

ASSOCIATION
FOR LEARNING
TECHNOLOGY



Learning Analytics: Gaining good actionable insight

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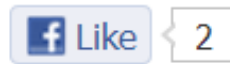
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SiliconANGLE » IBM's CEO Says Big Data Is Like Oil, Enterprises Need Help Extracting The Value

IBM's CEO Says Big Data is Like Oil, Enterprises Need Help Extracting the Value

MARIA DEUTSCHER | MARCH 11TH

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IBM chief executive officer Ginni Rommetty regards analytics as a new source of competitive advantage for her company's enterprise clientele.

Analytics in Education

“ Analytics is the process of developing **actionable insights** through problem definition and the application of statistical models and analysis against existing and/or simulated future data

Adam Cooper, What is Analytics? <http://publications.cetis.ac.uk/wp-content/uploads/2012/11/What-is-Analytics-Vol1-No-5.pdf>

Learning Analytics Definition

“ *...the measurement, collection, analysis and reporting of data about learners and their contexts, for purposes of understanding and optimising learning and the environments in which it occurs*

First International Conference on Learning Analytics and Knowledge (LAK11), 2011

Poll question here

Disciplines

- ◇ Computer science
- ◇ Statistics
- ◇ Programming
- ◇ Network analysis
- ◇ Psychology of education
- ◇ ...

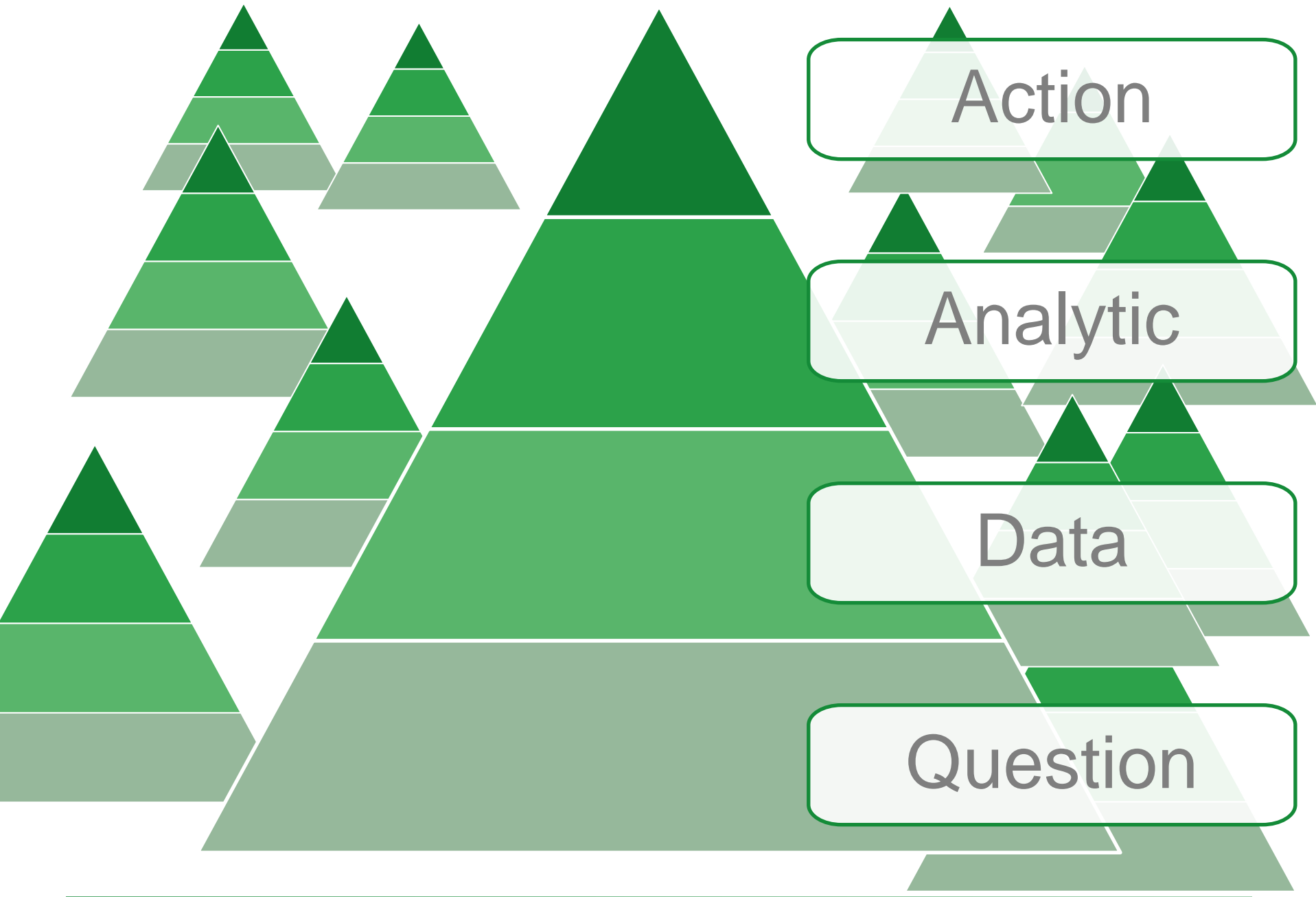
Methods

- ◇ Content Analytics
- ◇ Context Analytics
- ◇ Discourse Analytics
- ◇ Disposition Analytics
- ◇ Social Network Analysis
- ◇ ...

[Ferguson and Buckingham Shum \(2012\)](#) *Social Learning Analytics: Five Approaches*

Tools/Products

- ◇ Spreadsheets - MS Excel, Tableau, Open Refine, Google Sheets...
- ◇ SNA – NodeXL, Gephi, Cytoscape
- ◇ Programming: R, Python, MATLAB...
- ◇ VLEs - Blackboard Analytics for Learn, Desire2Learn Insights ...
- ◇ ...



The Absence of Theory

“Amazon cares not a whit **why** people who buy german chocolate also buy cake pans as long as they get to the checkout buying both

Mike Caulfield - Short Notes on the Absence of Theory

<http://hapgood.us/2013/12/10/short-notes-on-the-absence-of-theory/>

“ *Counts don't count much if decontextualized* ”

Wilson, T.D. (1999). Models in information behaviour research. Journal of Documentation, 55(3), 249 – 270.

Dragan Gasevic speaking at DiCE Seminar
Moray House School of Education – 9th January 2015



Data Visualization

DASHBOARD

DATA EXTRACT

4.4oz
125g



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CONTAINS GRAPHS • 100% VEGETARIAN



Image credit: <http://practicalanalytics.co/2014/06/02/cloud-based-healthcare-platform-apples-health-app-and-healthkit/>

“ *Graphs can be a powerful way to represent relationships between data, but they are also a very abstract concept, which means that they run the danger of meaning something only to the creator of the graph ... **Everything looks like a graph, but almost nothing should ever be drawn as one.***

Ben Fry in 'Visualizing Data'



Designing

Data Visualizations

O'REILLY*

Noah Iliinsky & Julie Steele

Iliinsky & Steele - Designing
Data Visualizations:
Representing Informational
Relationships

Exploratory visualization

Data visualizations that are used by the designer for self-informative purposes to discover patterns, trends, or sub-problems in a dataset. Exploratory visualizations typically don't have an already-known story.

Explanatory visualization

Data visualizations that are used to transmit information or a point of view from the designer to the reader. Explanatory visualizations typically have a specific “story” or information that they are intended to transmit.

“ Visualizations can be harmful

Corrin, L., & de Barba, P. (2014). Exploring students' interpretation of feedback delivered through learning analytics dashboards. In Proceedings of the ascilite 2014 conference (pp. 629-633). ascilite.

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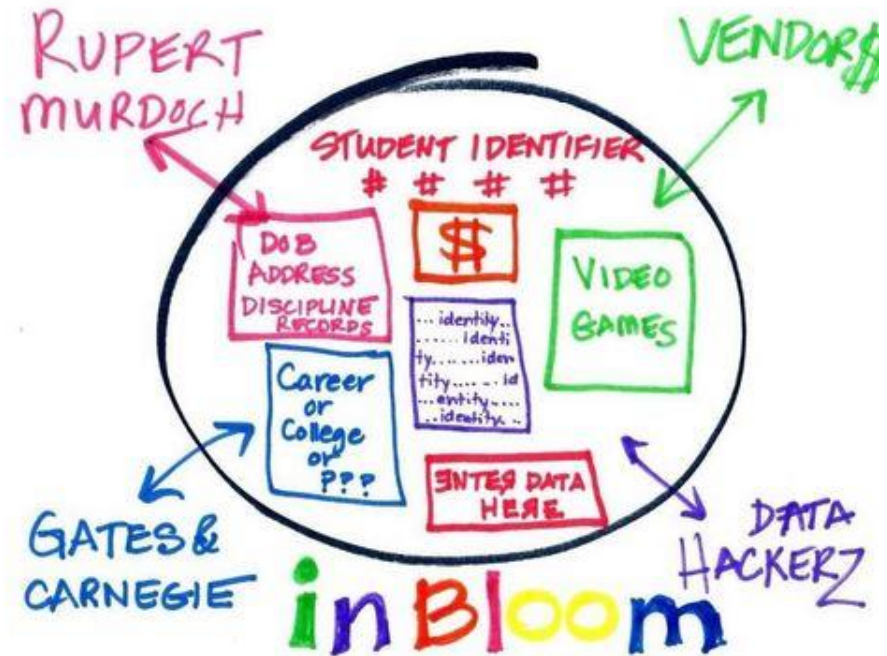


Ethics, privacy and data sharing

“The worlds of privacy and analytics intersect

...not always happily

Downes (2014)



© Unknown
Source: http://crooksandliars.com/files/primary_image/14/05/inbloom-drawing.jpg

Ethics

- ◇ Clarity
- ◇ Comfort and care
- ◇ Choice and consent
- ◇ Consequence and complaint

Legal, Risk and Ethical Aspects of Analytics in Higher Education ([Kay, Korn, & Oppenheim, 2012](#))




Ethical use of Student Data for Learning Analytics Policy

Also listed as:

Ethical use of Student Data for Learning Analytics Policy



This policy aims to set out how the University will use student data in an ethical way in order to shape the student support provided. The policy is based around eight key principles, each of which is linked to particular aspects of learning analytics.

-  [Policy on Ethical use of Student Data for Learning Analytics \(125KB\)](#)
-  [Ethical use of Student Data for Learning Analytics Policy FAQs \(122KB\)](#)
-  [Using information to support student learning \(427KB\)](#)

<http://www.open.ac.uk/students/charter/essential-documents/ethical-use-student-data-learning-analytics-policy>



Code of practice for learning analytics

<https://www.jisc.ac.uk/guides/code-of-practice-for-learning-analytics>

Opportunities

“
*Feedback loops between students and
instructors are missing!*

*Hattie, J., & Timperley, H. (2007). The power of feedback. Review of education
research, 77(1), 82-112.*

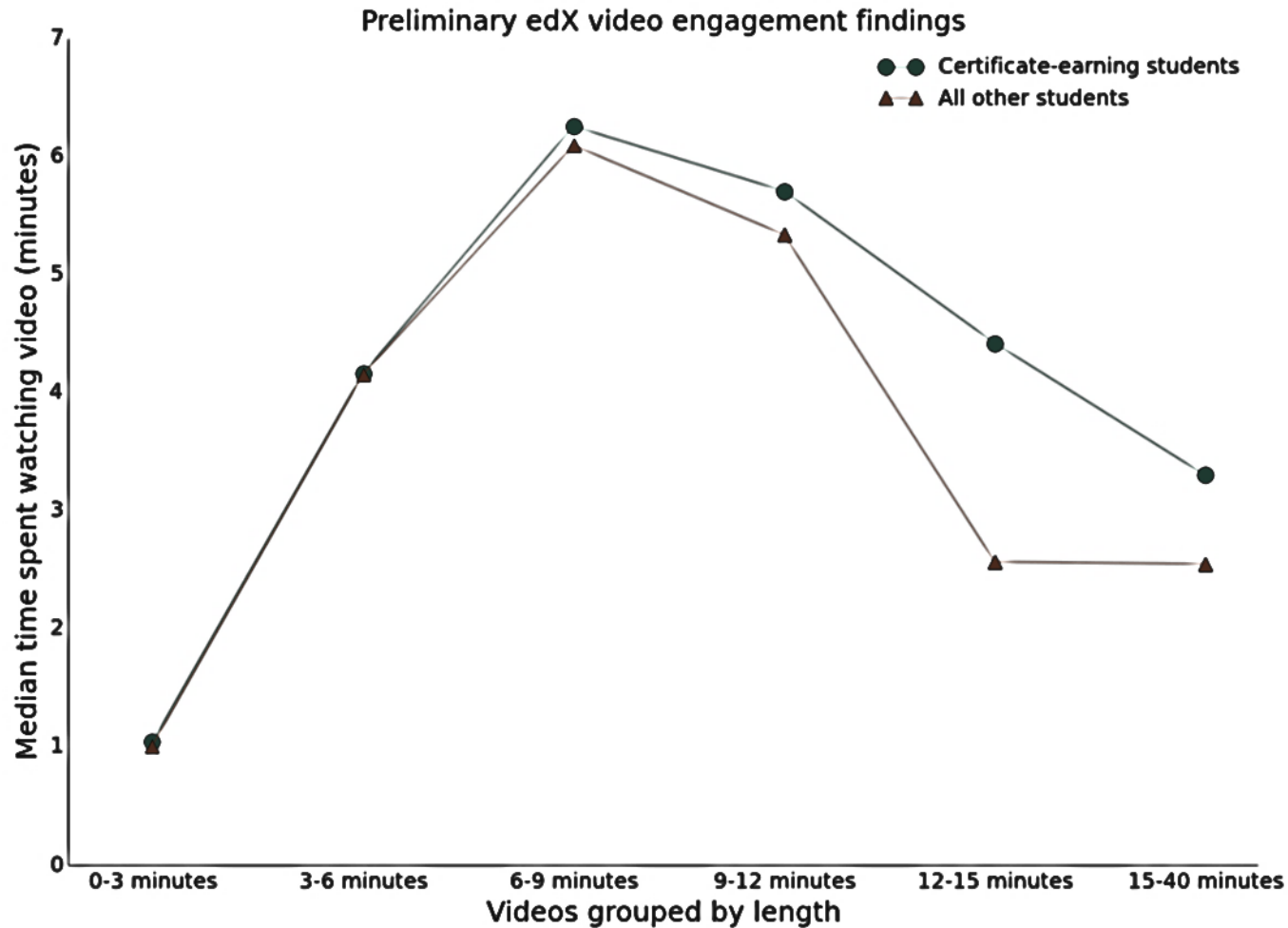
“ *At best analytics can help start a conversation. People have to be willing to take the conversation on*

Roberts, G. Analytics are not relationships

<http://rworld2.brookesblogs.net/2014/12/12/analytics-are-not-relationships/>

Examples

Optimal Video Length

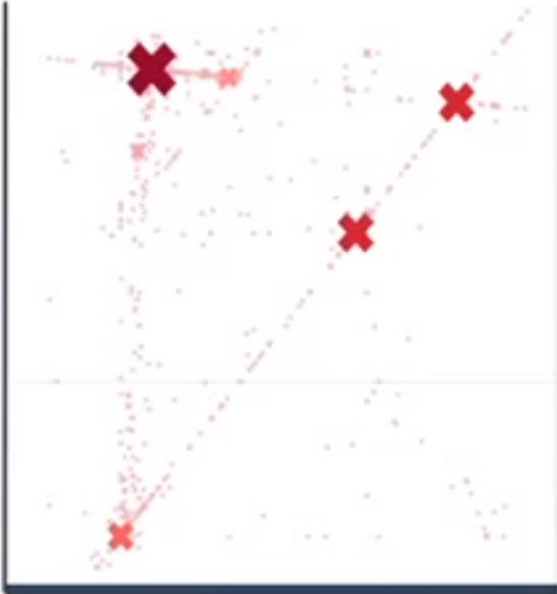


Philip Guo, Optimal Video Length for Student Engagement

Misconception or mistakes in MCQs

The Online Revolution: Education at Scale

Wrong student answers



New Window into Human Learning

29:22 / 43:33

Koller, D The Online Revolution: Education at Scale (2012)
<http://youtu.be/ixE1YAIHnVU?t=29m16s>

Analytics at scale: Course Signals

Developed at Purdue University, USA

The screenshot displays the Course Signals web application. At the top, there is a navigation bar with 'Home', 'Course Progress', 'Progress History', and 'Settings'. Below this, a 'Term(s)' dropdown is set to '201130-Summer 2011'. A table lists course sections with columns for 'Section', 'Parent Section', 'Status', 'Last Signal Updated', 'By', 'Last E-Mail Sent', and 'Instructor'. Two sections are visible: 'Summer-2011-ENGL-421' and 'Summer-2011-PHYS-17200'. Below the table, a 'Section Details' panel is open for 'Summer-2011-ENGL-421-S-LaDow'. This panel includes a 'Risk Group Summary' with columns for 'Risk', 'Students', and 'Grade Cutoffs'. The risk groups are High Risk (0 students), Medium Risk (1 student), Low Risk (90 students), and Unknown Risk (0 students). A 'Gradebook Columns Included' section lists 'Tech Sheet' (10 points), 'Blackboard Overview Quiz' (8 points), and 'GTKY' (6 points). The main part of the details panel is a table with columns for 'Student', 'Cross-Listed Child Section', and three dates: '8/08 2011', '8/08 2011', and '8/12 2011'. The table shows performance data for six students across these dates, with icons indicating status (red X, yellow triangle, green checkmark).

[http://www.slideshare.net/R3becca
F/scaling-up-
learning-analytics](http://www.slideshare.net/R3becca/F/scaling-up-learning-analytics)

Arnold, K. E., & Pistilli, M. (2012). *Course Signals at Purdue: Using Learning Analytics To Increase Student Success*. Paper presented at LAK12, Vancouver, Canada.

Easily accessible OU data

Learning design and analytics at the OU

Module Profile tool - Detailed data on the students studying a particular module presentation.

Module Flow tool - To find out what module(s), if any, students took next.

SEAM Survey - New project integrating two key surveys focussing on the student experience: The DALs and End of Module surveys.

Module Activity Charts - For an at a glance view of module data, on a week-by-week basis, and in real-time for current modules.

Pass rate Z-Scores - Measure whether the pass rate for a module is higher or lower than expected, given the type of module and the student cohort.

Five Year Trends - Data showing trends in pass rates over the last five years; available for individual modules within each CAU, summarised by credit points and level.

OU Overall demographics - Data showing comparison of registrations, completion and pass rates for 2013/14, by demographic groups.

Module Performance View - A self-service web tool that provides a graphical representation of selected student details and survey data against a selected comparison group.

Withdrawal Survey - Data and analysis on the reasons given by students for withdrawing.

<http://www.slideshare.net/R3beccaF/scaling-up-learning-analytics>

Scaling up Learning Analytics

9/12 2015 #altc: Invited Speaker - Rebecca Ferguson

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- Withdrawal Survey** - Data and analysis on the reasons given by students for withdrawing.

10:59 / 28:26

<https://www.youtube.com/watch?v=li4EgnOvpxA>

Wrapping up

“ *Learning activities don't happen in a single platform* ”

Dragon Gasevic

“Not everything that can be counted counts.

Not everything that counts can be counted.

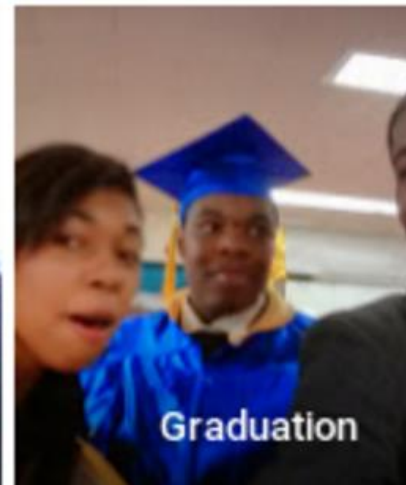
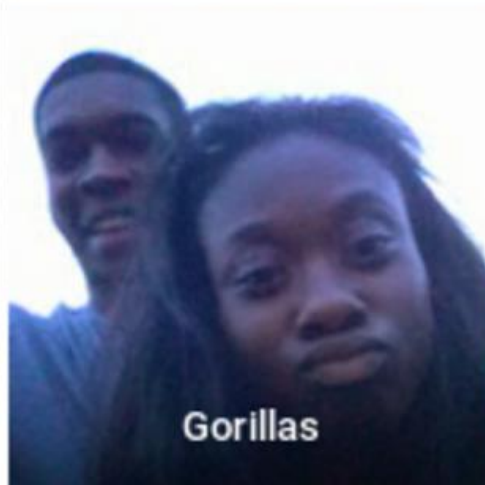
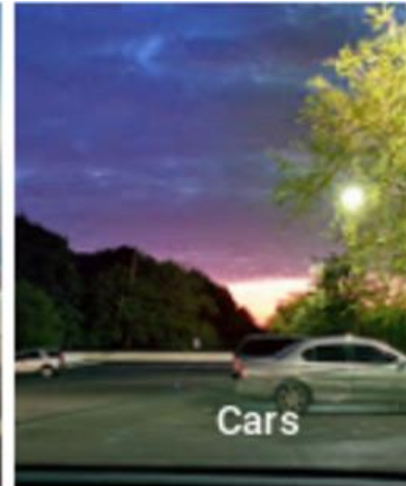
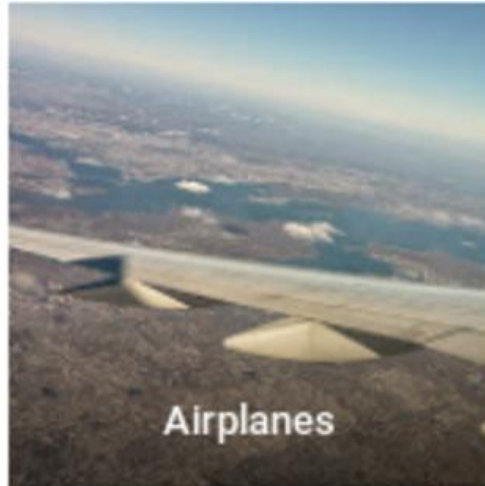
William Bruce Cameron

*“What kind of learners are we trying
to create?”*

... this should drive our analytics

Simon Buckingham Shum

Computers are stupid



<https://twitter.com/jackyalcine/status/615329515909156865>

Useful links

- LACE (learning analytics community exchange) : <http://www.laceproject.eu/>
- SoLAR : Society for Learning Analytics Research <http://solaresearch.org/>
- Jisc: <http://analytics.jiscinvolve.org/wp>
- Cetis Analytics Series : <http://publications.cetis.ac.uk/c/analytics>
- LAK16 Conference #lak16

From <http://www.slideshare.net/sheilamac/intro-to-learning-analytics-universities-scotlanddec2014smn>

Thank you!



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