



**Northumbria
University**
NEWCASTLE

Educational Analytics at Northumbria

SURF Analytica #surfstudiereis19

21/03/2019

Professor Peter Francis, Project Sponsor

Dr Heather Robson, Project Executive

Carly Foster, Project Manager

A Whole University Approach to Student Life and Wellbeing

Universities are committed to:

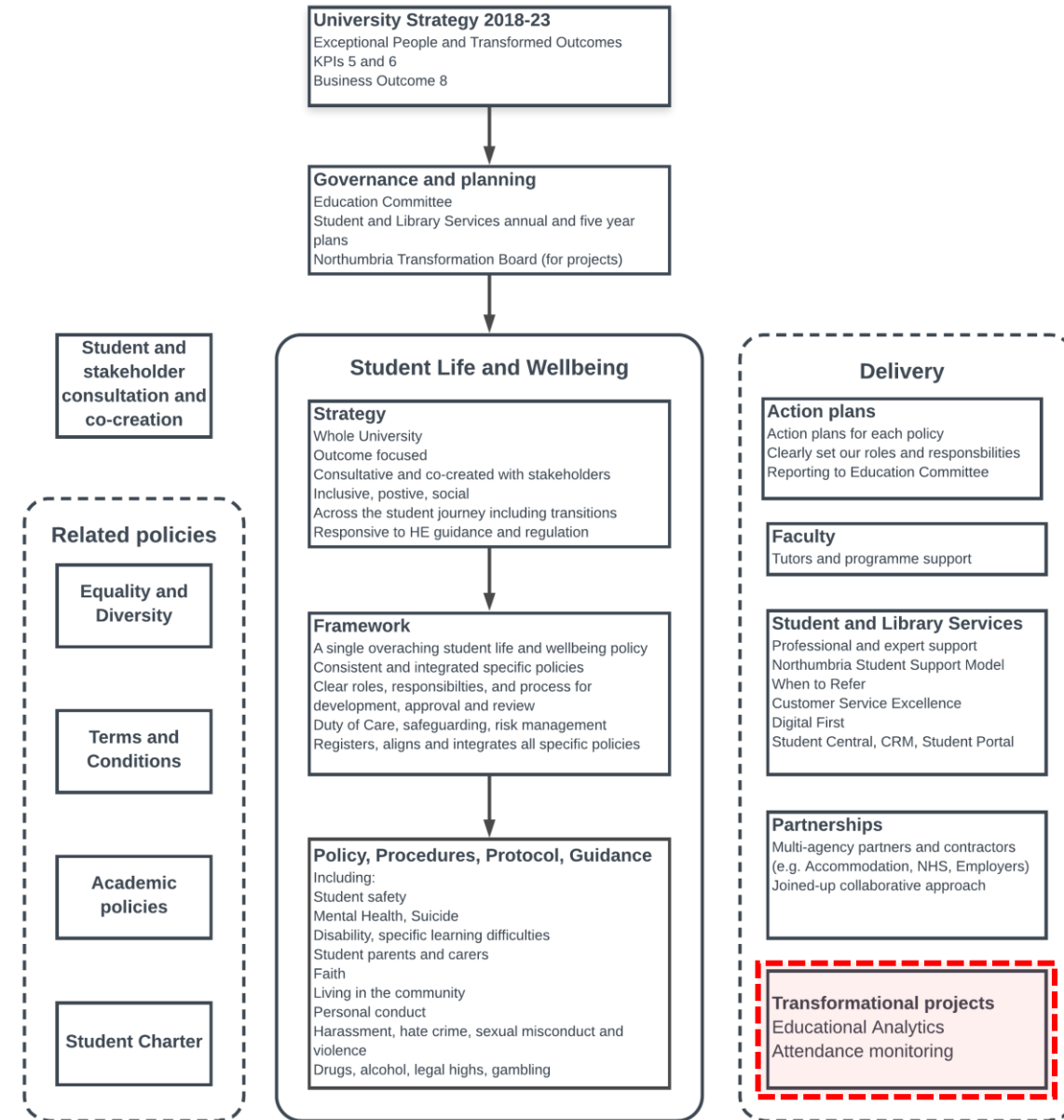
- Duty of Care and Safeguarding
- Equality and Diversity
- Student experience
- Graduate outcomes

*Its not just about **SURVIVING** it has to be about **THRIVING***

Thriving means:

- Engaged learning
- Academic determination
- Positive perspective
- Diverse citizenship
- Social connectedness

Schreiner (2010)



Educational Analytics Framework

A transformative and immersive experience evidenced through improved student outcomes enabled by ...

...a high quality, academically challenging learning community which delivers proactive and tailored support models enabled by...

...Adaptive Analytics which drives a customised learning environment where programmes, staff, services, resources and technology are optimised...

... Learner Analytics which enables students to self-regulate their learning and benchmark their performance through targeted communication, visualisation tools and other enhancement activities...

... Learning Analytics which promotes targeted personal, pastoral, wellbeing or other support interventions ...

...Academic Analytics which empowers staff to make academic, pedagogic or other Learning and Teaching interventions..

...Institutional Analytics which enables strategic interventions for improved utilisation of physical, spatial, technological or digital resources and informed communications...



...as part of a personalised student experience which is built upon...

...an Educational Data Mining (EDM) platform which harvests, processes and analyses Big Data from the Learning Environment to identify patterns and generate insights facilitated by investment in...

Data

Systems

Processes

Policies

People

← Benefit
← Outcome

Theory of change

← Inputs

#TakeOnTomorrow

Learning Analytics Pilot Project 2017/8

We...

- Mined Educational Data...
- Predicted “at risk” students...
- Made interventions with personal tutors...

Were they the right students?

but...

- Retention in the pilot department did not significantly improve

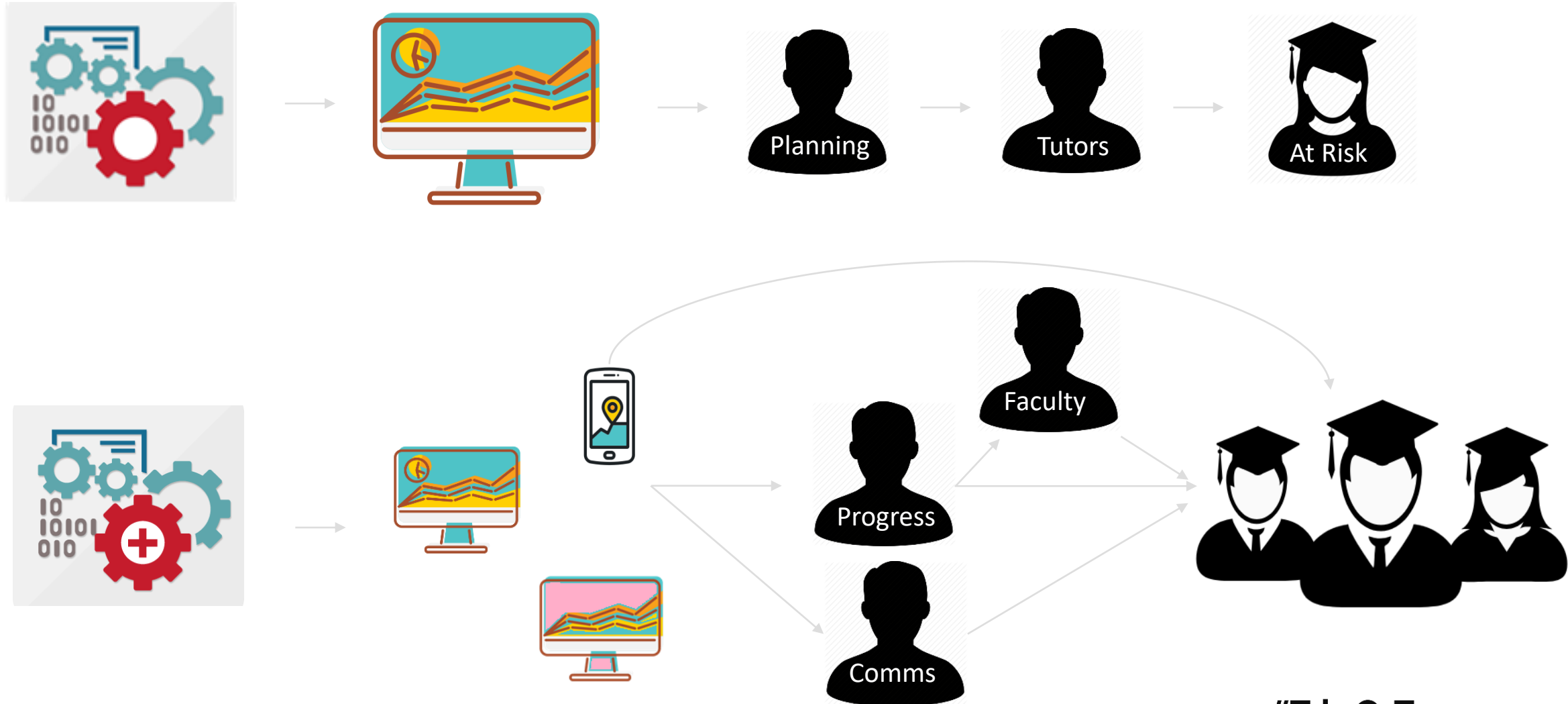
Were they the right interventions?

So...

- Learning Analytics Project closed and evaluated
- 15 recommendations to inform the Educational Analytics project

Were they the right staff?

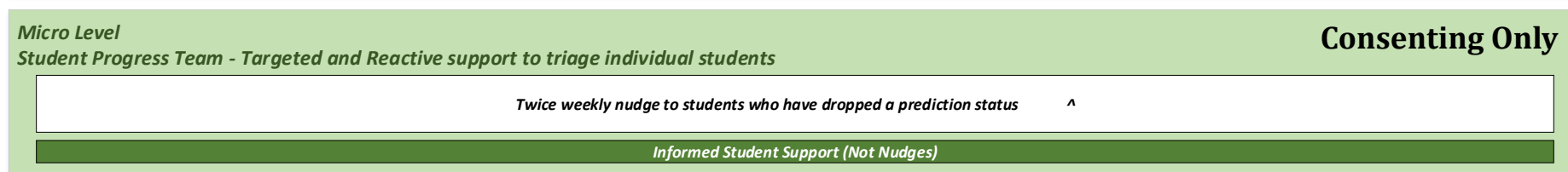
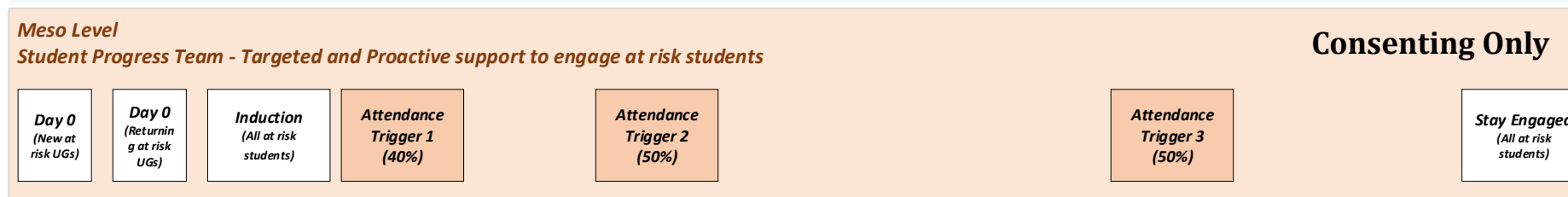
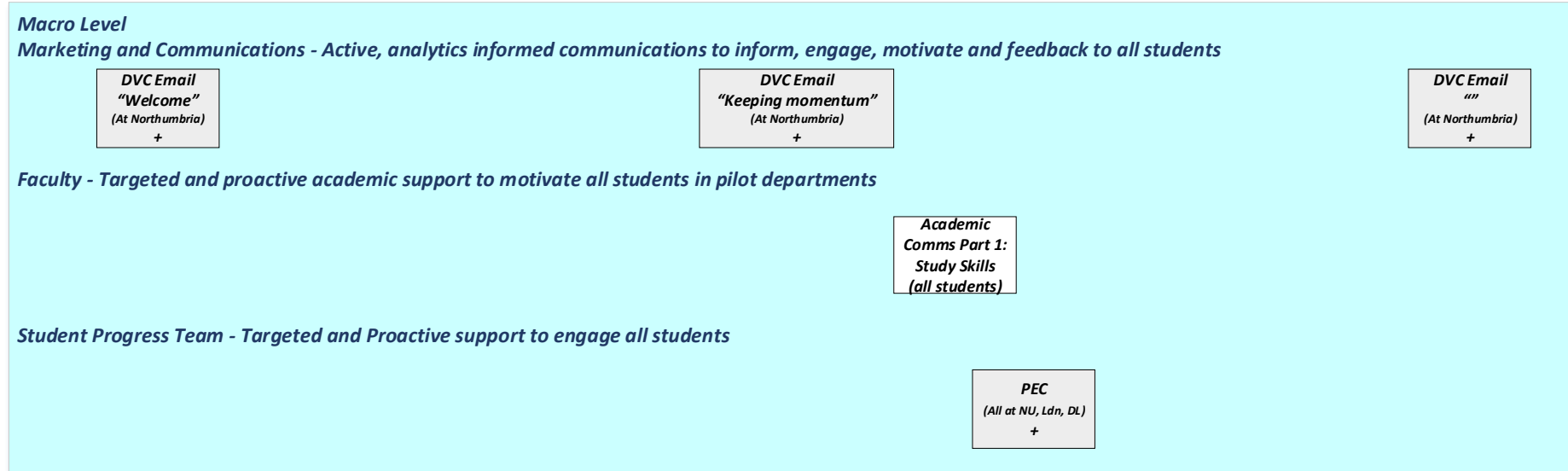
Educational Analytics 2018/9



#TakeOnTomorrow

“Nudge” Timeline

Semester 1 High Level Nudge Plan



Analytics is used to communicate with all students via “nudge style” emails

Analytics is used to target groups of consenting students

Analytics is used to target individual consenting students

0 1 2 3 4 5 6 7 8 9 10 11 12

#TakeOnTomorrow

Welcome Email (All New Students)

AGE ⓘ

This chart contains historical persistence data sampled on day 13 from 2 previous terms

Save to Scratchpad

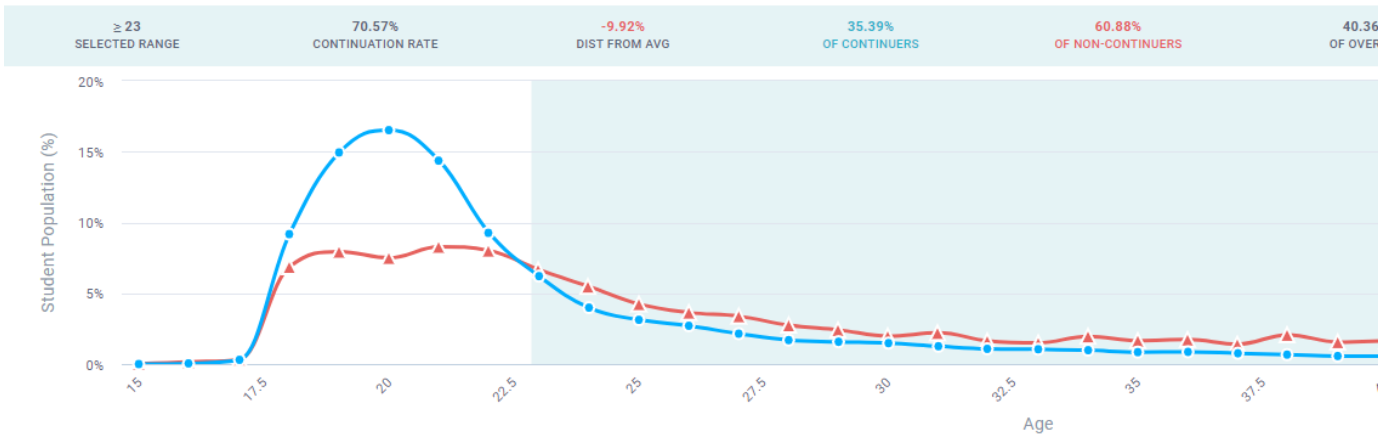
Build Paired Predictors

Sample Count: 33958 Of 34424 (98.65%) [More Info](#)

Welcome to Northumbria - a message from Professor Peter Francis (805 students)

Francis)

Sep 24, 20



MESSAGE SENT

A message from

Professor Peter Francis

Deputy Vice-Chancellor



Dear [Student Firstname],

Whether this is your first attempt at Higher Education or you're trying something new, I'm delighted to welcome you to Northumbria University.

My name is Peter Francis and I am a Professor of Criminology and Deputy Vice-Chancellor. I have overall responsibility for your learning and teaching making sure that the educational experience you receive is outstanding.

You are about to join an exciting academic learning community, working with some of the best academics known nationally and internationally for their research. Alongside fellow students you will develop your knowledge, skills and your abilities. I do hope that you find your programme engaging, challenging and stimulating.

To get you going here during your first few days, I've put together a [handy blog](#) which will give you lots more information about what is available to you as a Northumbria student, for instance our fantastic Careers and Employment service and Library.

It's tremendous to have you on board here as you embark on what I hope will be an inspirational, enlightening and dynamic journey with us.

So once again welcome! I try and get out about on campus as often as I can, so if you see me, please do stop me and chat - I'm always keen to hear how you're getting on.

Best Wishes,



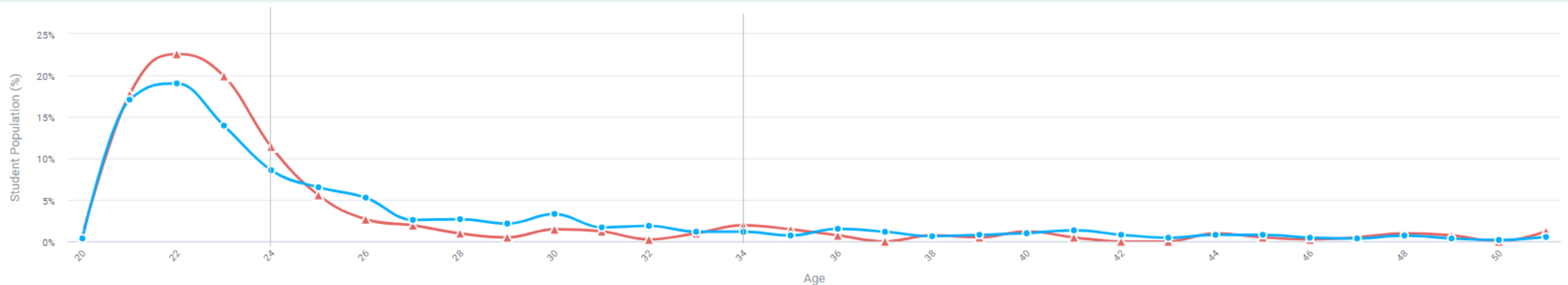
Professor Peter Francis
Twitter: [@ProfPFrancis](#)

- Age is a powerful predictor in the retention model **at the start of the year** for new students
- The opening line of the nudge acknowledges that students over 23 may be starting uni from a different place in their life to those younger than 23 and attempts to recognise and normalise this

#TakeOnTomorrow

Settling In (New “at risk” Postgrads)

< 24 SELECTED RANGE	68.89% CONTINUATION RATE	-4.20% DIST FROM AVG	58.98% OF CONTINUERS	72.33% OF NON-CONTINUERS	62.57% OF OVERALL	958 HISTORICAL COUNT
25 - 34 SELECTED RANGE	81.54% CONTINUATION RATE	8.45% DIST FROM AVG	28.42% OF CONTINUERS	17.48% OF NON-CONTINUERS	25.47% OF OVERALL	390 HISTORICAL COUNT
≥ 34 SELECTED RANGE	75.49% CONTINUATION RATE	2.40% DIST FROM AVG	13.76% OF CONTINUERS	12.14% OF NON-CONTINUERS	13.32% OF OVERALL	204 HISTORICAL COUNT



Students <24 were encouraged to build on the momentum of their previous study

Students 24-34 were encouraged to build on the goals that drove them to take on PG study

Students 34+ were offered support and acknowledged the challenges of studying and balancing other life commitments

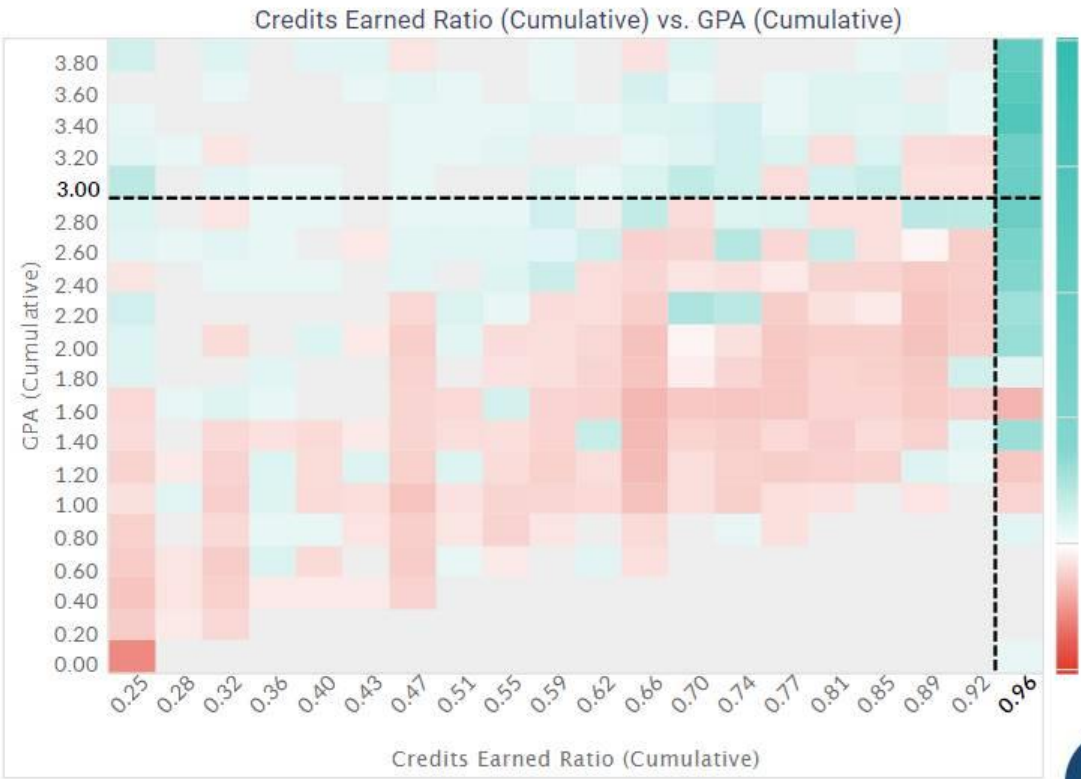
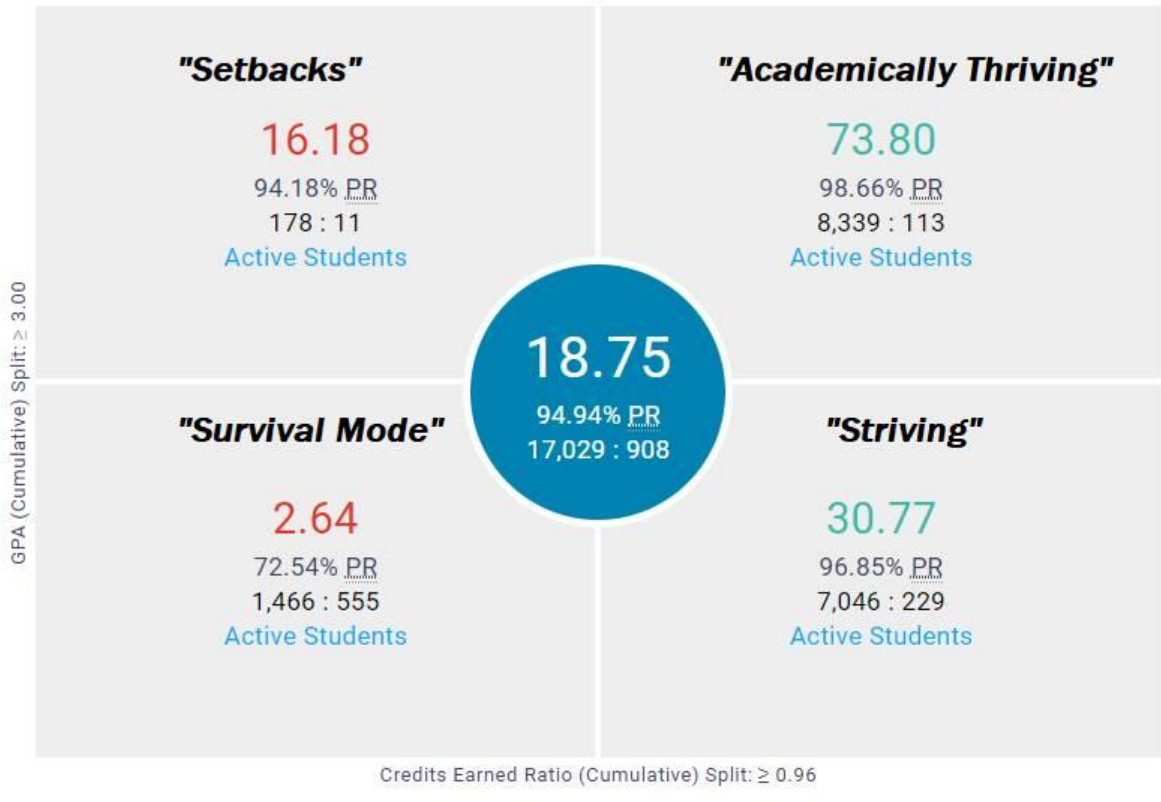
After Assessment Nudges

PAIRED PREDICTOR PLOT

Save to Scratchpad

X: Credits Earned Ratio (Cumulative)

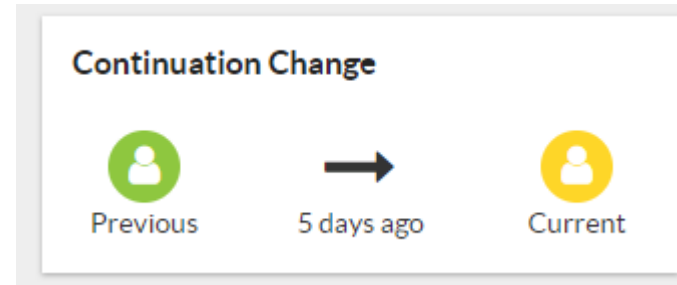
Y: GPA (Cumulative)









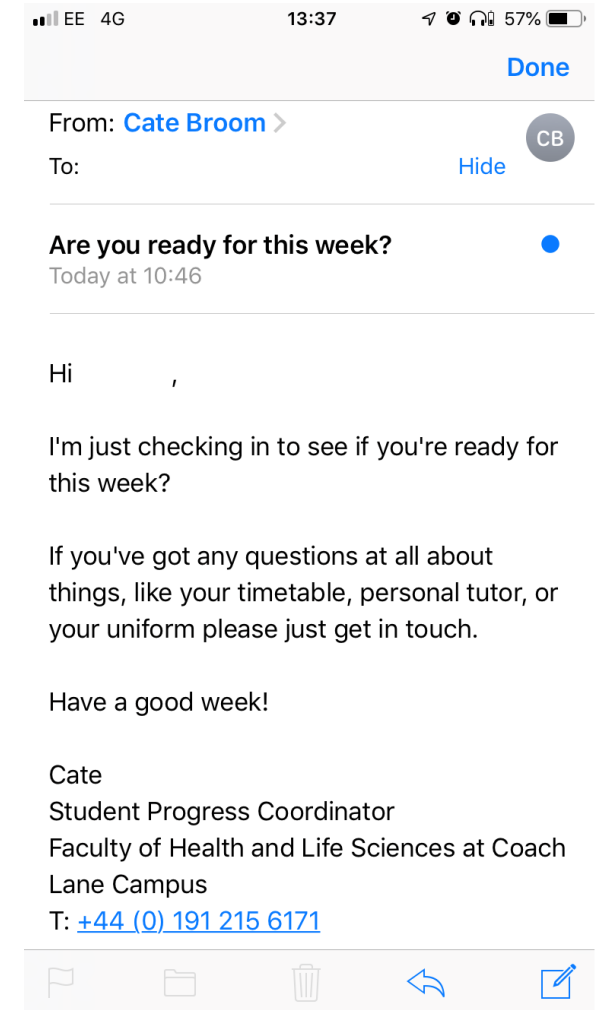
Individual Student Nudges

Who: Returning students who have become at risk between 24/09/2018 and 01/10/2018

What: A nudge to triage any issues during the first week of teaching. This nudge is important for **late enrolling students who had missed the initial nudges** although students becoming at risk were also captured. This was especially important on Nursing programmes where enrolment is often delayed due to mandatory requirements for DBS clearance meaning uniforms and PT sessions fall behind. These nudges specifically referenced the issues most affecting those students. Other nudges referenced Blackboard.



CONTINUATION PROBABILITY	CHANGE
	30/09/2018 ↓
	30/09/2018 ↓
	30/09/2018 ↓
	30/09/2018 ↓
	30/09/2018 ↓
	30/09/2018 ↓



Nudge Analysis and Evaluation Planning

Analysis of Nudges Nudge Type	Initiator			Reply Rate
	Advisor Initiated	Student Initiated	Opens	
Deputy Vice-Chancellor Comms	109,006	116	69,058	0.1%
Academic (Macro)	43,171	9	32,624	
Day 0 Nudge	1,927	25	1,002	3%
Induction Nudge	864	19	533	
Attendance Low (First of Semester)	2,782	95	1,345	
Attendance Less than 50% Nudge	1,776	178	1,205	
Distance Learning Outreach	36			
SPT Stay Engaged	821	4	387	
SPT Welcome Back	644	12	408	
Library Skills	757		512	
Continuation Probability (At-Risk)	32	6	-	8%
Continuation Shift Down	593	49	-	
Programme Leader Nudge	93	8	-	
Personal Tutor Nudge	66	2	-	
Grand Total	162,568	523		

Focus Groups

Survey 1

Survey 2

Interviews

PPSM/ Data Science

Descriptive Stats

Referrals from At Risk Nudges

- 1500 at unique risk students with 300 responses
- 139 No recommendation or referral required
- **28** referrals to Counselling and Mental Health Support
 - + 12 to Disability and Dyslexia Support
 - + 9 WIFT
 - + 5 Student Transitions
 - + 60 students offered support from SPT
- Other students signposted to Late Approvals, PEC, Finance
- c.100 referrals to Faculty (Personal Tutor, Programme Leader or Module Tutor)

Academic Analytics

- A qualitative focus on impact
- Four academic departments selected as part of the pilot project
 1. Computing and Information Science
 2. Design
 3. Law
 4. Sport, Exercise and Rehabilitation

Approach 1

Personal tutors will coordinate the delivery of targeted academic ‘nudge’ messages (informed pedagogic/Learning and Teaching activity) to designated students and cohorts.

- These nudge messages will be aligned to a semester nudge timeline to provide structured and timely personalised academic support. This equips and empowers academic staff to support students and make appropriate academic, pedagogic or learning and teaching interactions and initiatives
- Informed by IFA personal tutors will also engage with tutees as normal practice in meetings, studio working etc., and will capture this activity using IFA (Log Outreach)

Approach 2

Programme Leaders will play a role in the pilot phase engaging with students at programme level through nudge communication and in the evaluation of what works best to deliver a transformed learning and supportive experience for students

- The nudge messages will be specific to powerful predictors in the pilot department and consenting students
- Programme leaders will also work with SPT in nudge surgeries and be nudged by SPT team with students who are becoming at risk

Staff Engagement

- 40 academic staff have been identified and have received initial training in the use and interpretation of the IFA tool.
- This core group of academic staff will be the ambassadors for the workstream and during semester 2 the number of academic staff adopting the use of the tool will be scaled up.
- Training and Support
 - Nudge Theory
 - Crafting of Nudges
 - Academic Practice (Programme Leader and Personal Tutor)
 - Interpretation of student profiles; Inspiration and Intervention Factors
 - Using IFA to inform academic practice

Discussion Themes

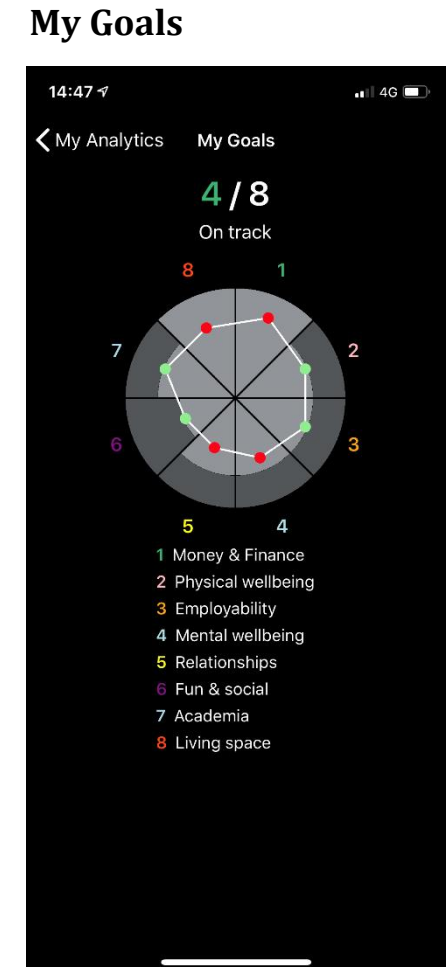
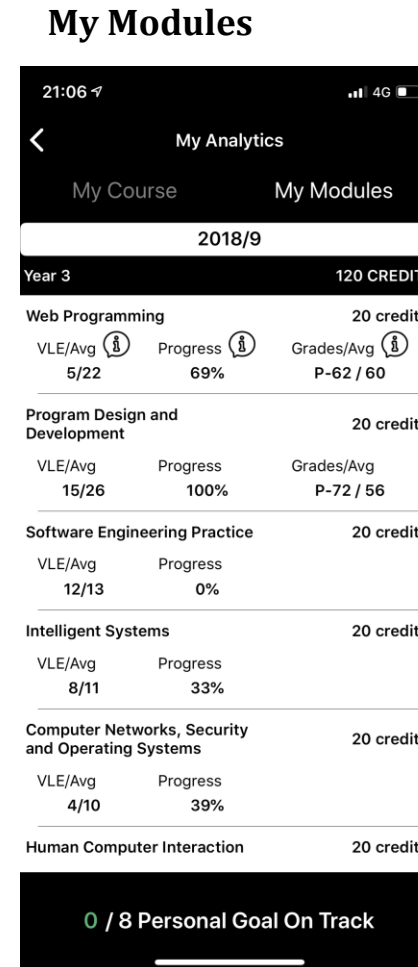
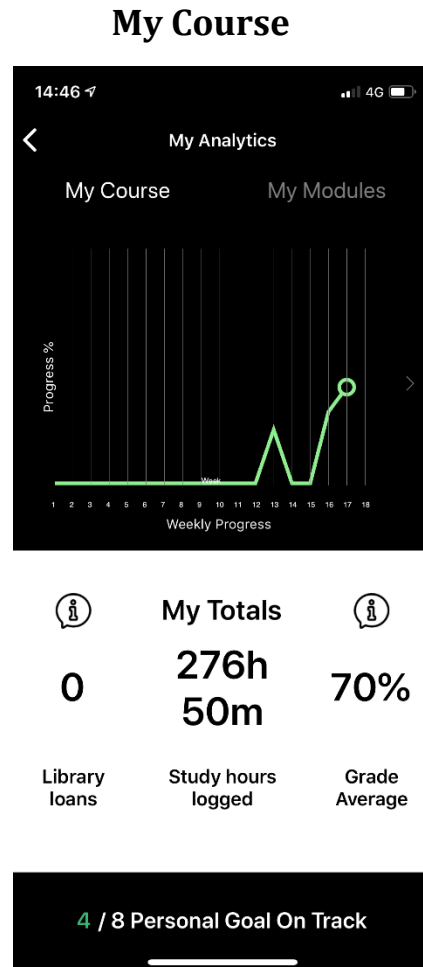
- **Personal/Guidance Tutor** – behaviour what do we expect from Guidance tutors - re-set expectations ...do we need a new policy or does EA allow a new language and engagement?
- **Relationships**
 - The trusted person begins that relationship before arrival – mentor, guidance, tutor
 - SPT are Pivotal
 - Sharing information of all engagement is key to a holistic approach of support...can this be achieved?
 - The Personal Tutor and Programme Leader – Key in AA
 - A super / year tutor with oversight and responsive to student cohort?
- **Programme** leaders are the glue
 - Insight to cohort behaviour
 - Departmental characteristics
- **Systems:** Can we link e-vision / show my student ?
- Not to be **deficit focussed** - lets address the high performing students

Learner Analytics

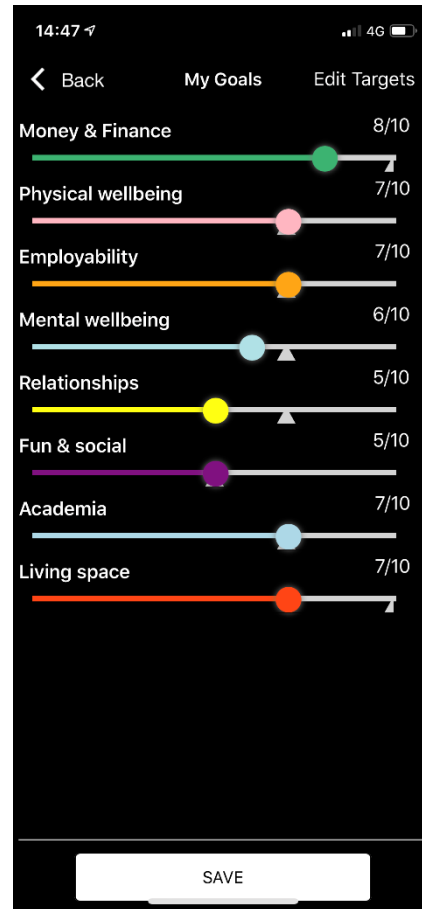
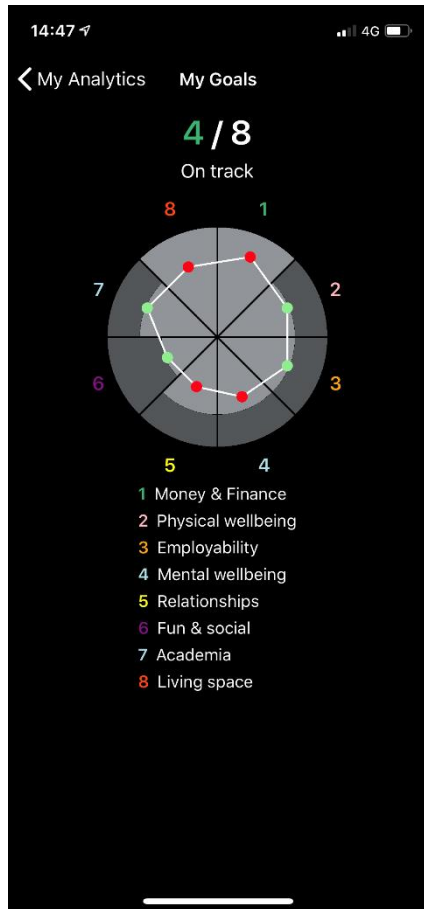
- Exploring the role of student-facing data and analytics to transform the student experience
- Embedded early design into our Multidisciplinary Design PGT course
- Worked with our in house IT team to build an app which integrates with Civitas
- The programmes which have been selected are:
 - Sport Management (Level 4)
 - Interior Design (Level 4 and 5)
 - Computer Science (Level 5)
- Qualitative and Quantitative research through Focus Groups, Interviews and Log Data

Learner Analytics

Analytics is a function in the My Learning section of NU Connect that is only available to selected students during a pilot project. There are three parts to NU Connect Analytics and a balance between data the university knows about the student (e.g. grades and library loans) and data that the student creates themselves (e.g. study hours logged)



NU Connect Analytics: My Goals



My Goals considers a number of important factors affecting the day to day student experience outside of the classroom.

Clicking the chart allows students to log where they currently feel they are (the circles) and set targets (triangles) of where they want to be for each area. These are then visualised on the chart so that they can see where they are overall.

They can change and reflect on this area as often as they feel is useful.

Initial Areas for Further Exploration



- Tasks, to do lists and reminders for **automated progress**



- Attendance data



- Games and badges



- Personalised insights / nudges



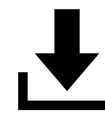
- Competition and comparison with peers



- Targets and scenarios



- Historical views to track progress



- Download their own data