Learning Analytics to Improve Student Outcomes

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Jisc

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University of Greenwich

- Public, research university in Greenwich and Medway, Kent
- Specialise in professional, technical and vocational subjects
  - Arts, humanities and social sciences
  - Business
  - Education and Health
  - Engineering and Science
- Strong track record of widening access
- 21,000 students in UK; plus 17,000 TNE students

Greenwich Digital

OUR DIGITAL JOURNEY 2013-2022
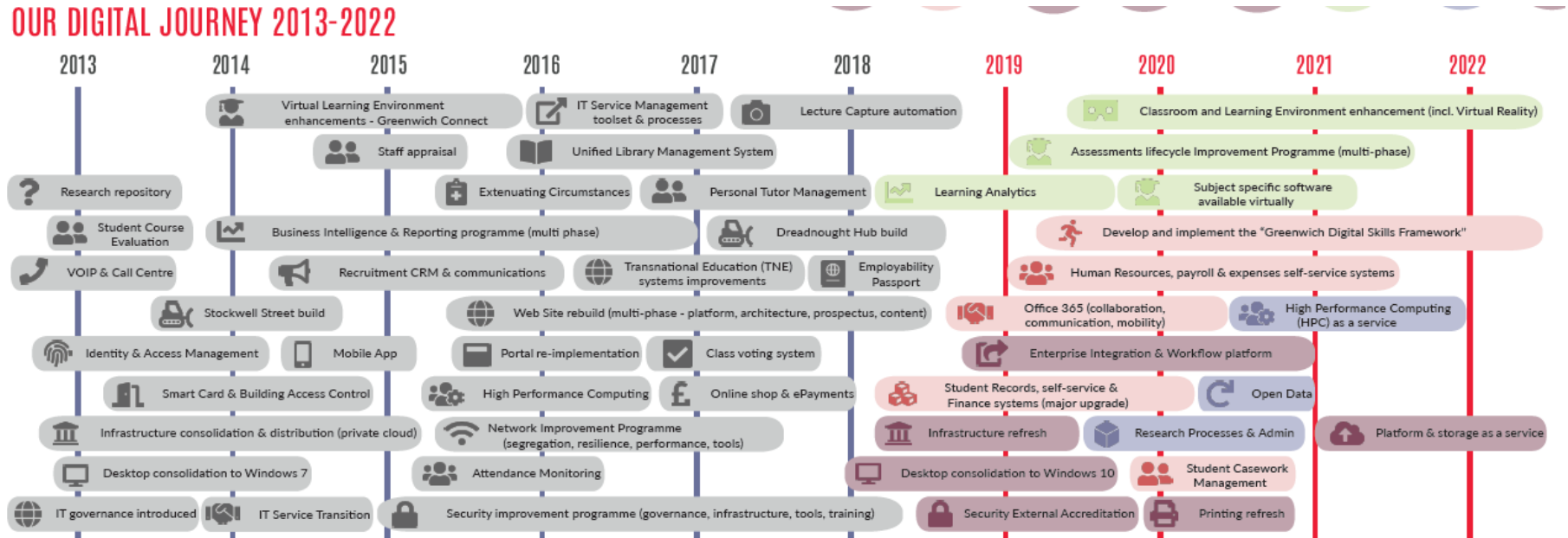
- Student records
- Virtual Learning Environment
- Attendance Monitoring
- Library Management
- Plagiarism detection

- Learning Analytics
- Timetabling
- Lecture Capture
- Personal Tutor Management System

Learning Analytics

- Use of data and algorithms to improve student outcomes by changing student and staff behaviour
  - Data Science
  - Artificial Intelligence
  - Behavioural Insights
- Term introduced by Mitchell and Costello in 2000, used in Blackboard LMS in 2005
- Wide range of student uses
  - Engagement
  - Retention & Progression
  - Mental health and well-being
  - Module Selection
  - Overall Outcomes

Pass Probability and Metrics

88 %	88 %
0 100	0 100
● Online	● Online
● Achievement	● Achievement
CONTRACT LAW	COMPANY LAW
87 %	50 %
0 100	0 100
● Online	● Online
● Achievement	● Achievement
TORT AND RELATED ISSUES	CONSTITUTIONAL LAW

Greenwich Personal Tutor Management System

Integrates key student data

- Demographics
  - Personal details (name, contact information, gender, ethnicity, disability information etc.)
  - Programme and course details
  - Personal statement
  - Transcript

- Activity:
  - VLE
  - Library
  - Attendance
  - SRS

- Tutor comments

Main Menu.

Filtering Menu.

Count indicating the number of Tutees.

Menu Items repeated after the tutee list.

List of tutees showing summary details and programme information.

Jisc LA System Architecture

Presentation and Action

HEI Dashboards | Data Explorer | Student App: Study Goal

Data Storage and Analysis

Jisc Learning Analytics Predictor | Learning Data Hub | Data Aggregator

Transformation Toolkit/Plugins

Data Collection

Student Records | Other Data | VLE | Library | Attendance | Equipment Use

Jisc National Learning Analytics System

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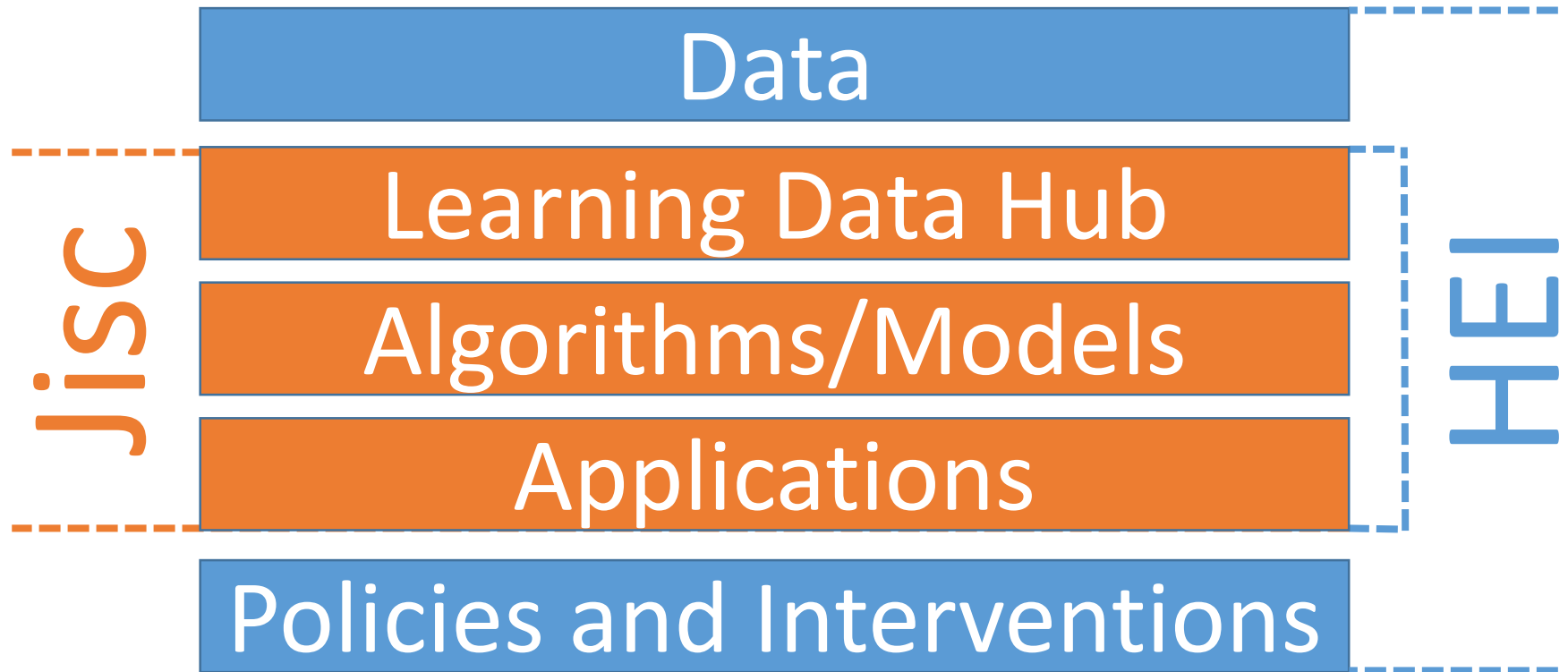
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Example LA Projects

- Columbus State University College (USA): retention rose by 4.2% (5.7% for low-income students)

- Open University (UK) pilots: 2.1% boost in retention

- University of New England (Australia): drop-out rates fell from 18% to 12%

- Purdue University (USA): 12% more B and Cs, 14% fewer D and Fs using LA system

Rebooting learning for the digital age: What next for technology-enhanced higher education?

Sarah Davies, Joel Mullan, Paul Feldman

hepi

Jisc

Jisc briefing
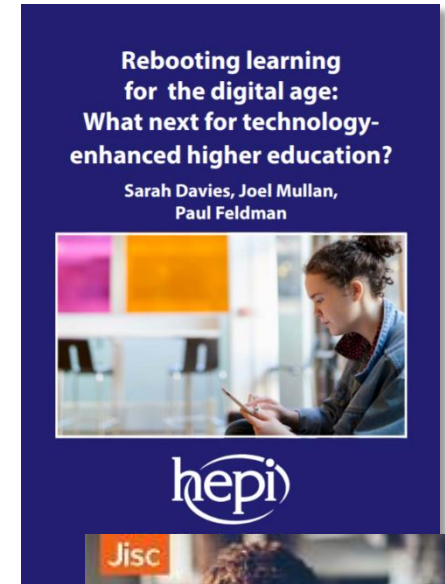
Improving Retention with LA

- Monitor attendance
- Intervene based on data insights
  - Compare student engagement/performance with cohort and tutor/lecturer expectations
  - Predict student outcomes
- Motivate students
  - Review performance
  - Set goals

Data

- Characteristics / prior learning
  - Student records (Banner)
- Engagement
  - Virtual Learning Environment/Learning Management System (Moodle)
  - Library access/usage (SirsiDynix)
  - Attendance Monitoring System
  - Personal Tutor Management System
- Assessment
  - Student records (Banner)
- Other

Student Records   Other Data   VLE   Library   Attendance   Equipment Use

Data Storage and Analysis

- Tools to read and transform data from most popular systems/formats

- Data aggregation tools

- Data stored in Learning Data Hub (database/ warehouse)

- Algorithms and models
  - Rules-based
  - Prediction using machine learning

Jisc Learning
Analytics Predictor

Learning
Data Hub

Data Aggregator
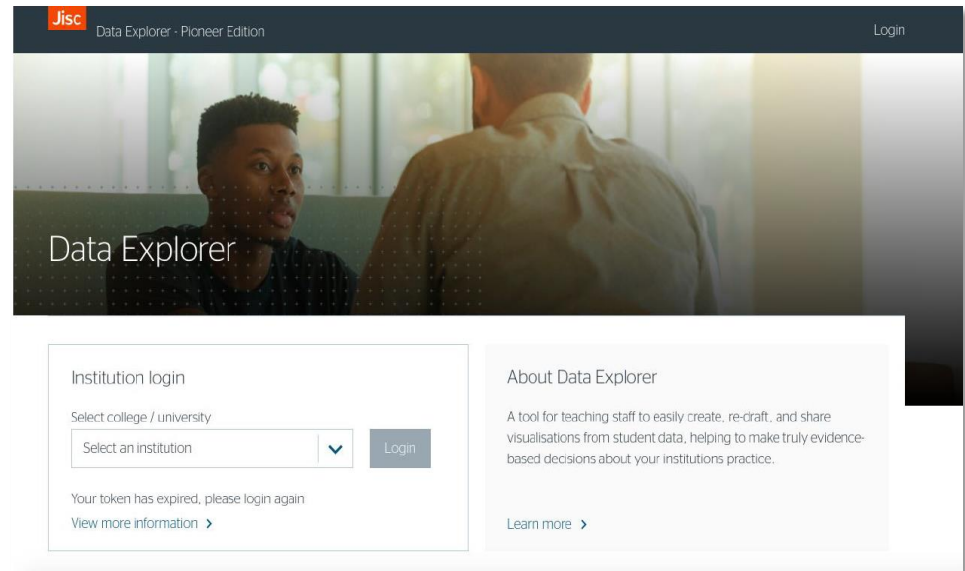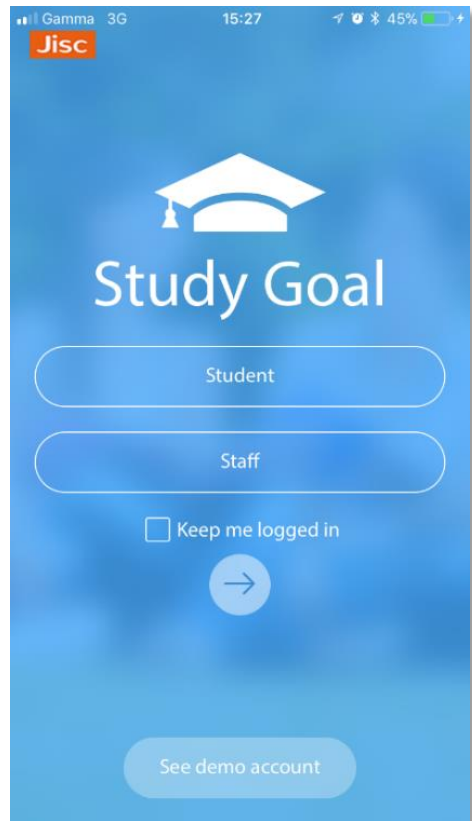
Transformation Toolkit/Plugins
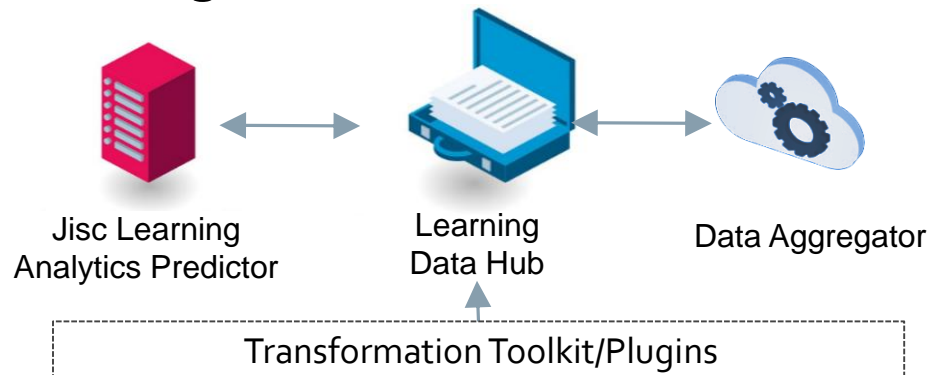
LA-driven Interventions

- Review engagement and outcome data
  - Student
  - Tutor
  - Lecturer

- Series of nudge communications
  - Electronic (text, email)
  - Formal letter

- At Greenwich undertaken by Faculty Retention Officers
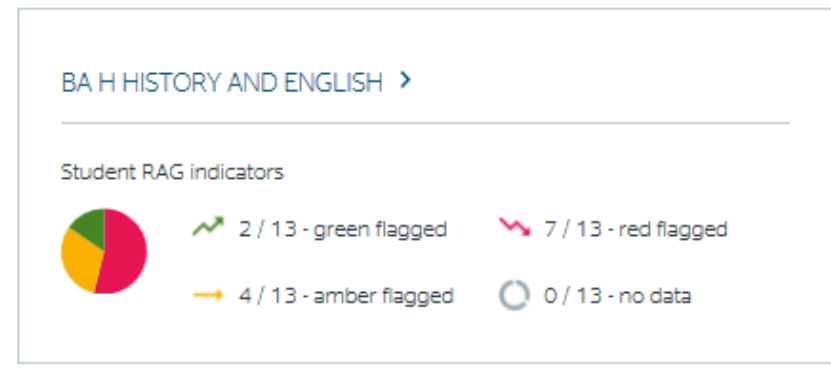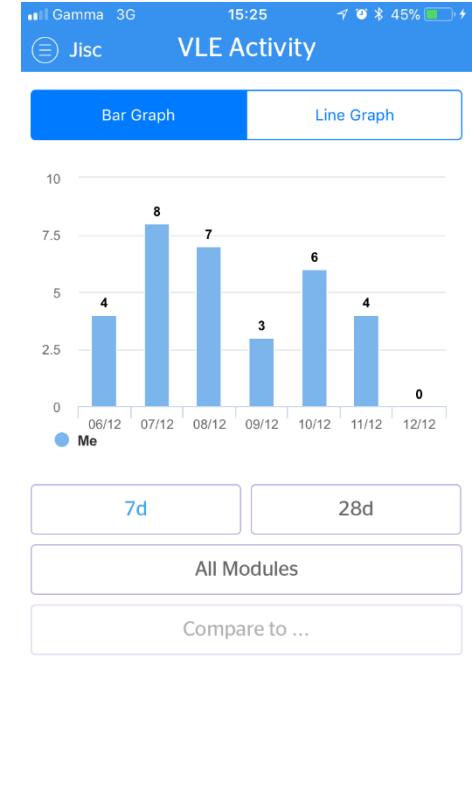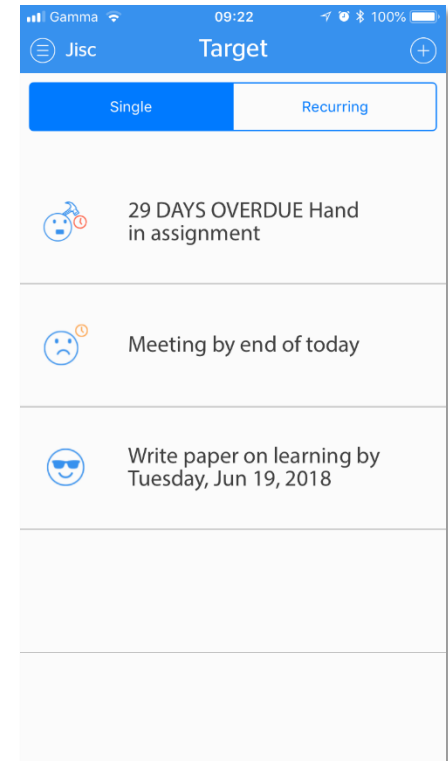
Applications

- Student Study Goal
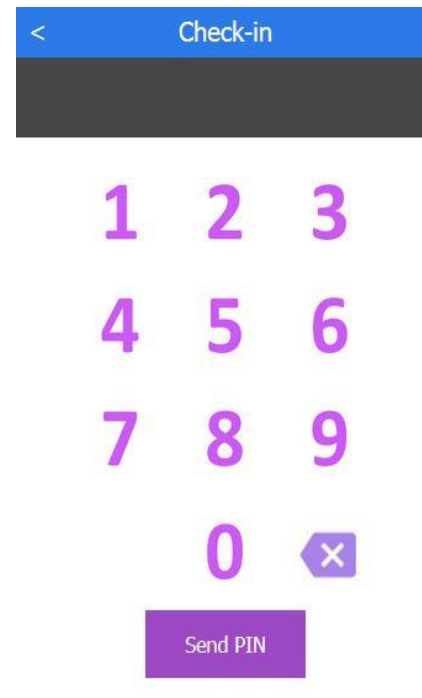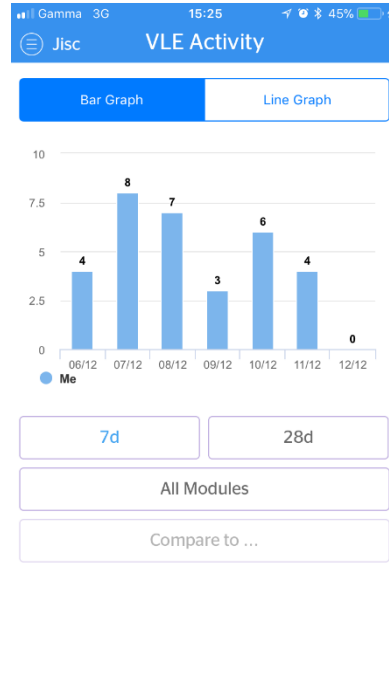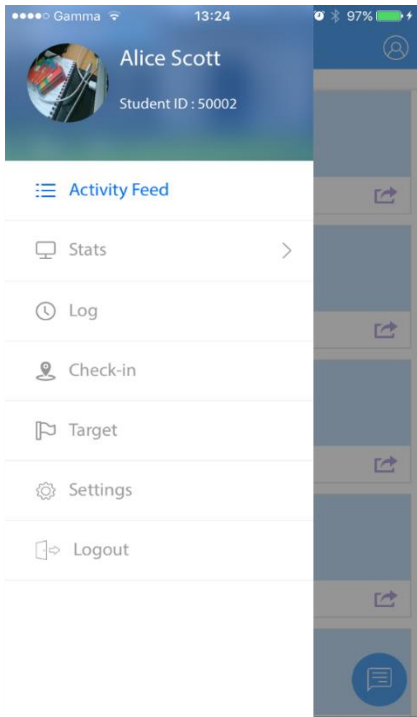- Data Explorer

HEI Dashboards

Data Explorer

Student App:
Study Goal

Study Goal

Data Explorer

Tutor Dashboard
Paul Bailey

My Courses

Find data for the courses you manage via a course start / end date and academic year.

Coming soon

My Modules

Manage and analyse current module data, start a new class lecture attendance and view previous registers

View all modules I manage ›

My Students

Locate students you manage directly by their name, red amber green (RAG) and alert status.

View all students I manage ›

Department and Course view

› Department	› Course	› Student
Tech & Analytics	Please select a course	Please select a student

2 courses found

BA (Hons) Jiscing ›

Student RAG indicators

12 / 18 - green flagged   0 / 18 - red flagged
2 / 18 - amber flagged   4 / 18 - no data

MA Jiscing ›

Student RAG indicators

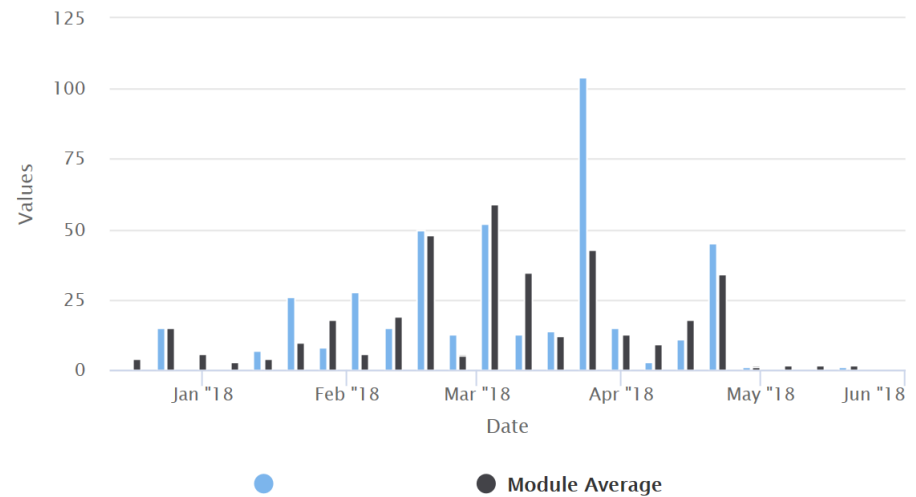2 / 4 - green flagged   0 / 4 - red flagged
1 / 4 - amber flagged   1 / 4 - no data

Roles: Personal Tutor

- For the first time, all student information is easily accessible in one package

- Can talk to a tutee knowing everything about their studies

- Can show students how they compare against their cohort
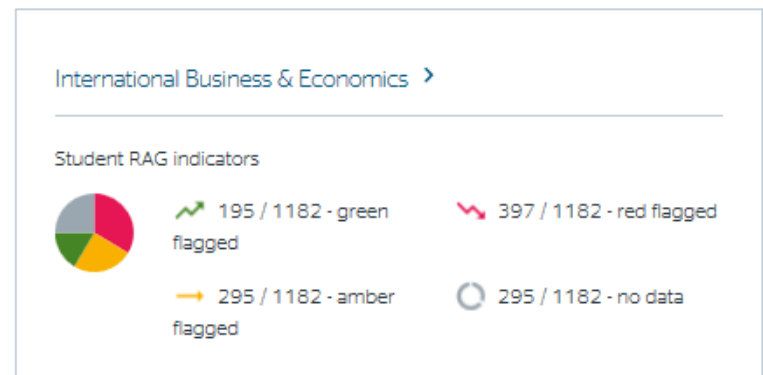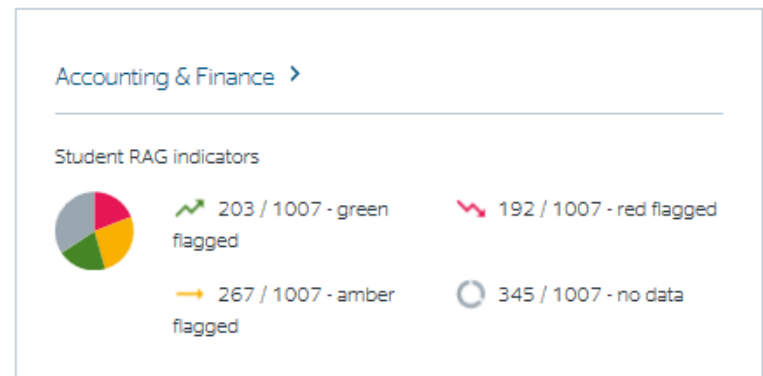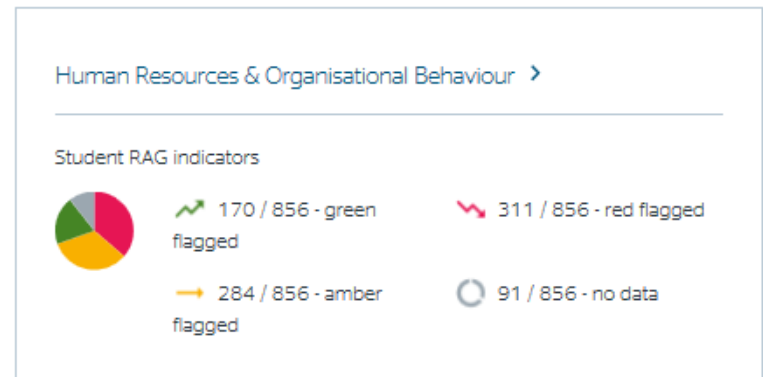

Overall Activity (01/09/2017 – 31/05/2018)

Roles: Module (Course) Leader

- I can understand how students interact with my course and the online materials

- Indicates where I need to improve content, change course delivery, update Moodle, etc.

Human Resources & Organisational Behaviour ›

Student RAG indicators

- 170 / 856 - green flagged
- 284 / 856 - amber flagged
- 311 / 856 - red flagged
- 91 / 856 - no data

Accounting & Finance ›

Student RAG indicators

- 203 / 1007 - green flagged
- 267 / 1007 - amber flagged
- 192 / 1007 - red flagged
- 345 / 1007 - no data

International Business & Economics ›

Student RAG indicators

- 195 / 1182 - green flagged
- 295 / 1182 - amber flagged
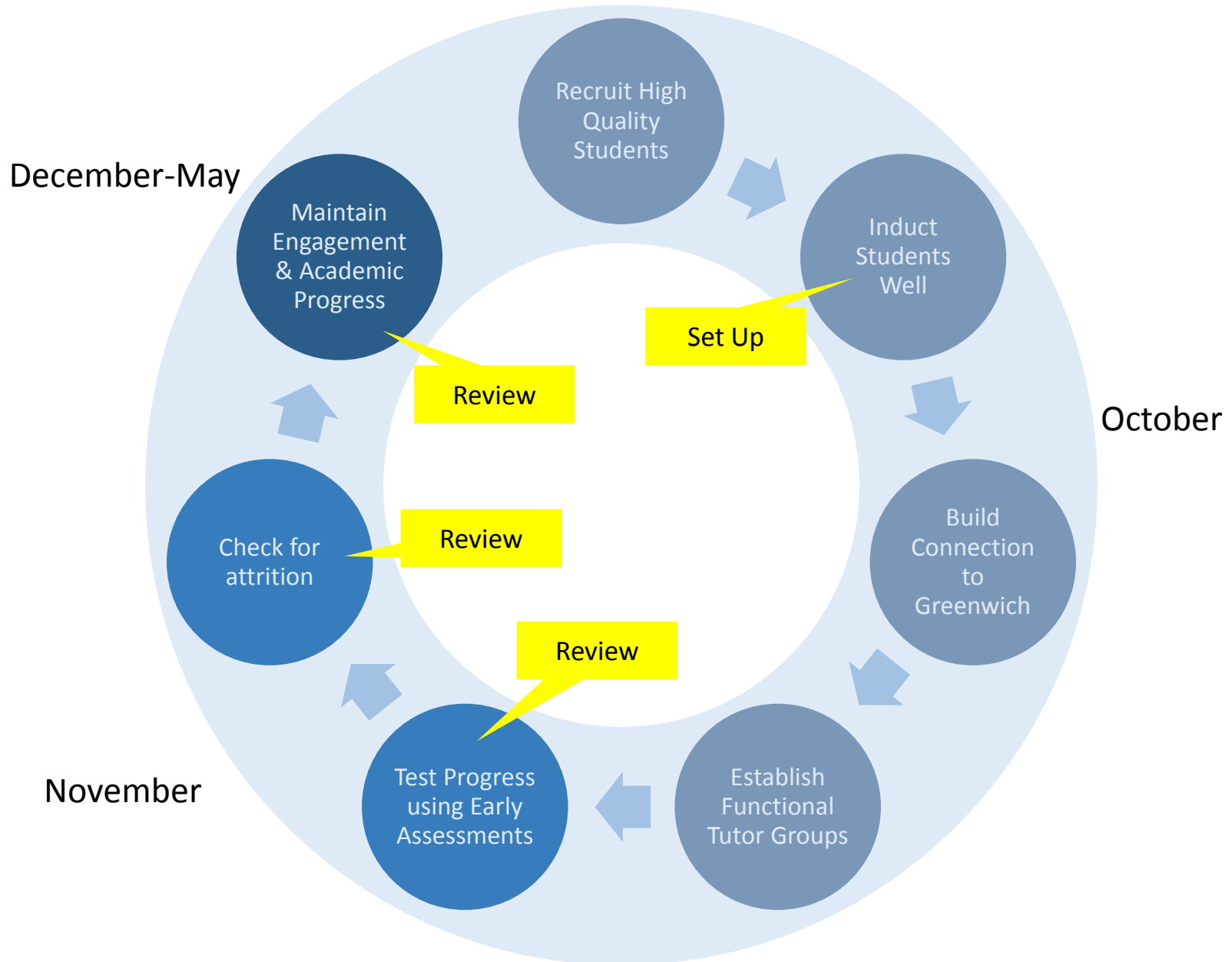- 397 / 1182 - red flagged
- 295 / 1182 - no data

Legal and Ethical Considerations

- Code of Practice

- Literature Review

- Template Learning Analytics Policy

- Guidance on consent for learning analytics

- Endorsed by NUS

- All available from the blog at
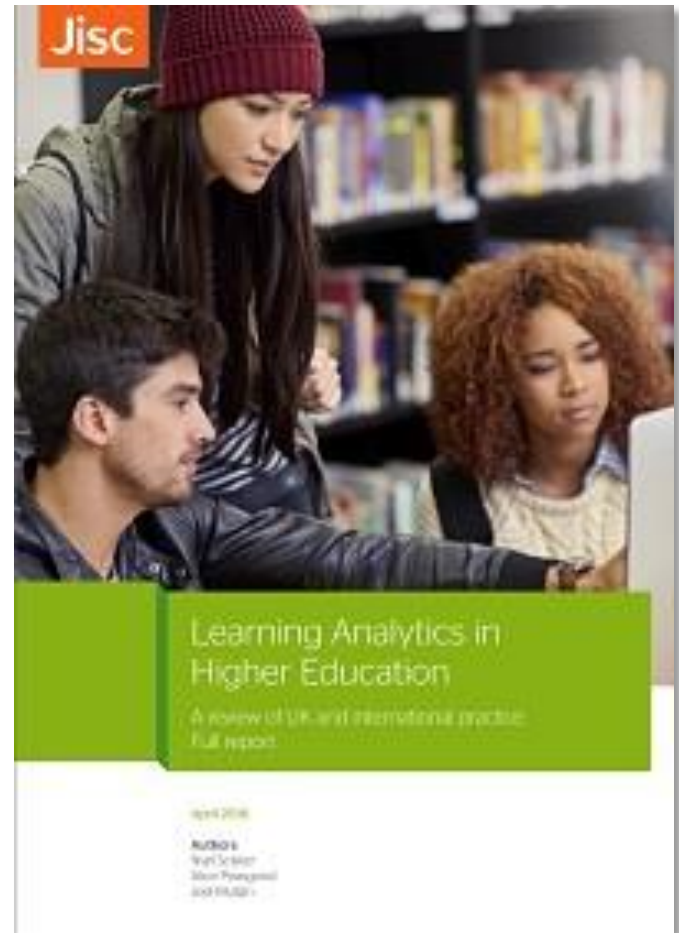 http://analytics.jiscinvolve.org
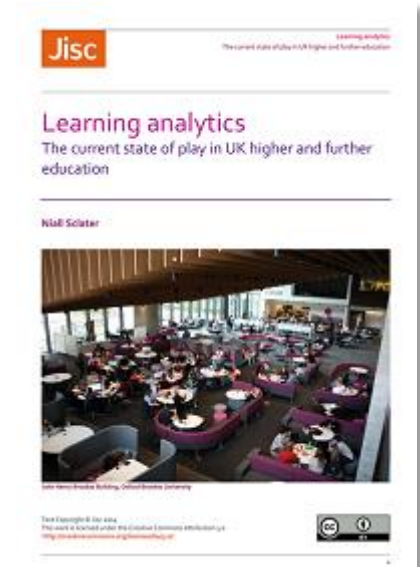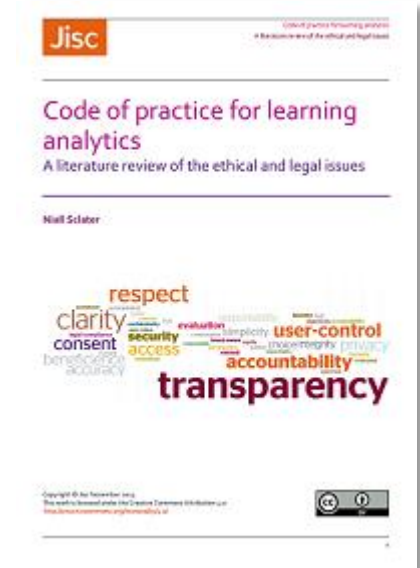
Learning Analytics and Retention

Jisc Learning Analytics

- Growing community
  - +100 unis and colleges
  - +20 vendors
- Heart is Learning Data Hub
  - Data from +25 organisations
- Expanding toolset
  - Load institutional data
  - Analytics processor
- Jisc Apps
  - Student App
  - Data Explorer
- Vendor apps and technologies
- Underpinned by business model, code of ethics, GDPR compliance, etc.

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