## Learning analytics in a time of an insatiable thirst for data and evidence: A provocation



Public lecture, 22 November, 2017 - International Seminar "Evidence-based research: methodological approaches and practical outcomes" hosted by the UNESCO Chair in Education and Technology for Social Change at the Open University of Catalonia, Spain





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# Open Public Session Lecture: Will the future of higher education be evidence-based?







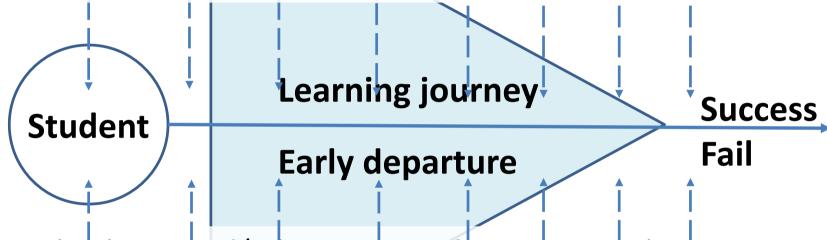
#### Some (more?) important questions to ask are...

- Why is there a need for evidence? (e.g. efficiency, transparency, accountability?)
- Who will define what counts as evidence and what is not regarded as evidence? (e.g. the role of gatekeepers, those who formulate criteria and standards; quantitative/qualitative data)
- Who will verify the evidence as valid and appropriate for the purpose for and context in which it was collected?
- Who will use the evidence and for what purpose?
- What is the relationship between data, evidence, intelligence, knowledge and wisdom?
- And finally, how do these questions impact the collection, analysis and use student data?





Mapping the collection, analysis and use of student demographic and learning data to inform/support pedagogy and learning



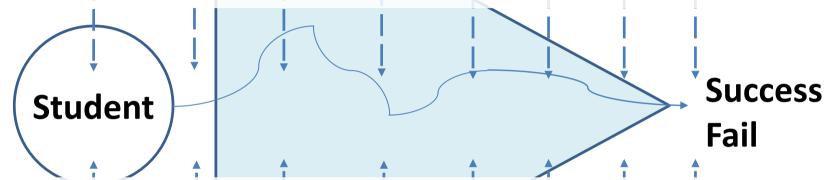
- What happened/is happening descriptive analytics
- Why did it happen/is it happening diagnostic analytics
- What will happen predictive analytics
- How can we make it happen prescriptive analytics





What data do we need to describe, understand, predict and prescribe the learning journey?

What data do we **already** have, in which formats, for what purposes, where are the data stored and governed by who?



What data don't we have and that we need to describe, understand, predict and prescribe the learning journey? What are our **assumptions** about learning, and data-as-evidence? What data do **students** need to make better informed choices and to take ownership of their learning journey?





#### (Re)considering learning analytics:



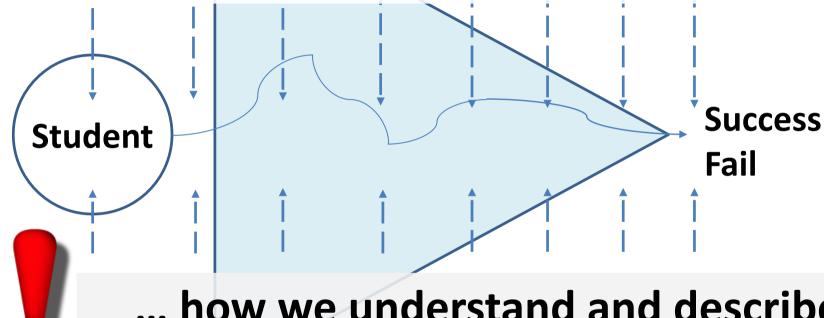
#### Learning analytics

- defines 'learning', 'progression' and '(dis)engagement';
- decides samples, what data to collect (and when), what to use as proxies and what data to ignore;
- who will/ how to interpret the analyses and findings;
- decides what findings to share with whom as well as choosing methods of dissemination (e.g. dashboards, early alerts, etc.)





Our understanding of learning analytics as process of collecting evidence and measuring/increasing success and efficiency is shaped by...











COLUMN | POSTSECONDARY LEARNING What Can Higher Ed Learn from Precision Medicine? By Michelle R. Weise Nov 13, 2017

Students as broken and sick...

"Focused hospitals are built around a very specific value-adding process activity: They take incomplete or broken parts and then transform them into more complete outputs of higher value while charging a fee for the outcome."

Source credit: https://www.edsurge.com/amp/news/2017-11-13-what-can-higher-ed-learn-from-precision-medicine



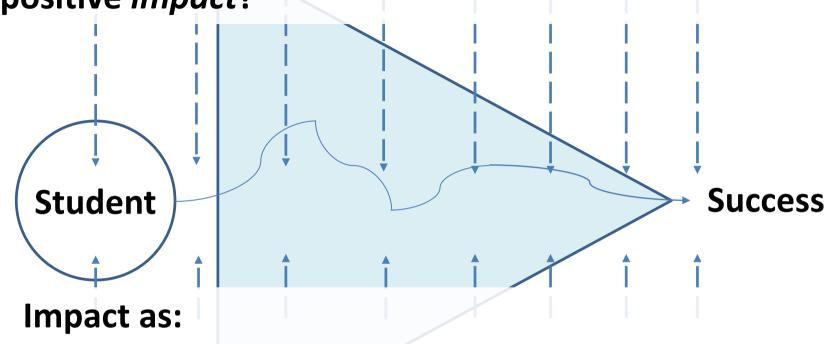








How will we know that learning analytics is having a positive *impact*?



- More successful/satisfied students?
- More effective and appropriate teaching?
- Better allocation/utilisation of resources?







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https://pdfs.semanticscholar.org/245d/03eb70a6ad06314257d997f570b1a71ab4cc.pdf

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# Where is the evidence? A call to action for learning analytics

#### Conference Item

How to cite:

Ferguson, Rebecca and Clow, Doug (2017). Where is the evidence? A call to action for learning analytics. In: LAK '17 Proceedings of the Seventh International Learning Analytics & Knowledge Conference, ACM International Conference Proceeding Series, ACM, New York, USA, pp. 56–65.











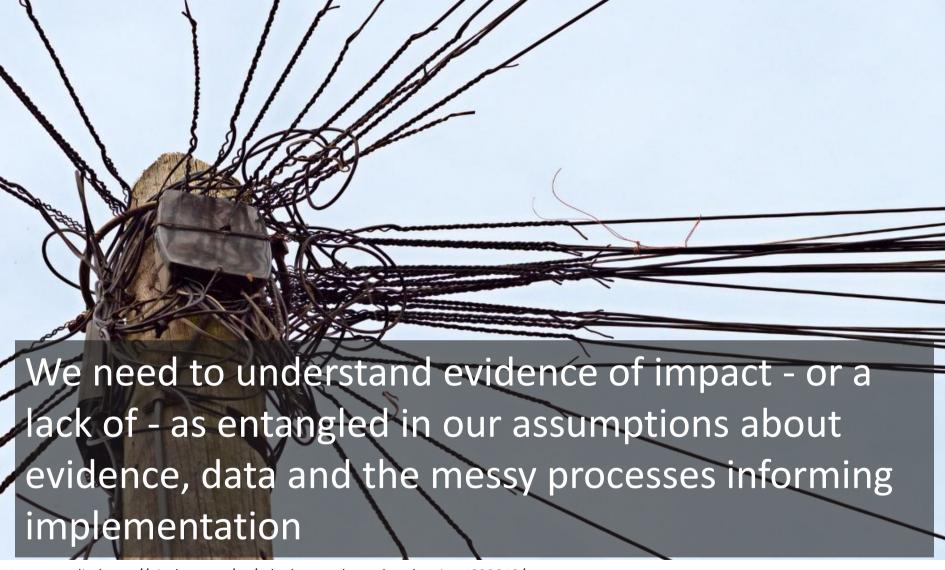


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Political

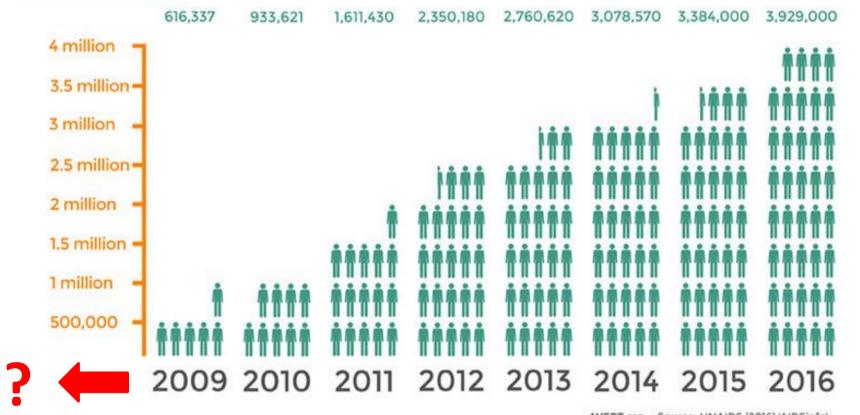
# Evidence is...

ncomplete

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### Antiretroviral program (ART) in South Africa: Number of people receiving antiretroviral treatment



AVERT.org Source: UNAIDS (2016) 'AIDSinfo'

Source credit: https://www.avert.org/professionals/hiv-around-world/sub-saharan-africa/south-africa





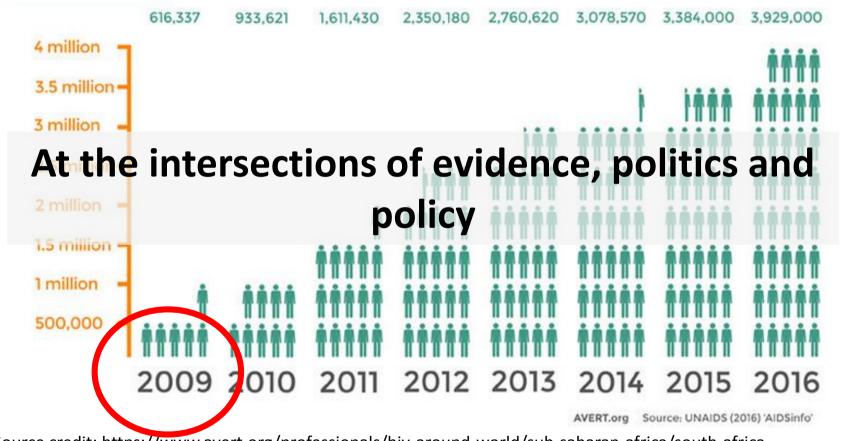


Source credit: https://www.theguardian.com/world/2008/nov/26/aids-south-africa





### Antiretroviral program (ART) in South Africa: Number of people receiving antiretroviral treatment

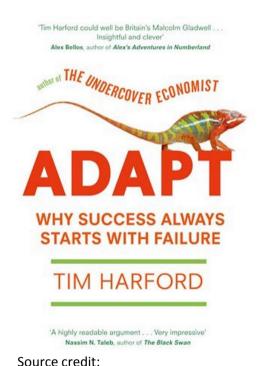


Source credit: https://www.avert.org/professionals/hiv-around-world/sub-saharan-africa/south-africa





### Example 2: At the intersections of politics and evidence



https://www.amazon.com/Adapt-Success-Always-Starts-Failure/dp/1250007550 **Problem:** Russia 20<sup>th</sup> century – we need more sustainable water supply

#### **Stalin:**

What is the problem? Do research. Propose an evidence-based plan

#### **Palchinsky:**

Smaller dams will be more effective

#### **Stalin:**

I want to build the world largest hydroelectric dam

Stalin 1, Palchinsky, 0

Outcome: Massive costs, 100,000 people

displaced





# Example 3: At the intersections of evidence and Zeitgeist



We have compiled a list of 30 scientific studies that show a link between vaccines and autism, disproving the myth that no official research papers exist to support what alternative doctors have been saying for years.



Source credit: http://yournewswire.com/30-solid-scientific-studies-that-prove-vaccines-cause-autism/









WHERE MAINSTREAM FEARS TO TREAD





Hoax Alert

#### Fake News Website YourNewsWire Renames Itself As NewsPunch















As of a few hours ago all links to articles on the notorious fake news website yournewswire.com seem to be getting redirected to newspunch.com. The move has not been officially announced on the site as far as we can tell. It seems likely the move is an effort to dodge various fake news filters on social media and in search engines by swapping a 'burned' domain name for a (pre-aged) untainted one.

If you search Google for "yournewswire.com" several of the top results indicate the site is fake news (having your own dedicated category on Snopes.com is a dead giveaway):

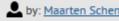


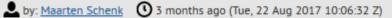




Hoax Alert

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If you search Google for "yournewswire.com" several of the top results indicate the site is fake news (having your own dedicated category on Snopes.com is a dead giveaway):

Source credit: https://hoax-alert.leadstories.com/3468724-fake-news-website-yournewswire-renames-itself-asnewspunch.html









### Incomplete

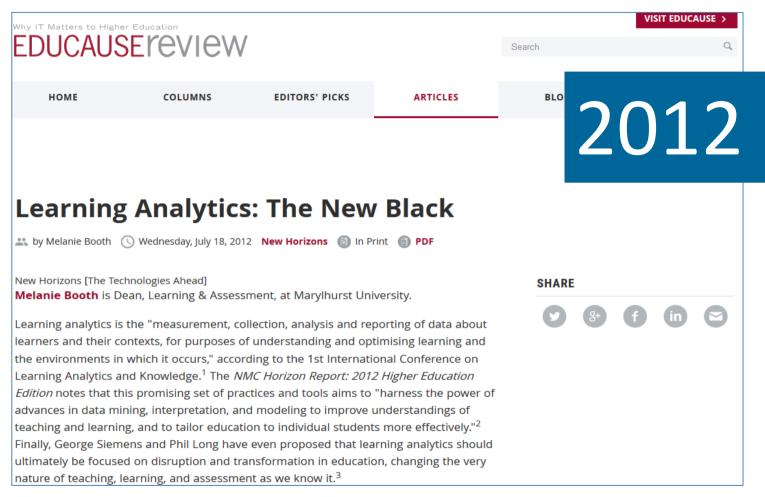
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### Fragile

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Page credit: https://library.educause.edu/resources/2015/10/the-predictive-learning-analytics-revolution-leveraging-learning-data-for-student-success







# Higher Education and the Revolution of Learning Analytics

2016

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# Stanford Calls for Responsible Use of Student Data in Higher Ed

6 October 2016

By Krysten Crawford

Oct 6, 2016



Page credit: https://www.edsurge.com/news/2016-10-06-stanford-calls-for-responsible-use-of-student-data-in-higher-ed



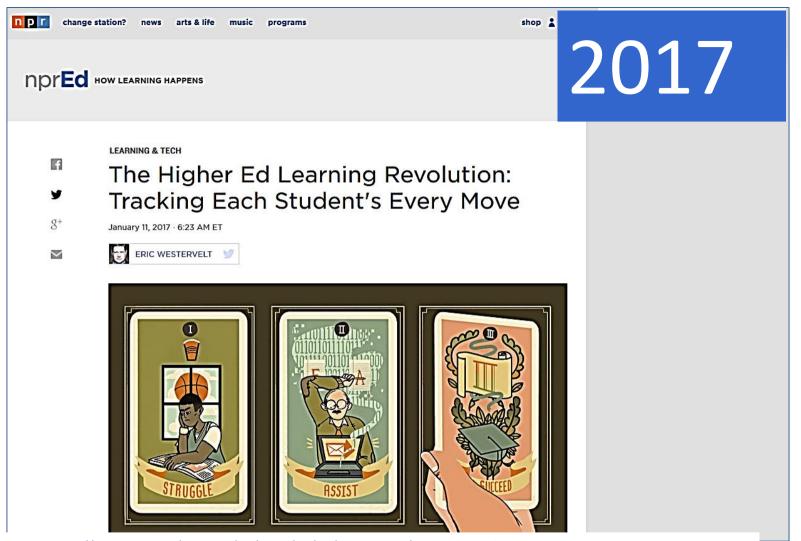




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Page credit: http://www.npr.org/sections/ed/2017/01/11/506361845/the-higher-ed-learning-revolution-tracking-each-students-every-move





# Eight provocations for thinking about 'evidence'





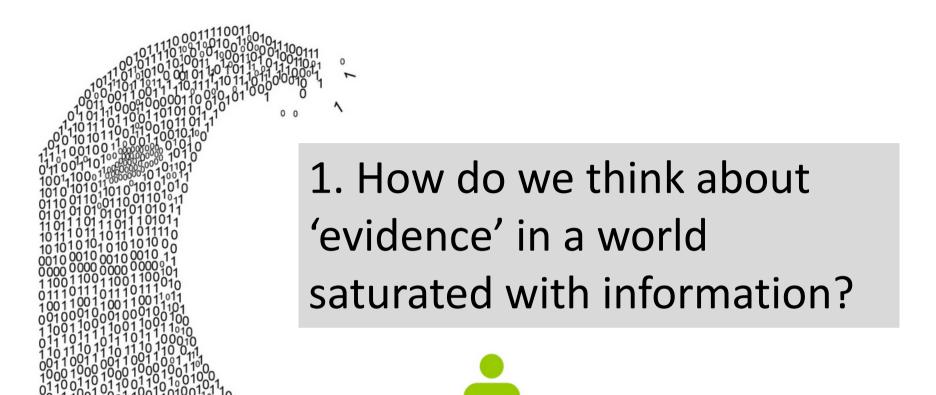


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"Our problem is keeping up with, sorting out, absorbing, prioritising, and using information. Our technological capacity for gathering and computerising information far exceeds our human ability to process and make sense of it all. We're constantly faced with deciding what's worth knowing and what to ignore"

Patton, M. Q. (2008). *Utilization-focused evaluation*. [4<sup>th</sup> edition]. London, UK: Sage publications, p.5





2. How do we think about 'evidence' in a world of 'fake' news', myths, alternative facts, and post-truths?



Image credit: https://www.flickr.com/photos/freepress/6641427981



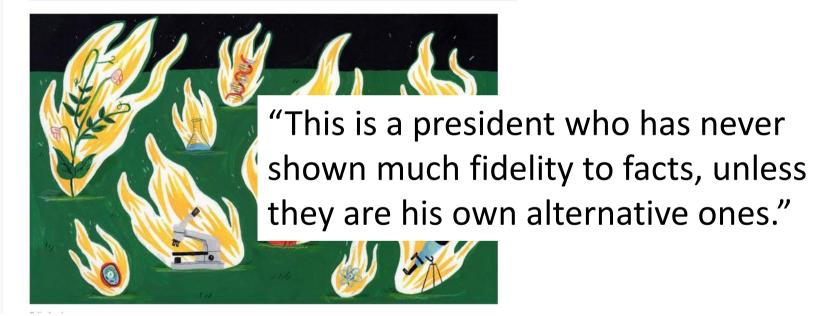


#### The New York Times

SundayReview | EDITORIAL

#### President Trump's War on Science

By THE EDITORIAL BOARD SEPT. 9, 2017



Site credit: https://www.nytimes.com/2017/09/09/opinion/sunday/trump-epa-pruitt-science.html





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#### Neuro-hit or neuro-myth?

Source credit: http://www.educationalneuroscience.org.uk/neuromyth-or-neurofact/





nature.com > nature reviews neuroscience > science and society > article





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Science and Society

# Neuroscience and education: myths and messages

Paul A. Howard-Jones

Source credit: https://www.nature.com/articles/nrn3817?WT.ec\_id=NRN-201412/



















CHRISTIAN JARRETT SCIENCE 01.05.15 12:53 PM

# ALL YOU NEED **ABOUT THE**







Source credit: https://www.wired.com/2015/01/need-know-learning-styles-myth-two-minutes/





3. How do we think about 'evidence' in a world where 'knowing' is distorted and manipulated to create biased and distorted findings?

#### salon

### Bush knew Saddam had no weapons of mass destruction

Salon exclusive: Two former CIA officers say the president squelched top-secret intelligence, and a briefing by George Tenet, months before invading Iraq.

SIDNEY BLUMENTHAL

09.06.2007 • 1:16 PM

Source credit: https://www.salon.com/2007/09/06/bush\_wmd/





4. How do we think about 'evidence' in a world where 'what we know' is increasingly determined by the algorithms and automated agents on Google, Amazon and Facebook?







#### André Staltz

#### THE WEB BEGAN DYING IN 2014, HERE'S HOW

30 OCT 2017

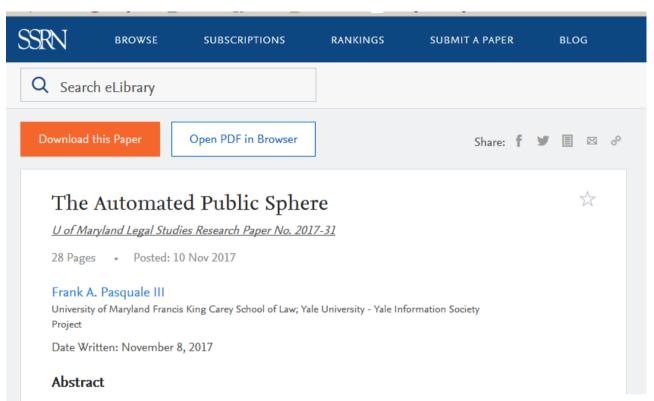
Before the year 2014, there were many people using Google, Facebook, and Amazon. Today, there are still many people using services from those three tech giants (respectively, GOOG, FB, AMZN). Not much has changed, and quite literally the user interface and features on those sites has remained mostly untouched. However, the underlying dynamics of power on the Web have drastically changed, and those three

It looks like nothing changed since 2014, but GOOG and FB now have direct influence over 70%+ of internet traffic.

Source credit: https://staltz.com/the-web-began-dying-in-2014-heres-how.html







"The promised *Wealth of Networks* has given way to a black box society – one where trolls, bots, and even foreign governments maraud to distort the information environment on Twitter, Facebook, Google News, Reddit, and other networks."

Source credit: https://papers.ssrn.com/sol3/papers.cfm?abstract\_id=3067552





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#### Fleeing from Frankenstein's monster and meeting Kafka on the way: Algorithmic decision-making in higher education

Paul Prinsloohttp://orcid.org/0000-0002-1838-540X,

First Published October 17, 2017 Research Article



Article information ~





Source credit: http://journals.sagepub.com/doi/abs/10.1177/2042753017731355





5. How do we think about 'evidence' in a world where 'knowing' does not mean we will act?





Lessons from Rwanda - Lessons for Today - Assessment of the Impact and Influence of the Joint Evaluation of Emergency Assistance to Rwanda –

Source: https://www.alnap.org/help-library/lessons-from-rwanda-lessons-for-today-assessment-of-the-impact-and-influence-of-the



"... the refusal of international agencies and world leaders to take seriously and use the data they were given" (Patton, 2008, p. 9)

Image credit: https://www.flickr.com/photos/dfid/3403032782







Image credit: https://commons.wikimedia.org/wiki/File:Wounded\_Triage\_France\_WWI.jpg





7. How do we collect 'evidence' in a world where evidence of efficiency/ effectiveness does not mean that the intervention was appropriate, moral and/or ethical?

Biesta, G. 2007. Why "what works" won't work: evidence-based practice and the democratic deficit in educational research, Educational Theory, 57(1), 1–22. DOI: 10.1111/j.1741-5446.2006.00241.x. Biesta, G. 2010. Why 'what works' still won't work: from evidence-based education to value-based education, Studies in Philosophy of Education, 29, 491–503. DOI 10.1007/s11217-010-9191-x.





8. How do we present 'evidence' in a world where the evidence will only be considered "when a problem is recognized as serious and requiring a new solution; when the policy community develops a financially and technically workable solution; and when political leaders find it advantageous to approve it" (El-Khawas, 2000, p. 50; emphasis added)

El-Khawas, E. 2000. Patterns of communication and miscommunication between research and policy. In S. Schwarz & U. Teichler (Eds.), The institutional basis of higher education research. Experiences and perspectives (pp. 45-55). London, UK: Kluwer Academic Publishers





# "The pursuit of evidence is probably the most pressing moral imperative of our time"

Alice Dreger (2016). *Galileo's middle finger. Heretics, activists,* and one scholar's search for justice. New York, NY: Penguin Books







# 1. (Re)considering Evidence-Based Management (EBM)

"Evidence-based education seems to favour a technocratic [and quantitative] model in which it is assumed that the only relevant research questions are about the effectiveness of educational means and techniques, forgetting, among other things, that what counts as "effective" crucially depends on judgments about what is educationally desirable" (Biesta, 2007, p. 5)





# 1. (Re)considering Evidence-Based Management (EBM)

Evidence-based decision making is entangled in/at the intersection of the impatience of policy makers to find quick solutions (in line with their political agendas), stakeholders 'on the ground' and specialists who research the problems

(El-Khawas, 2000)





#### EDUCATIONAL THEORY

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#### WHY "WHAT WORKS" WON'T WORK: EVIDENCE-BASED PRACTICE AND THE DEMOCRATIC DEFICIT IN EDUCATIONAL RESEARCH

Gert Biesta

First published: 6 February 2007 Full publication history

DOI: 10.1111/j.1741-5446.2006.00241.x View/save citation

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Source credit: http://onlinelibrary.wiley.com/doi/10.1111/j.1741-5446.2006.00241.x/full









#### Studies in Philosophy and Education

September 2010, Volume 29, <u>Issue 5</u>, pp 491–503 | <u>Cite as</u>

#### Why 'What Works' Still Won't Work: From Evidence-Based Education to Value-Based Education

Authors Authors and affiliations

Gert J. J. Biesta

Article

First Online: 09 July 2010



Source credit: https://link.springer.com/article/10.1007/s11217-010-9191-x





### 2. (Re)considering Data

We have access to ever increasing volumes, velocity and variety of student digital data, that allows us to expand not only on the traditional scope of institutional research with regard to student data, but also to infer relations unthinkable ten years ago. We may therefore be tempted to rush to look for patterns without considering our own assumptions and epistemologies

Noisy systems with underdeveloped theory – there is a real danger to mistake the noise for a signal, and not realising that the noise pollutes our data with false alarms and "setting back our ability to understand how the system really works" (Silver, 2012, p. 162)





### 2. (Re)considering Data (2)

Data are not neutral, raw, objective and pre-analytic but framed "technically, economically, ethically, temporally, spatially and philosophically. Data do not exist independently of the ideas, instruments, practices, contexts and knowledges used to generate, process and analyse them" (Kitchen, 2014, p. 2)





### 2. (Re)considering Data (3)

- Data do not speak for itself (as claimed by Mayer-Schönberger & Cukier, 2013)
- It is not enough to know that people do things without understanding why they do act in a particular way
- N ≠ all (contra to Mayer-Schönberger & Cukier, 2014)
- Data sets represent cultural, moral, and instrumental choices (Brock, 2015)





### 2. (Re)considering Data (4)

- More or big(ger) data are not (necessarily) better data (Prinsloo, Archer, Barnes, Chetty & Van Zyl, 2015)
- "The sheer size of analysis does not eschew the limitations of subjectivity" the "unbearable lightness of information" (Papacharissi, 2015, p. 1097)
- What happens when we collect, analyse and use the bleeps, the logins, the downloads, the posts in and outside of an institutional Learning Management system (LMS) as the full/only narrative of what is happening in our students' lives, of their aspirations, and of their learning?





### 2. (Re)considering Data (5)

What are the implications when we use *their* data points to describe, diagnose, predict and prescribe *their* learning journeys without ever asking them what these data points mean *to them*, and what data would matter to *them* to allow them to make more informed decisions, to complete *their* journeys and not ours?





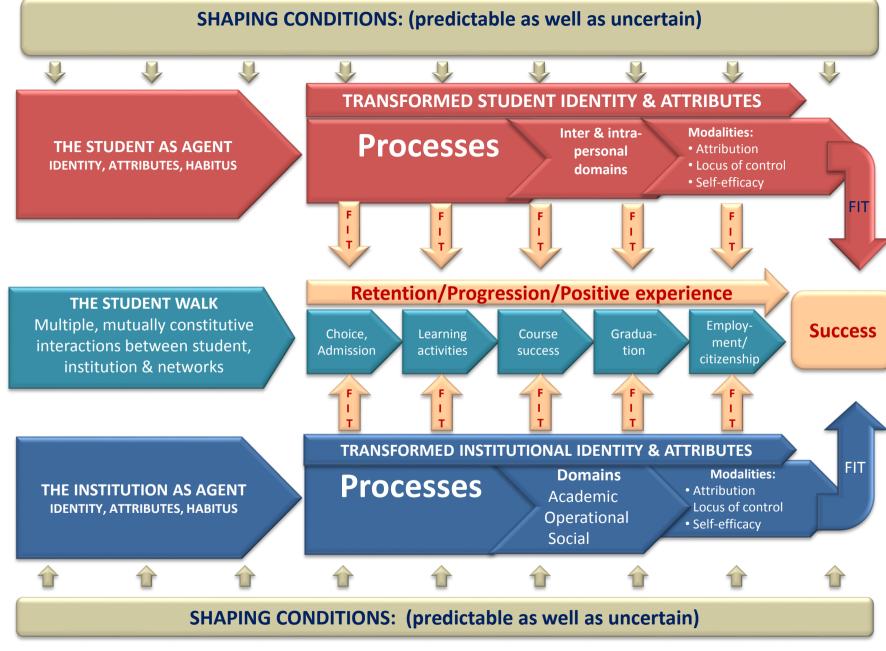
### 3. (Re)considering learning

How does evidence look and function when we consider education as an open and recursive system, worlds apart from research environments where we can control variables?

How does evidence look when we consider student success as a complex, non-linear process and result of intersecting, often interdependent and mutually constitutive variables in the nexus between students' life-worlds, capital and contexts, institutional assumptions, epistemologies and (in)efficiencies, and macro-societal shifts and changes?







(Subotzky & Prinsloo, 2011)

#### Pointer 1: Learning analytics as moral practice



Just because you can collect their data, does not mean you have to. Even if it may be legal, it may not be ethical.

Nick Seaver wants this website to ban the Nazis @npseaver

Twitter friends: if you had to put in a single classic-length tweet the most important task for "the ethical use of data," what would it be?

8:07 AM - 8 Nov 2017

14 Retweets 26 Likes







#### Pointer 1: Learning analytics as moral practice

"Learning analytics should not only focus on what is effective, but also aim to provide relevant pointers to decide what is appropriate and morally necessary"

(Slade & Prinsloo, 2013, p. 1519)





# Pointer 2: Change the narrative: Whose story is it anyway?

If learning analytics' primary aim is to improve students' learning (Gašević, Dawson, & Siemens, 2015), maybe we should ask...

- To what extent has learning analytics become our voice-over of student learning experiences by telling them 'this is what your learning looks like and it is the only narrative that matters'...?
- How can we replace our epistemological arrogance and colonisation of the student experience with an epistemological shift from 'knowing' to listening, humility and respect?

Gašević, D., Dawson, S., & Siemens, G. (2015). Let's not forget: Learning analytics are about learning. *TechTrends*, 59(1), 64-71. Tuck, E., & Fine, M. (2007). Inner angles. A range of ethical responses to/with indigenous and decolonising theories. In Norman K Denzin and Michael D Giardina (Eds), *Ethical futures in qualitative research*. *Decolonising the politics of knowledge* (pp. 145-168). Walnut Creek, CA: Left Coast Press Inc.





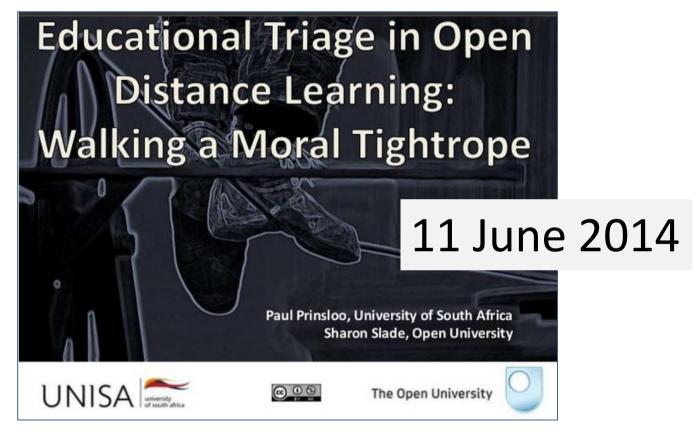
# Pointer 2: Changing the narrative: Whose story is it anyway? (cont.)

- What happens if we stop talking about 'students as sick, 'broken' and 'dropouts'? What happens when we discard a deficit model of student learning to one that focuses on what they have, what they bring to the table?
- What data do we have that, if they have access to that data, will allow them to make better and more informed choices?
- What data do *they* have that if we have access to that data, and with their permission, will allow *us* to help them make better choices?





### Pointer 3: It is also *our* story and being responseable

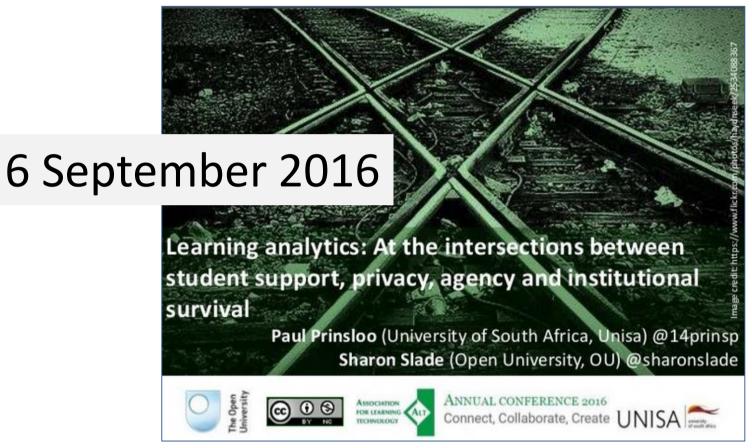


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#### Pointer 3: Response-able (cont.)

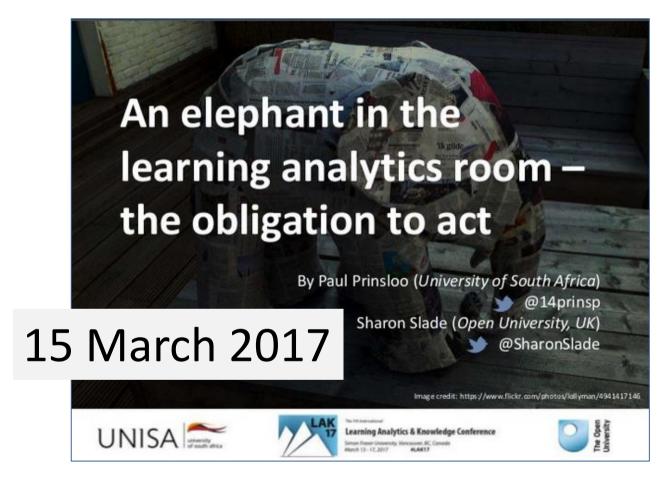


Page credit: https://www.slideshare.net/prinsp/learning-analytics-at-the-intersections-between-student-support-privacy-agency-and-institutional-survival





#### Pointer 3: Response-able (cont.)



Page credit: https://www.slideshare.net/prinsp/an-elephant-in-the-learning-analytics-room-the-obligation-to-act





## Pointer 4: Recognise the political nature of data and evidence

earning analytics is a structuring device, not neutral, informed by current beliefs about what counts as knowledge and learning, coloured by assumptions about gender/race/class/capital/literacy and in service of and perpetuating existing or new power relations

Prinsloo, P., & Slade, S, (2017, March 17). Building the learning analytics curriculum: Should we teach (a code of) ethics? Retrieved from https://www.slideshare.net/prinsp/building-the-learning-analytics-curriculum-should-we-teach-a-code-of-ethics





## Pointer 4: Recognise the political nature of data and evidence

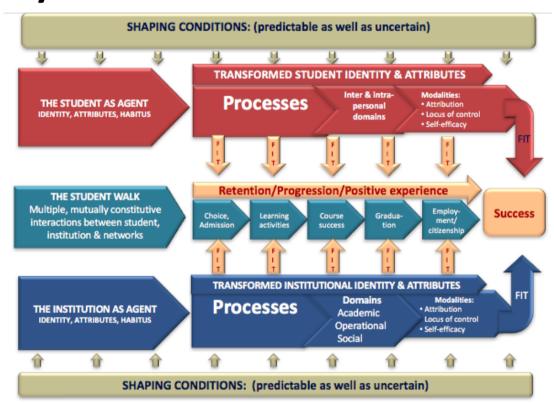
How do we collect, analyse and use data when the data represent the results of generations of structural inequalities and injustices?

How do we use learning analytics to break intergenerational cycles of bias, discrimination and exclusion?





# Pointer 5: Consider the difference between correlation and causation in highly complex and dynamic systems







#### Pointer 6: Oversight and accountability

Education Tech Research Dev DOI 10.1007/s11423-016-9463-4



#### DEVELOPMENT ARTICLE

Ethical oversight of student data in learning analytics: a typology derived from a cross-continental, cross-institutional perspective

James E. Willis III1 · Sharon Slade2 · Paul Prinsloo3

An interpretative multiple-case study: Indiana University, Open University (UK) and the University of South Africa (Unisa)

Willis, J. E., Slade, S., & Prinsloo, P. (2016). Ethical oversight of student data in learning analytics: A typology derived from a cross-continental, cross-institutional perspective. *Educational Technology Research and Development*, 64, 881-901. DOI: 10.1007/s11423-016-9463-4 http://link.springer.com/article/10.1007/s11423-016-9463-4





## Pointer 7: Higher education can not afford NOT to collect, analyse and use student learning data

- We have a contractual duty to ensure effective and appropriate learning experiences
- We have a *fiduciary* duty of care in the context of the asymmetrical power relationship between institution and students
- We have the opportunity and the authority to act/care/respond
- We don't have unlimited resources
- We need to be transparent and accountable for what we can and cannot do.
- Once we know, we cannot un-know knowing we have a moral duty to respond









We should see evidence as an invitation to a conversation and not the end of the conversation

Image credit: https://pixabay.com/en/question-mark-pile-question-mark-1481601/





The question therefore is not: "Will the future of Higher Education be evidence-based?", but how do we define evidence, and who defines it, and what/whose purpose will it serve when enacted upon?







### Gracias. Thank you.

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http://opendistanceteachingandlearning.wordpress.com

Twitter profile: @14prinsp



