking to **intervene** in **educational conduct** and shaping learner behavior towards predefined aims.

Machine behaviourism: Future visions of 'learnification'and 'datafication'across humans and digital technologies

Knox, J., Williamson, B., & Bayne, S. (2020).