Learning analytics: facing up to the challenges

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Learning analytics

The measurement, collection, analysis and reporting of data about learners and their contexts, for purposes of understanding and optimizing learning and the environments in which it occurs.
Ethics

• What is worth seeking — that is, what ends or goals of life are good?

• What are individuals responsible for — that is, what duties should they recognize and attempt to fulfill?

Willis, Pistilli & Campbell. (2013). Ethics, big data, and analytics. *Educause Review Online*
Learning analytics help us to identify and make sense of patterns in the data to improve our teaching, our learning and our learning environments.
Privacy

A living concept made out of continuous personal boundary negotiations with the surrounding ethical environment.

Privacy can be understood as a freedom from unauthorized intrusion: the ability of an individual or a group to seclude themselves or the information about them, and thus to express themselves selectively.

Ferguson, Hoel, Scheffel, & Drachsler (2016). Ethics and privacy in learning analytics.
Privacy & data protection

From the perspective of data protection, data are treated as property. From the perspective of privacy, data are much more personal, almost a part of the self and certainly very bound up with the sense of self. If we reveal these data, we reveal ourselves.

Ferguson, Hoel, Scheffel, & Drachsler (2016). Ethics and privacy in learning analytics.
Build strong connections with the learning sciences

Under-represented in early work:
• cognition
• metacognition
• pedagogy.

Understanding and optimising learning require knowledge of:
• how learning takes place
• how it can be supported
• the importance of factors such as identity, reputation and affect.

Learning analytics could help develop:
• good learning design
• effective pedagogy
• increasing student self-awareness.

Keywords
learning analytics
analytics use
data-informed decision making
instructional improvement
instructional dashboards
pedagogical support
teaching analytics
learning analytics design
learning analytics implementation

Challenges: http://oro.open.ac.uk/36374/
Teaching with analytics: https://doi.org/10.18608/jla.2019.62.4
Reflection opportunity

How do you make the links between pedagogy and learning analytics in your work?

How could you make them more clearly?
Develop methods of working with a wide range of datasets in order to optimise learning environments.

“...automated techniques are able to extract information with an efficiency that is beyond the capabilities of human-coders, providing the means to deal analytically with the multiple modalities that characterize the classroom. Once generated, the information provided by the different modalities is used to explain and predict high-level constructs such as students’ attention and engagement.”

Chan, Ochoa, Clarke (2020): Multimodal Learning Analytics in a Laboratory Classroom
Reflection opportunity

Which problem does your work solve for learners?

How did they solve that problem in the past?

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Focus on the perspectives of learners

Criteria for learning success could include:
• grades
• persistence
• motivation
• confidence
• enjoyment
• satisfaction
• career goals.

Analytics for learners:
• personalised
• easily understood
• clearly linked with improving learning
• transparent
• open to challenge
• two-way process.

Challenges: 2012

Reflection opportunity

What does success look like from your learners’ perspective?

How could your analytics do more to help your learners achieve their goals?

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Develop and apply a clear set of ethical guidelines

No detailed ethical framework has been developed for learning analytics. This is a pressing need for the field, and each researcher could play a part here by including a clear section on ethics within their papers and publications.

LEARNING ANALYTICS PRINCIPLES OF USE: MAKING ETHICS ACTIONABLE

https://lak20laprinciples.weebly.com/

Challenges: 2012

Drivers, developments and challenges http://oro.open.ac.uk/36374/
Reflection opportunity

What are the most important ethical decisions you have made about learning analytics?

How could you share these?
Visions of
the future

Full report
bit.ly/28X5tq7
Provocation 1: Learners are monitored by their learning environment
Provocation 2: Learners’ personal data are tracked
Provocation 3: Analytics are rarely used.
Provocation 4: Learners control their own data
Provation 5: Open systems are widely adopted
Provocation 6:
Learning analytics are essential tools
Provocation 7: Analytics help learners make the right choices
Provocation 8: Analytics have largely replaced teachers.

Enabling relevant, personalised, engaging learning.
Ethical challenges for learning analytics

Journal of Learning Analytics, Dec 2019
Challenge one: duty to act

Use data and analytics whenever they can contribute to learner success, ensuring that the analytics take into account all that is known about learning and teaching.

If you could have any superpowers you wanted, to help you do your job, what would they be?

Co-designing: https://doi.org/10.18608/jla.2019.62.3
Reflection opportunity

When do the learners and educators you work with really need analytics and data?

What would happen if they no longer had access to analytics and data?
Challenge two: informed consent

Equip learners and educators with data literacy skills, so they are sufficiently informed to give or withhold consent to the use of data and analytics.

Data literacy skills include the ability to read, work with, analyse and argue with data.

Image: Center for Spatial Research (via MOMA)
Challenge two: informed consent

Students Are Campaigning to Ban Facial Recognition From College Campuses

A new national campaign wants to stop facial recognition from invading U.S. college campuses.

By Edward Onwuso Jr
Jan 14 2020, 11:00am
Share Tweet Snap

At least 10 schools across the U.S. have installed radio frequency scanners, which pick up on the Wi-Fi and Bluetooth signals from students' phones and track them with accuracy down to about one meter, or just over three feet, said Nadir Ali, CEO of indoor data tracking company Inpixon.

www.cnet.com • www.vice.com
Reflection opportunity

What data is being collected about you right now?

Why is it being collected?
Challenge three: safeguarding

Take a proactive approach to safeguarding in an increasingly data-driven society, identifying potential risks, and taking action to limit them.

21 February, 2020: “There have been over 1.3 million threat alerts at the OU so far in 2020” (Inside Track – internal newsletter)
Challenge three: safeguarding

Data may be:
- inaccurate
- mislabelled
- mistyped
- incomplete
- poorly chosen
- biased sample
- out of date

Years of genomics research is riddled with errors thanks to a bunch of botched Excel spreadsheets

Karen Triquet @k_triplet · 17m

“Problems arise both from the way that #algorithms themselves are written (& who is writing them), & from biased #data being used to make future predictions, which happens as a result of human #bias that already exists in our society & creates feedback loops...” #Aled #edtech

WCET @wcet_info · Jan 30

Today on #WCETFrontiers: #Algorithms, #Diversity, and #Privacy: Better #Data Practices to Create Greater Student #Equity bit.ly/2vxNdhH #highered #dataprotection
Reflection opportunity

When have you provided inaccurate or incomplete data about yourself?

Why did you do that?
Challenge four: equality and justice

Work towards increased equality and justice, expanding awareness of ways in which analytics have the potential to increase or decrease these.

https://xkcd.com/1838 • slide from Jutta Treviranus, CC BY-NC 4.0
Intelligence that understands, recognizes and serves diversity:

- Better able to
- respond to unexpected
- detect risk
- adapt to change
- transfer to new contexts
- Greater longevity
- May reduce disparity...
- May lift us out of our current ruts...
Reflection opportunity

What assumptions does your work make about learners, their actions, their priorities, their aims, or their dreams?
Reflection opportunity

What assumptions does your work make about learners, their actions, their priorities, their aims, or their dreams?

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Challenge five: data ownership

Increase understanding of the value, ownership, and control of data.
Challenge 5: data ownership

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How do you want us to verify your account?

Text me at +xx xxxxxxx7333
Call me at +xx xxxxxxx7333

www.huffingtonpost.co.uk • https://xkcd.com/1998
If your learners read at 250 words per minute, how long does it take to find and read your data protection and privacy policies?

Is that the ideal time?
Challenge six: integrity of self

Increase the agency of learners and educators in relation to the use and understanding of educational data.
Challenge six: integrity of self
Reflection opportunity

What one change might you make to your work in response to these challenges?
The ten reflections

1. How do you make the links between pedagogy and learning analytics in your own work? How could you make them more clearly?
2. Which problem does your work solve for learners? How did they solve that problem in the past?
3. What does success look like from your learners’ perspective? How could your analytics do more to help your learners achieve their goals?
4. What are the most important ethical decisions you have made about learning analytics? How could you share these?
5. When do the learners and educators you work with really need analytics and data? What would happen if they no longer had access to analytics and data?
6. What data is being collected about you right now? Why is it being collected?
7. When have you provided inaccurate or incomplete data about yourself? Why did you do that?
8. What assumptions does your work make about learners, their actions, their priorities, their aims, or their dreams?
9. If your learners read at 250 words per minute, how long does it take to find and read your data protection and privacy policies? Is that the ideal time?
10. What one change might you make to your work in response to these challenges?
The ten challenges

1. Build strong connections with the learning sciences
2. Develop methods of working with a wide range of datasets in order to optimise learning environments
3. Focus on the perspectives of learners
4. Develop and apply a clear set of ethical guidelines

5. Use data and analytics whenever they can contribute to learner success, ensuring that the analytics take into account all that is known about learning and teaching
6. Equip learners and educators with data literacy skills, so they are sufficiently informed to give or withhold consent to the use of data and analytics.
7. Take a proactive approach to safeguarding in an increasingly data-driven society, identifying potential risks, and taking action to limit them.
8. Work towards increased equality and justice, expanding awareness of ways in which analytics have the potential to increase or decrease these.
9. Increase understanding of the value, ownership, and control of data.
10. Increase the agency of learners and educators in relation to the use and understanding of educational data.