



# **Analytics - an agent for change**

**Gavin Henrick**

Business Development

#mootgr18

@ghenrick

# But first...



# Our Mission

**Empowering  
educators to improve  
our world**

# Our Vision

To give the world  
the most effective  
**platform** for  
learning



# 4 QUALITY EDUCATION





Registered: 106K sites, 140M  
users

[moodle.net/stat](https://moodle.net/stat)

# Our Values

**Education**

**Openness**


**Integrity**

**Respect**

**Innovation**



# Educatio n

A woman with short brown hair, wearing a white shirt and a grey scarf, is holding a white mug and gesturing with her right hand. She is looking towards a man with curly brown hair and a beard, wearing a blue denim shirt. They are both looking at each other in a conversation. The background is a bright, out-of-focus indoor setting.

Education is the foundation of making the world a better place. We are always learning, improving how we learn, and seeing the education potential in every situation.



# Openness

S

We strive to be open in our goals, our tools, our processes and our results, as much as is practical. Everyone should be able to communicate freely and inclusively.



# Respec t

We treat everyone with respect and sensitivity, recognising the importance of their contributions: team members, teachers, students, customers, partners, suppliers and competitors.

# Integrity

We employ the highest ethical standards, demonstrating honesty and fairness in every action that we take. Say what you'll do, and do what you say.





# Innovatio

n

Encourage a culture where everyone has opportunities to make new things and take risks, and share that with others.

# Sustainability



# Why “educators”?

**We respect  
educators and we  
want them to  
innovate locally**

# **So Analytics...**

**How does this all  
mean? How does it  
apply to and  
support educators ?**





# **Learning analytics: What is it?**

# What is Learning Analytics?

Learning analytics is 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.

- Wikipedia

# What is Learning Analytics?

Field associated with **deciphering trends and patterns** from educational big data, or huge sets of student-related data, to further the **advancement of a personalized, supportive system** of higher education- 2013 Horizon Report

# **What is report without action?**

We already have this data available to us in various formats, and some reports.

There are many great report plugins and integrations available for Moodle.

But what happens to them? Who looks?  
Who decides to act? Who acts?

# Descriptive Analytics

What has  
happened?





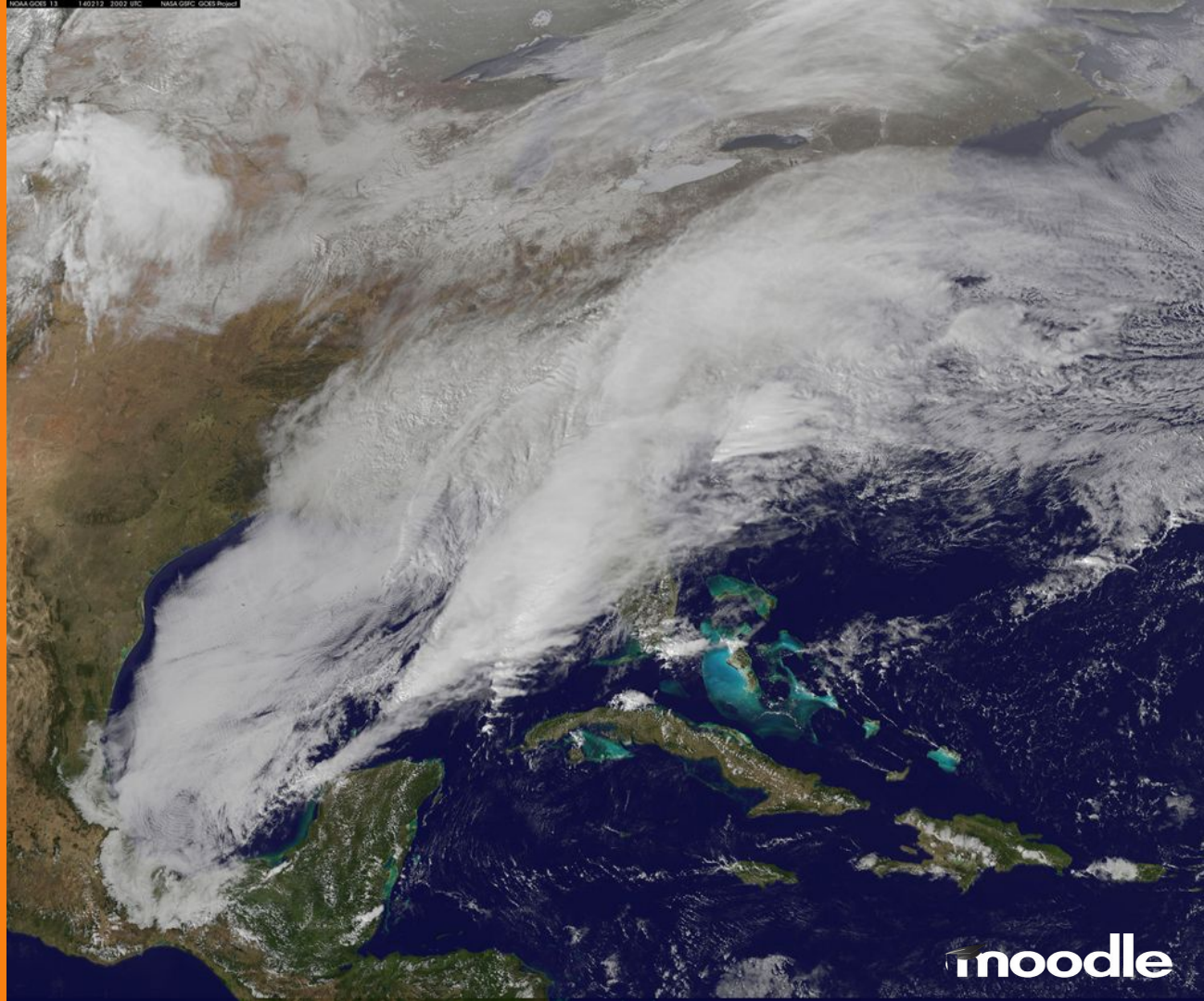
# **Diagnostic Analytics**

**Why has  
this  
happened?**



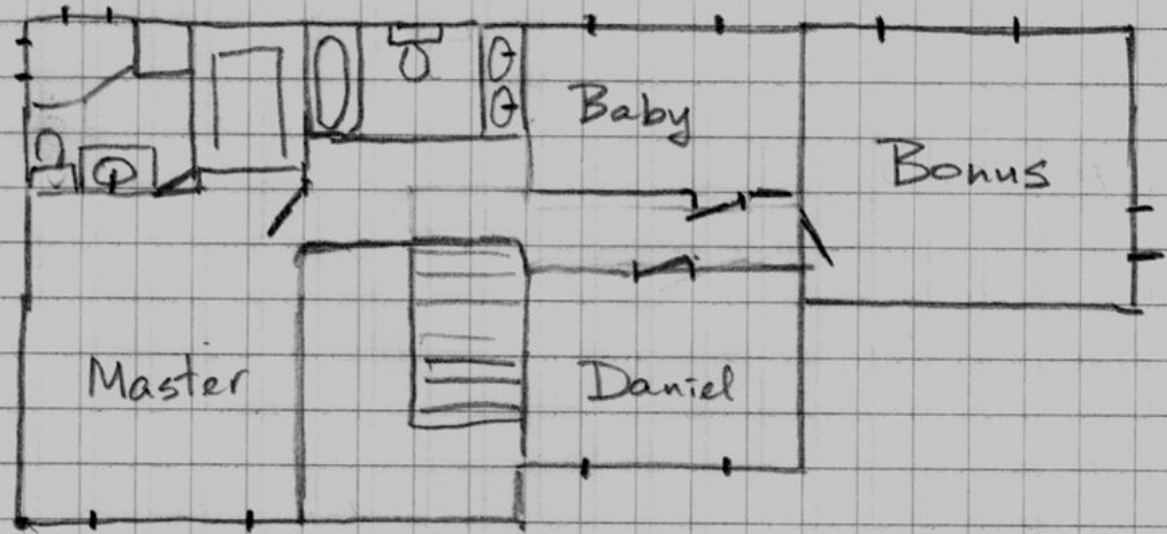
# Predictive Analytics

What will  
happen?



# Prescriptive Analytics

# What should happen?





**What will happen  
when something is  
identified?**

# Some types of interventions /

feedback

- Academic Mentor

- Student services engagement

- Counselling

- Coaching

- Tutoring

- Mentoring

- Nudging

**A nudge - indirect  
message to change  
behaviour**

Most  
popular  
plan

SalesforceIQ CRM Starter

Lightning Professional

Lightning Enterprise

Out-of-the-box CRM for up to 5 users

Starting at

\$25

USD/user/month\*  
(billed annually)

TRY FOR FREE

LEARN MORE >

Complete CRM for any size team

MOST POPULAR

\$75

USD/user/month\*  
(billed annually)

TRY FOR FREE

LEARN MORE >

Deeply customizable sales  
your business

\$150

USD/user/month\*  
(billed annually)

TRY FOR FREE

LEARN MORE >

BUY NOW



FREE TRIAL

For 30 days

UP TO  
50%  
OFF  
FOR 6 MONTHS

Independent  
Contractors

SELF-EMPLOYED

~~\$10~~ \$5 /mo

Buy now

SIMPLE START

~~\$15~~ \$10 /mo

Buy now

Small  
Businesses

ESSENTIALS

~~\$35~~ \$24 /mo

Buy now

PLUS

~~\$50~~ \$30 /mo

Buy now

Track miles ▾



# Ballot Bin Voting with cigarette stubs



**Lucerne,  
Switzerland  
Gets  
Cleaned Up  
in a Playful  
Manner**



**housefly  
painted  
onto the  
ceramic of a  
urinal in a  
men's  
public toilet**



# Nudges in Gmail

Thanks for the update.

Interesting.

Thanks!

↩ Reply

➡ Forward



# Kissing Point Safely



**Selfie Spot  
Helena  
Montana**



## Original

The screenshot shows the original version of the Taloon.com website. The header is red with the Taloon.com logo and navigation links. The main content area features a product page for the Lumilinko AL-KO Snowline 620 II. The product image is on the left, and the description is on the right. Below the product image, there is a red-bordered box containing social sharing buttons for Facebook, Twitter, and LinkedIn. The footer includes a circular logo with the year 2004.

## Challenger

The screenshot shows the challenger version of the Taloon.com website. The layout is identical to the original, but the social sharing buttons (Facebook, Twitter, LinkedIn) have been removed from the product page. The red-bordered box is no longer present, and the footer remains the same.

Taloon.com removed social sharing buttons from its product pages. This increased add to carts by 11.9%



Visual Website Optimizer

# Nudge Example from not in education



**Follow Neil Patel on Facebook**  
Get free marketing and business advice!

 Like 105k





*A Practitioner's Guide To*  
**Nudging**

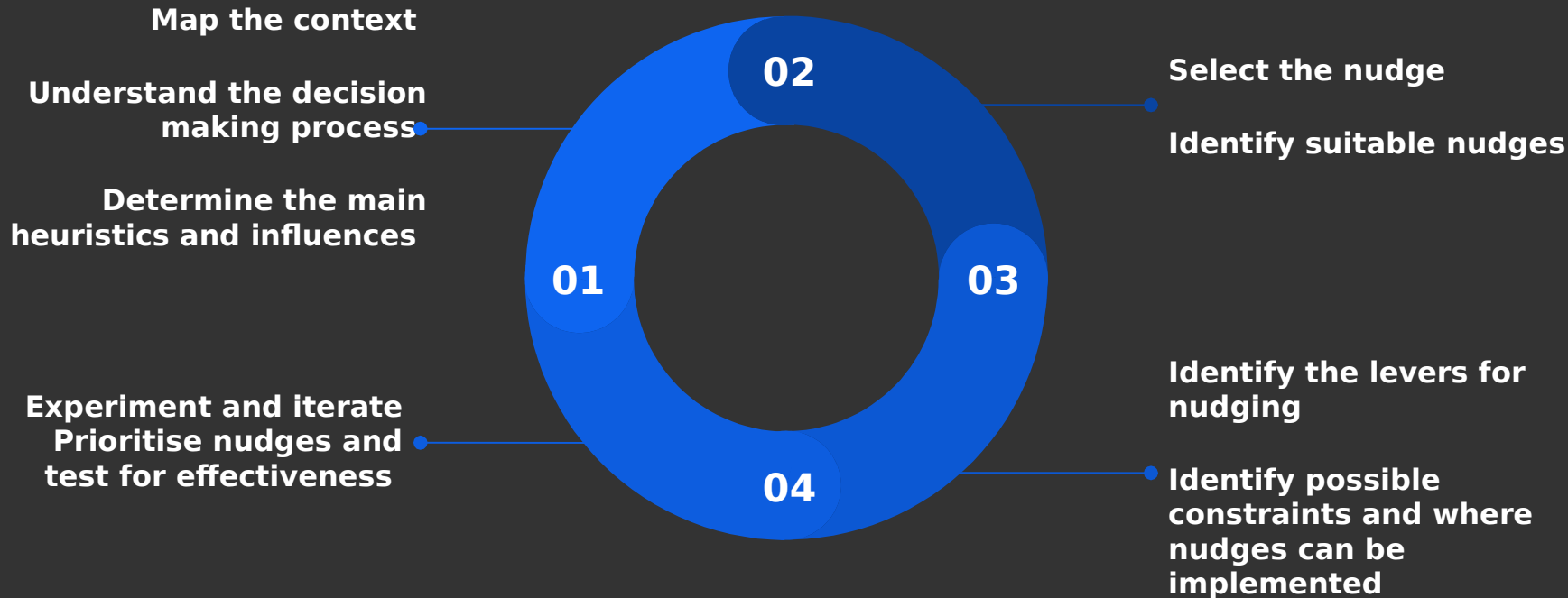
Kim Ly, Nina Mažar, Min Zhao and Dilip Soman

15 March, 2013

Elizabeth Lyons and Julian House contributed research and analysis to this report.

		MINDFUL		MINDLESS	
		ENCOURAGE	DISCOURAGE	ENCOURAGE	DISCOURAGE
ACTIVATING A DESIRED BEHAVIOUR	EXTERNALLY-IMPOSED	Simplifying tax rules to make tax filing easier.	Placing signs to remind people not to litter.	Advertising that most people are recycling to increase recycling efforts.	Using fake speed bumps to discourage speeding <sup>9</sup> .
	EXTERNALLY-IMPOSED	Simplifying application processes for college grants to encourage higher-level education <sup>10</sup> .	Installing car dashboards that track mileage to reduce gas usage <sup>11</sup> .	Automatically enrolling for prescription refills to encourage taking medication.	Placing unhealthy foods in harder to reach places <sup>12</sup> .
BOOSTING SELF-CONTROL	SELF-IMPOSED	Maintaining an exercise routine by agreeing to pay a small penalty if a gym session is missed <sup>13</sup> .	Avoiding drunk driving by hiring a limo service beforehand <sup>14</sup> .	Joining a peer savings group to encourage saving money <sup>15</sup> .	Channelling money into a separate account to reduce the likelihood of it being spent <sup>16</sup> .

# Nudge development process



# How can nudges be implemented in education?



# Example in note taking watching a

video  
From a study in Canterbury NZ

Identified different styles of  
engagement

Found opportunities for interventions

Prediction model was developed

A framework of interactive personalised  
nudges was created

ACM ISBN 978-1-4503-4635-1/17/07.

<http://dx.doi.org/10.1145/3079628.3079683>

# Recent presentation at ASCILITE

**2018** Keeping everyone OnTask: Gauging the impact of personalised feedback through academic case studies

3 short cases studies

Lim, L., Barker, S., Fudge, A. & Kelly, S. (2018). Keeping everyone OnTask: Gauging the impact of personalised feedback through academic case studies. In M. Campbell, J. Willems, C. Adachi, D. Blake, I. Doherty, S. Krishnan, S. Macfarlane, L. Ngo, M. O'Donnell, S. Palmer, L. Riddell, I. Story, H. Suri & J. Tai (Eds.), Open Oceans: Learning without borders. Proceedings ASCILITE 2018 Geelong (pp. 184-193).

# Case 1: OnTask for Student

## Engagement

The inclusion of the OnTask email being sent to students 3 days prior to the closing date of the quiz in 2018 led to an additional 47.4% of the class completing the quiz.

Lim, L., Barker, S., Fudge, A. & Kelly, S. (2018). Keeping everyone OnTask: Gauging the impact of personalised feedback through academic case studies. In M. Campbell, J. Willems, C. Adachi, D. Blake, I. Doherty, S. Krishnan, S. Macfarlane, L. Ngo, M. O'Donnell, S. Palmer, L. Riddell, I. Story, H. Suri & J. Tai (Eds.), Open Oceans: Learning without borders. Proceedings ASCILITE 2018 Geelong (pp. 184-193).

## Case 2 : OnTask for large classes

Needed to assist in personalising of feedback for large classes (200-600)

Using the system allowed the identification of **specific trigger points** at which **feedback** can be sent to students to **prompt them** to take **appropriate action**

## Case 3 : OnTask for Student

### Wellbeing

Study has suggested the inclusion of OnTask interventions assessing student wellbeing as an emotional state of mind.

Questionnaire will allow students the opportunity to self-assess

A response will offer understanding and supportive acknowledgement ... and suggestions or techniques to return to a balanced position in the flow

# **Text 'nudges' boost engagement for community college STEM students**

Text message reminders and answers to students' questions reduced the summer melt rate by 22%.

<https://www.educationdive.com/news/study-text-nudges-boost-engagement-for-community-college-stem-students/517814/>

# The value of a nudge

The students were sent nudges regarding due dates, study habits, stresses and staying focused.

“We typically find that 60-70% of these students will return texts that ask them questions. “















<https://www.tacoma.uw.edu/teaching-learning-technology/pplus>

# University of Analytics

[Dashboard](#) / [Site administration](#) / [Analytics](#) / [Analytics models](#)

Blocks editing on

## Analytics models

Target	Enabled	Indicators	Time splitting	Insights	Actions
No teaching 	✓	<ul style="list-style-type: none"><li>There are no teachers </li><li>There are no students </li></ul>	Single range 	<div>Choose... </div>	<a href="#">Actions</a> ▼
Students at risk of dropping out 	✓	<ul style="list-style-type: none"><li>Course accessed after end date </li><li>Course accessed before start date </li><li>Any write action </li><li>Read actions amount </li><li>Assignment cognitive </li><li>Assignment social </li></ul>	Quarters accumulative 	<div>Choose... </div>	<a href="#">Actions</a> ▼



# Moodle Learning Analytics Working Group

- Open Source: No proprietary algorithms
- Open Access: Anonymized Data Exchange
- Open Research: All can participate in posing questions and seeking answers

Visit <https://moodle.org/analytics> !

# Current features

- Two built-in prediction models: "Students at risk of dropping out" and "No Teaching".  
A set of student engagement indicators based on the Community of Inquiry.  
Built-in tools to evaluate models against your site's data  
Proactive notifications for instructors using Events  
Instructors can easily send messages to students identified by the model  
Machine learning backend plugin type

# Students at risk of dropping out

Prediction: **⚠ Student at risk of dropping out**

Name

Actions



Nannie Hussain

Actions ▾



Mariano Hernandez



Carmella Carandang



Barbara Bhardwaj

Send message

Outline report

View prediction details

Acknowledged

Not useful

sights and Actions

# Current limitations

- Models included in this release must be "trained" on a site with previous completed courses, ideally using the Moodle course completion feature.

The current models cannot make predictions on a site until this is done.

The prediction model included with this version requires that courses have fixed start and end dates.

Models and predictions are only visible to teachers and administrators at present.

# Use Moodle for Research

- Use the data-rich Moodle platform for your study
- Create plugins to implement new structures
- **Share** plugins to collect more data and reviews
- Join in our Moodle Inspire analytics initiative.

Visit [research.moodle.net](https://research.moodle.net) !



[gavin@moodle.com](mailto:gavin@moodle.com)

@ghenrick  
(Twitter or Telegram)

[https://www.naspa.org/images/uploads/main/DATA2018\\_DOWNLOAD.pdf](https://www.naspa.org/images/uploads/main/DATA2018_DOWNLOAD.pdf)  
[https://www.jisc.ac.uk/sites/default/files/how\\_do\\_you\\_decide\\_whether\\_to\\_intervene\\_with\\_students\\_base  
d\\_on\\_their\\_learning\\_analytics\\_transcript.pdf](https://www.jisc.ac.uk/sites/default/files/how_do_you_decide_whether_to_intervene_with_students_based_on_their_learning_analytics_transcript.pdf)  
<https://oro.open.ac.uk/34330/1/LAK12-DougClow-personalcopy.pdf>  
<http://2018conference.ascilite.org/conference-proceedings/>  
<https://www.slideshare.net/dougclow/the-learning-analytics-cycle-closing-the-loop-effectively>

2008 book *Nudge: Improving Decisions about Health, Wealth, and Happiness*, by Richard H. Thaler and Cass R. Sunstein

[https://www.rotman.utoronto.ca/-/media/Images/Programs-and-Areas/behavioural-economics/GuidetoNu  
dging-Rotman-Mar2013.pdf](https://www.rotman.utoronto.ca/-/media/Images/Programs-and-Areas/behavioural-economics/GuidetoNudging-Rotman-Mar2013.pdf)

Using Learning Analytics to Devise Interactive Personalised Nudges for Active Video Watching  
<https://ir.canterbury.ac.nz/bitstream/handle/10092/14529/AVWS-UMAP2017-final.pdf?sequence=2>

A Practitioner's Guide To Nudging Kim Ly, Nina Mažar, Min Zhao and Dilip Soman