

TEEM:

- Full of life and activity, abound and overflowing with
- when students are empowered, they teem with ideas

TEaching to EMpower (TEEM):

Towards Learning Analytics for Students by Students An ambitious agenda

Karen Chen

Assistant Professor

Information Systems
September 30, 2022

Big Thanks

DOIT/Analytics/IRADS

Student-success Campus Units

Academic Departments

FDC

Students



John Fritz



Jack Seuss



Robert Carpenter



Collin Sullivan



Kevin Joseph



Shannon
Tinney
Lichtinger



Ken Schreihof



Thomas Penniston

Big Thanks

DOIT/Analytics/IRADS
Student-success Campus Units
Academic Departments
FDC
Students



Amanda M. Knapp
Academic Success
Center



Delana Gregg
Academic Success
Center



Laila Shishineh
First-Year &
Transfer Academic
Programs (AETP)



Sarah Jewett
Innovations in Transfer
Research and Practice
Transfer Equity Initiative



Christine
Routzahn
Career Center

Big Thanks

Information
System
Department

DOIT/Analytics/IRADS
Student-success Campus Units
Academic Departments
FDC
Students



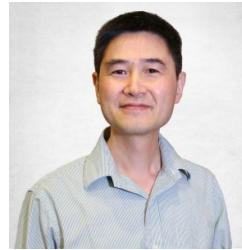
Vandana Janeja



Karuna Josh



Md Osman Gani



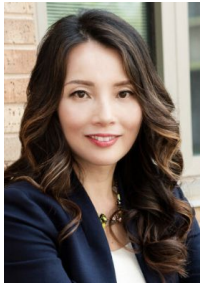
Zhiyuan Chen



Sreedevi Sampath



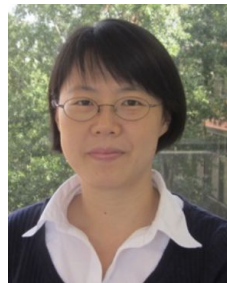
Carolyn Seaman



Charissa Cheah
Psychology



Tara Carpenter
Chemistry



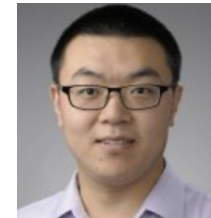
DoHwan Park
Statistics



Ravi Kuber



Andrea Kleinsmith



Yaxing Yao

Big Thanks

DOIT/Analytics/IRADS
Student-success Campus Units
Academic Departments
FDC
Students



Linda Hodges



Kerrie Kephart

Big Thanks

DOIT/Analytics/IRADS

Student-success Campus Units

Academic Departments

FDC

Students (who inspired and encouraged me)

- IS 296 Foundations of Data Science (50+ students from Spring & Fall cohorts)
- Mentored students
 - Khalyl K. (IS)
 - Cayla A. (Physics, McNair Scholar)
 - Safiatou C. (IS, McNair Scholar)
 - Aditi T. (IS)

Outline

- Vision
- Serendipity x 2
- Unpacking TEEM
- Drizzle of TEEM
- Your thoughts

Learning Analytics: Broadly Defined

- Collecting and analyzing of data
 - Generated from students' learning
 - Enable students' learning (e.g. wellbeing)
 - Explain students' learning (e.g. social context)
 - Actionable insights to improve student learning and support their life-long flourishing as a whole person
- Data
 - Quantitative + Qualitative
 - Already collected + can be collected
 - Large + small
 - Structured + unstructured
 - Individual student + aggregated level
 -

Analytics


- Statistical/ML Modelling
- Ethnographic
- Storytelling
-

My Background


**DATA SCIENCE
RESEARCHER & EDUCATOR
INTERDISCIPLINARY
EDUCATIONAL RESEARCHER**

PIER@ Carnegie Mellon
PROGRAM IN INTERDISCIPLINARY EDUCATION RESEARCH

**MULTIMODAL
LEARNING
ANALYTICS**



**DATA SCIENCE
PROBLEM SOLVING
(CASELET
PROJECT)**

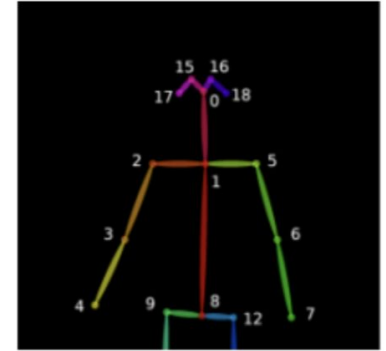
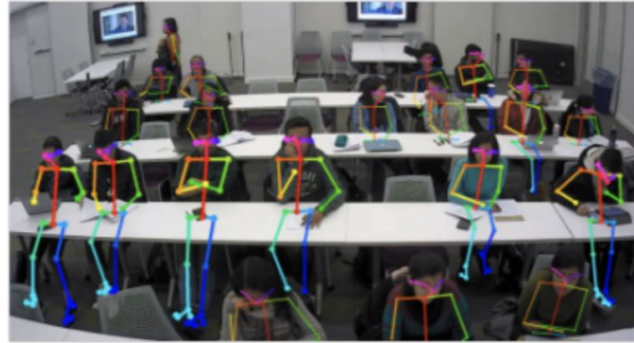


Carnegie Mellon University
The Simon Initiative

Open Learning Initiative
Transforming higher education through the science of learning

**INSTRUCTOR FOR DATA
SCIENCE/ANALYTICS > 10 YEARS**

Building Interpretable Descriptors for Student Posture Analysis in a Physical Classroom




Chen L. Gerritsen D. Building Interpretable Descriptors for Student Posture Analysis in a Physical Classroom. In Proceedings of the 14th International Conference on Educational Data Mining (EDM). June 2021.

My UMBC Journey


DATA SCIENCE RESEARCHER & EDUCATOR INTERDISCIPLINARY EDUCATIONAL RESEARCHER

PIER@ Carnegie Mellon
PROGRAM IN INTERDISCIPLINARY EDUCATION RESEARCH

MULTIMODAL LEARNING ANALYTICS




DATA SCIENCE PROBLEM SOLVING (CASELET PROJECT)



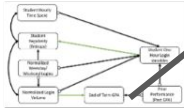
INSTRUCTOR FOR DATA SCIENCE/ANALYTICS > 10 YEARS

2020/8 -



DOIT LA Mini Grant

LEARNING ANALYTICS (LMS)

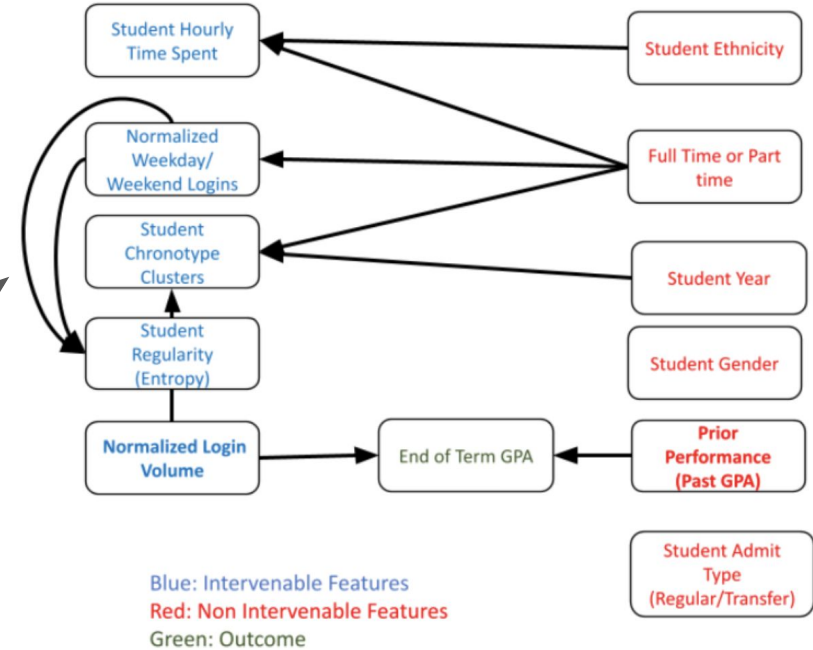


Academic Data Science Alliance

DATA ETHICS (CASELET+ PROJECT)

INSTRUCTOR FOR DATA SCIENCE COURSES (UG & GRADUATE)

Causal relationships between LMS activity and student academic performance



In submission to
Journal of Educational Data Mining

My Vision of TEEM

2020/8 –

**DATA SCIENCE
RESEARCHER & EDUCATOR
INTERDISCIPLINARY
EDUCATIONAL RESEARCHER**

PIER@ Carnegie Mellon
PROGRAM IN INTERDISCIPLINARY EDUCATION RESEARCH

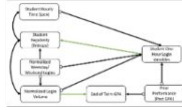
**MULTIMODAL
LEARNING
ANALYTICS**



**DATA SCIENCE
PROBLEM SOLVING
(CASELET
PROJECT)**

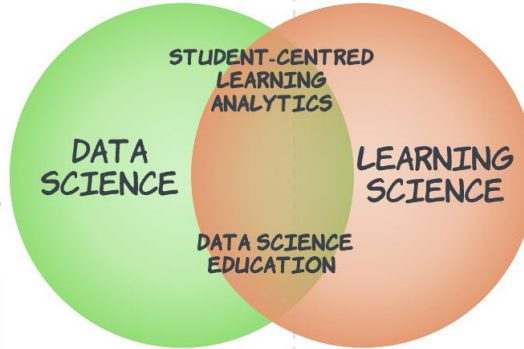


**LEARNING
ANALYTICS
(LMS)**



**DATA ETHIC⁵
(CASELET+
PROJECT)**

**TEACHING TO EMPOWER (TEEM)
INFRASTRUCTURE**



**INSTRUCTOR FOR DATA
SCIENCE/ANALYTICS > 10 YEARS**

**INSTRUCTOR FOR DATA SCIENCE
COURSES (UG & GRADUATE)**

serendipity

/ˌsɛr(ə)nˈdɪpɪti/ • noun

The effect by which one accidentally stumbles across something truly wonderful especially while looking for something truly unrelated.

Serendipity #1 - LA mini grant work with student

Bumpy Journey:

Exploring Gateway Courses Failures and Major Switch



Khalyl Konkobo

IS Undergraduate Student

- Analyzed dataset of 13,550 students from Fall 2015 to Spring 2019 cohort
- Data elements include: Major plan, course enrollment, and performance, students' demographic information(race, gender, and high school GPA as well math placement outcomes)
- Built model predicting likelihood of failing computer science gateway courses at three time points: upon enrollment, by the end of the first semester, and when related math courses are finalized. The model achieves an AUC score of 0.69, 0.77, and 0.93 respectively, [link to presentation](#)

Presented at 2022 Annual International Learning Analytics Summit hosted by Indiana University's Center for Learning Analytics and Student Success

Serendipity #1 - LA mini grant work with student

Bumpy Journey:

Exploring Gateway Courses Failures and Major Switch



Khalyl Konkobo

IS Undergraduate Student

- **Unique fact #1:** According to the Summit organizer, Khalyl is the *first undergraduate student* who presented at the LA Summit
- **Unique fact #2:** He analyzed the data that he is familiar with, in fact, he is one of the data points in the dataset
- He demonstrated superior understanding of this dataset, its context and ins and outs quantitative and qualitative aspects, I learned a whole lot from Khalyl
- **My aha moment: Students working with own data = deeper understanding**

Presented at 2022 Annual International Learning Analytics Summit hosted by Indiana University's Center for Learning Analytics and Student Success

Serendipity #2 - bring LA mini work to classroom

Think-pair-share activity on problem formulation in IS 296 Spring 2022 Week 13

Cognitive Factors	Non-cognitive factors	IS 296 outcome
5	3	Yes
3	2	No
...
1	4	Yes

If I have data from previous cohort who took IS 296, how do you go about building a model to predict students' outcome in IS 296?

- How would you collect data on cognitive factor e.g. math/computing background?
- How would you collect data on non-cognitive factor?
- How would you define IS 296 outcome?
- How would you use this model for?

Collect data before start IS 296

@ end of semester (outcome)



Make prediction what will happen in the future?

Serendipity #2 - bring LA mini work to classroom

Sample of students' responses

Cognitive Factors	Non-Cognitive Factors	Where to use this model?
Previous class (math/programming) and grade Placement exam	<ul style="list-style-type: none">- Attendance- Outside school activity (e..g job)- Personality Survey- time spent on course materials- OH visits- on time hw submission as proxy for self-discipline- survey on study habits	<ul style="list-style-type: none">-Determining prerequisite classes and recommended classes to take before this class - <i>Show students how to do well (prescriptive analytics)</i>- student self-assess if they will do well

My aha moment #2: Students working with problems they can relate to = deeper engagement & good insights

The missing students' voices in LA systems and why it is important to have them?

- The design of student-facing learning analytics, or Learning Analytics (LA) system in general, rarely reflects students' voices (Bodily 2017, Jivet 2018 & Dollinger 2018)
- LA is often perceived by students as
 - “Surveillance Analytics” (Pardo 2014) or “Blackbox Analytics” (Kitto 2017)
 - Something **done to them** or **about them**, not something **done with them** or **for them** (West 2020, Ochoa 2021)
- This leads to students' mistrust and may impede the wide-scale adoption and the loss of opportunity to fully realize LA's potential (Tsai 2018, Drachsler 2016)

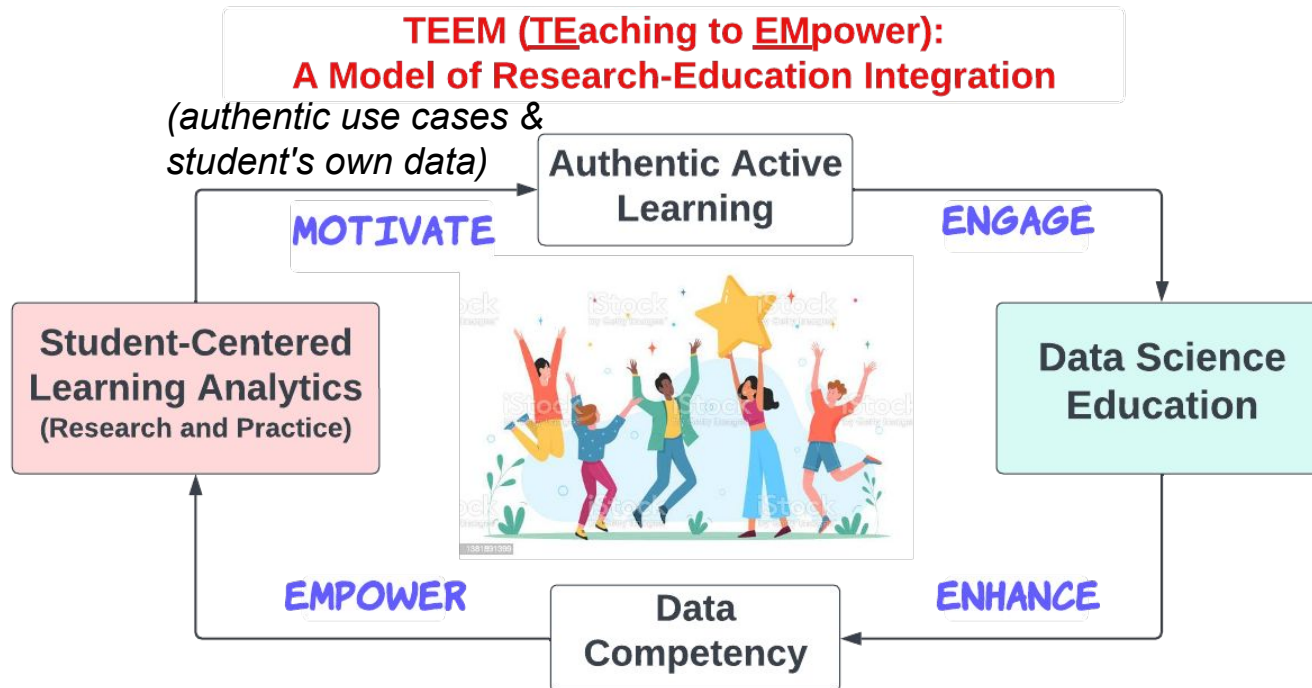
How to hear students' voices?

- Quantitative method (e.g. survey)
 - Pros: Can reach large pool of students
 - Cons: Can't hear deep voices
- Qualitative method (e.g. human-centered approach, e.g. participatory design or co-design)
 - Pros: Can hear deep voices
 - Cons: Can only reach a small number of student
- For both of the approaches
 - There is unfilled gap of students' competency in understanding the complexity of data/model behind the scene, which is crucial for increasing transparency and trust
 - Not explicitly promoting students' agentic power

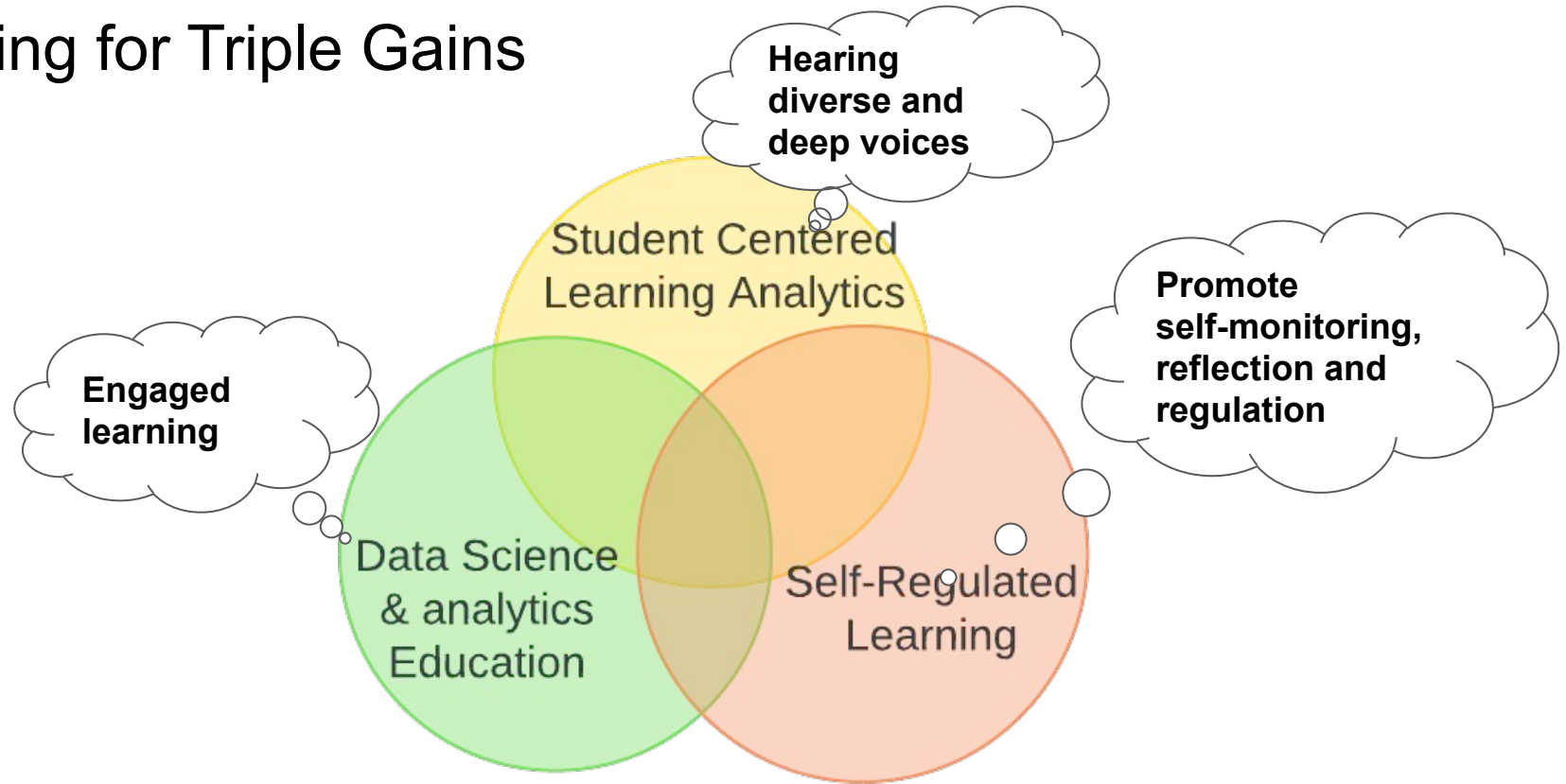
An Overarching Question

How can we leverage students' data to design “***student-centered learning analytics***” that could ***improve student outcomes*** and that students ***love to use and trust*** by ***deliberately hearing students' diverse voices*** and ***profoundly engaging and empowering students?***

Proposed Solution: Leveraging the untapped opportunities in data science/analytics education






Aiming for Triple Gains



Why UMBC is a Unique Place for TEEM?

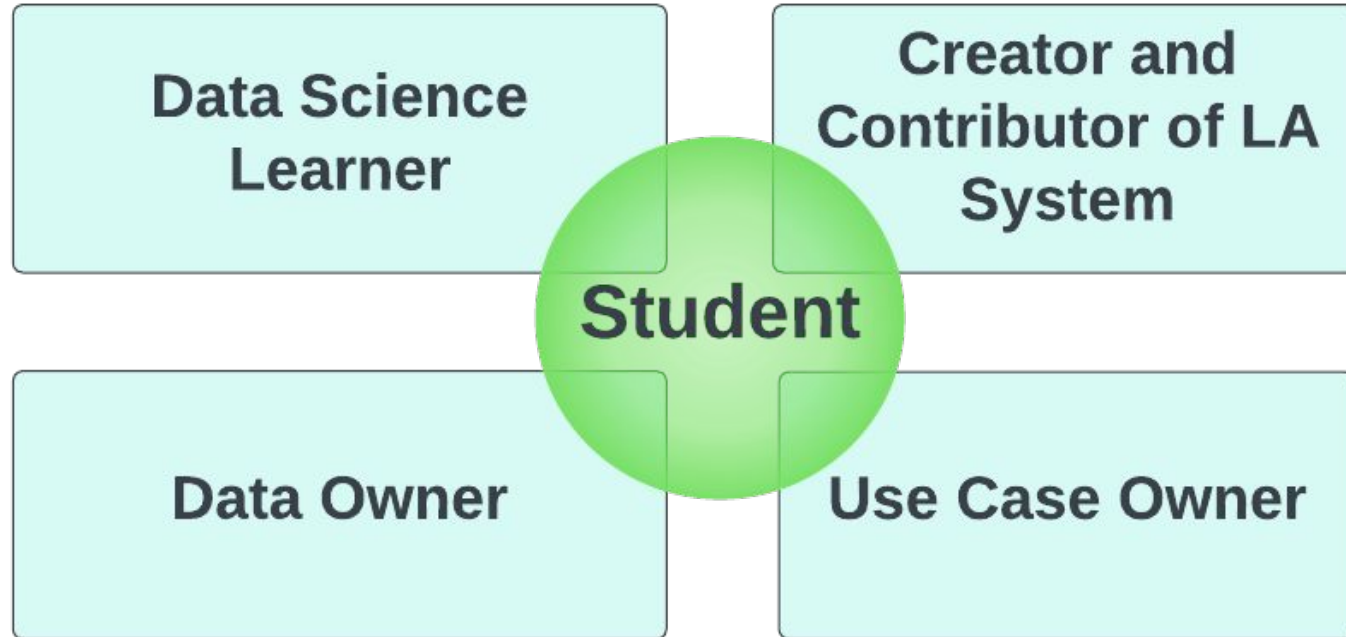
- Diverse student population
- Empowering culture (ref. “Empowered University”)
- Focusing on students’ success (ref. “Inclusive Excellence”)
- Data/Technology infrastructure
 - Robust centralized data warehousing (REX, Learning Record Stores)
 - “Check My Activity” - one of the first large-scale deployment of student-facing learning analytics (Leeuwen et al. 2021)
- Active Learning Analytics Community
- Growing data science/analytics educational initiatives (UG Data science courses, GWP programs)

Courses*	Rank	Activity (?)	Below	Average	Above	Grade Report
Fall 2010						
CMPE 321	20					Yes
LLC 644	2					No
SCI 100Y	19					Yes

**“Redesigning CMA”
as one of the planned
pilot TEEM project**

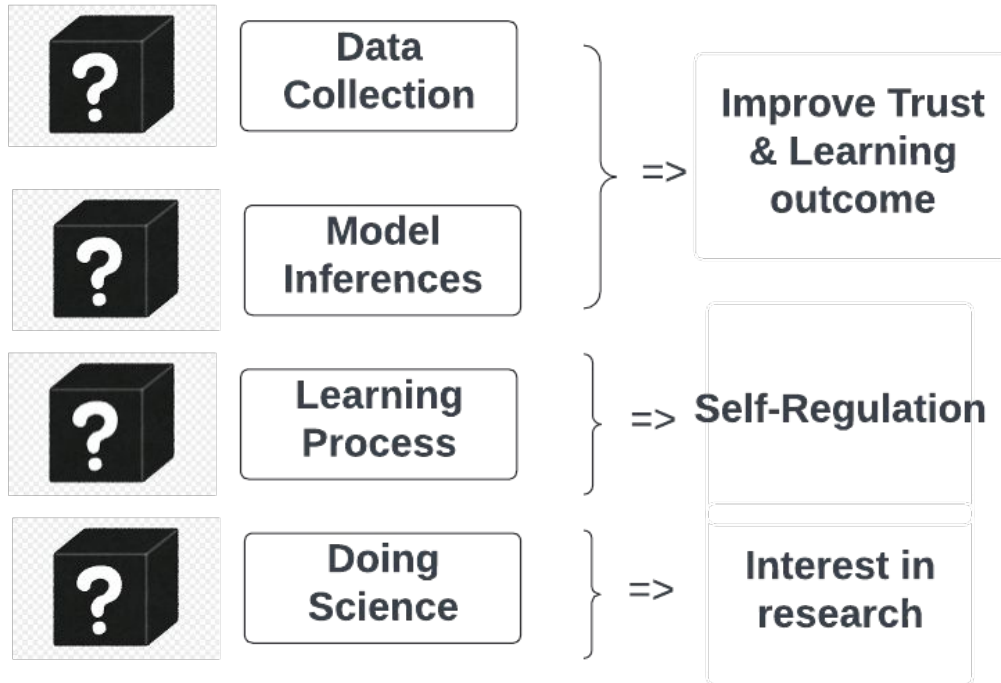
Main Idea #1:

The convergence of four of students' roles



Main Idea #2:

Opening up four different kinds of “Blackbox”



Main Idea #3:

Centering Students' Agency by Supporting Self-Regulated Learning

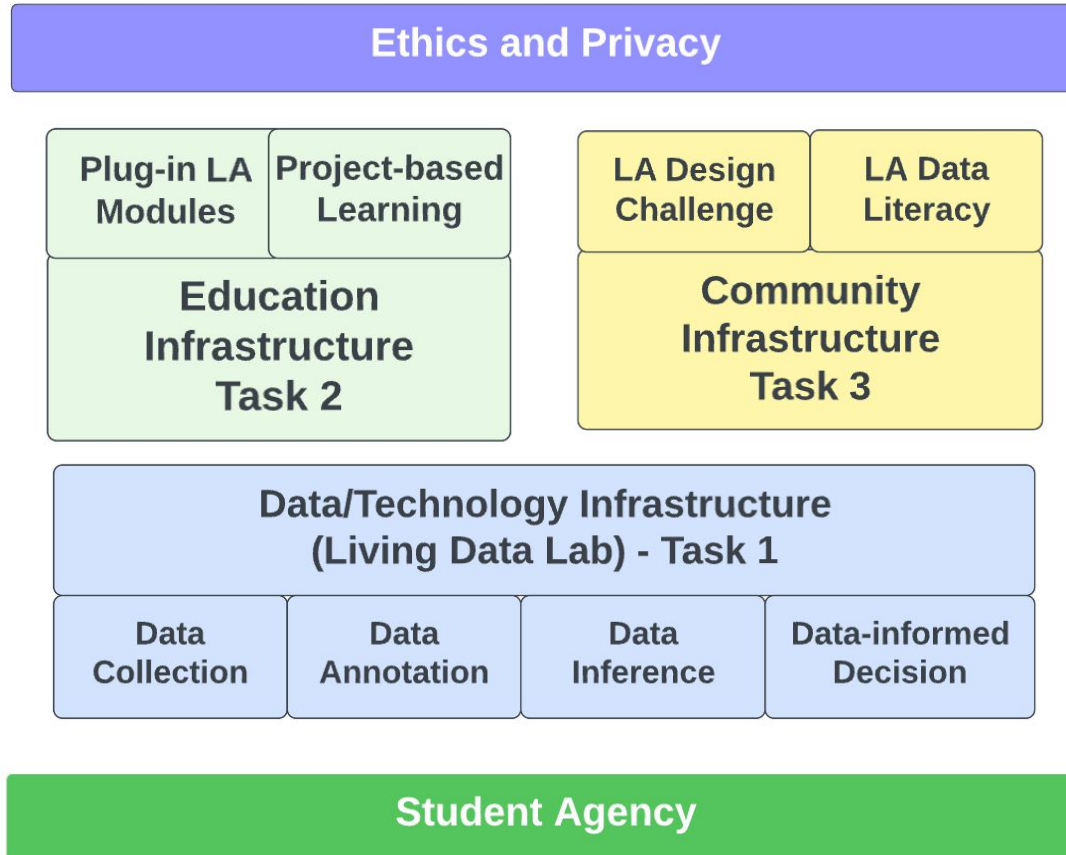
	(R)	(R)	(R)
STUDENT TIME REVIEWING COURSE MATERIALS	3hr	20m	7hr
PRODUCTIVE STUDY TIME	?	?	?
ENGAGEMENT (# CLICKS)	High	low	MED
ACTUAL MOTIVATION ON COURSE SUBJECT	?	?	?
PREDICTED COURSE SCORE	B+	B+	A-
SOCIOCULTURAL FACTORS THAT IMPACT STUDENT PERFORMANCE	?	?	?
EMOTIONAL FACTORS THAT IMPACT STUDENT PERFORMANCE	?	?	?
CUMULATIVE GRADE	B	A	B
STUDENT RANKING IN COHORT	10%	20%	5%
INSTRUCTOR SUPPORT AND ENCOURAGEMENT	?	?	?
MISCONCEPTIONS ON SUBJECT MATTER.	?	?	?

Every Self-Regulated Learner is a

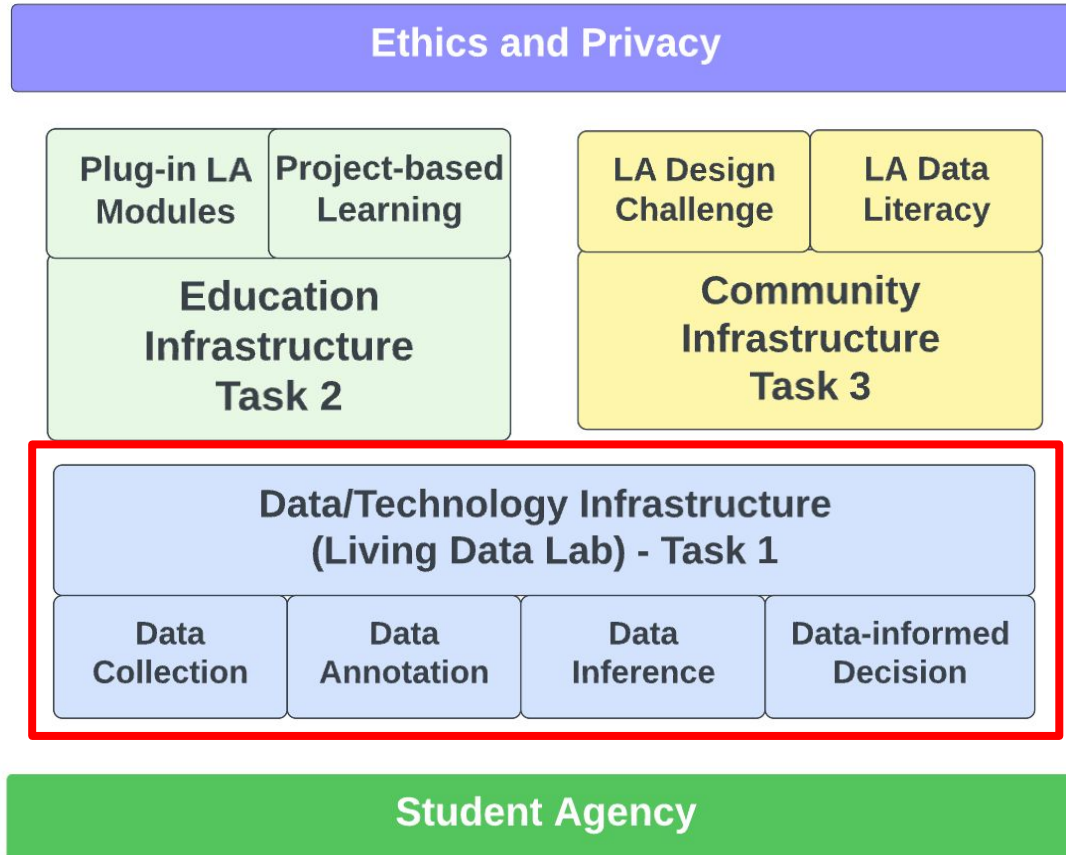
- problem solver (of his/her own learning problem) - *Sandra McGuire*
- data scientist/analyst (who knows how to make sense of data pattern of their own)
- learning scientist (who knows what kind of learning science principle applicable for them)
- PLUS: an aspiring LA researcher and practitioner (e.g. by discovering new data sources (see left) and ways to turn data into actionable information))

Blank Box Dashboard (Wise 2022) discovering missing data sources, to avoid “street light” effect

Overview of Proposed Tasks



Overview of Proposed Tasks



Task 1: Data/Technology Infrastructure - Living Data Lab

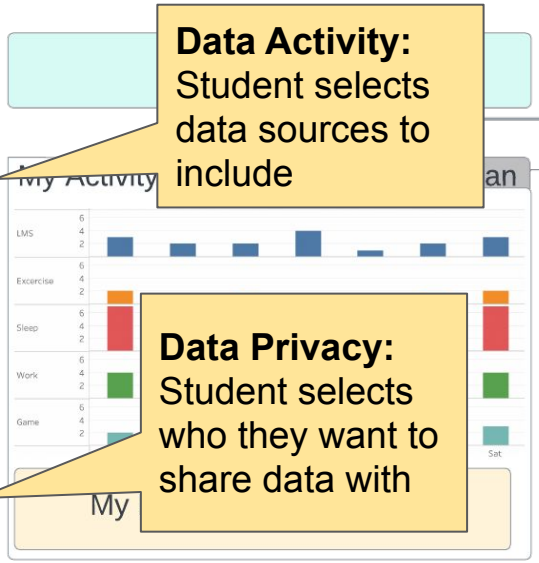
1A

- Jamal, K
(Freshman, IS)
- LMS activity
 - Campus work
 - Test
 - Exercise
 - Sleep
 - Custom

- Trusted Group**
- Christine
 - David
- 1B

Data Activity:
Student selects data sources to include

Data Privacy:
Student selects who they want to share data with



Action Plan

I will plan better for next test

Model Inference

Strategy Pattern

Grade Prediction

Nowcasting

Forecasting



Learning Resources

Short Video Tutorial

Learning Analytics

Learning Science

CASE STUDY

Toolbox

CODAP

Jupyterhub

Model Explorer

Design Products



Task 1: Data/Technology Infrastructure - Living Data Lab

Data Activity:
Student can view & annotate data

- Camp work
- Test
- Exercise
- Sleep
- Custom

2

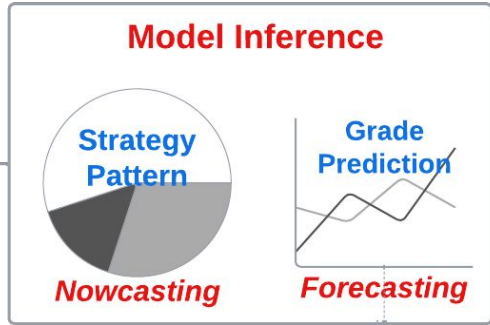
Trusted Group

Christine
David



Action Plan

I will plan better for next test



Learning Resources

Short Video Tutorial

Learning Analytics

Learning Science

CASE STUDY

Toolbox

CODAP

Jupyterhub

Model Explorer



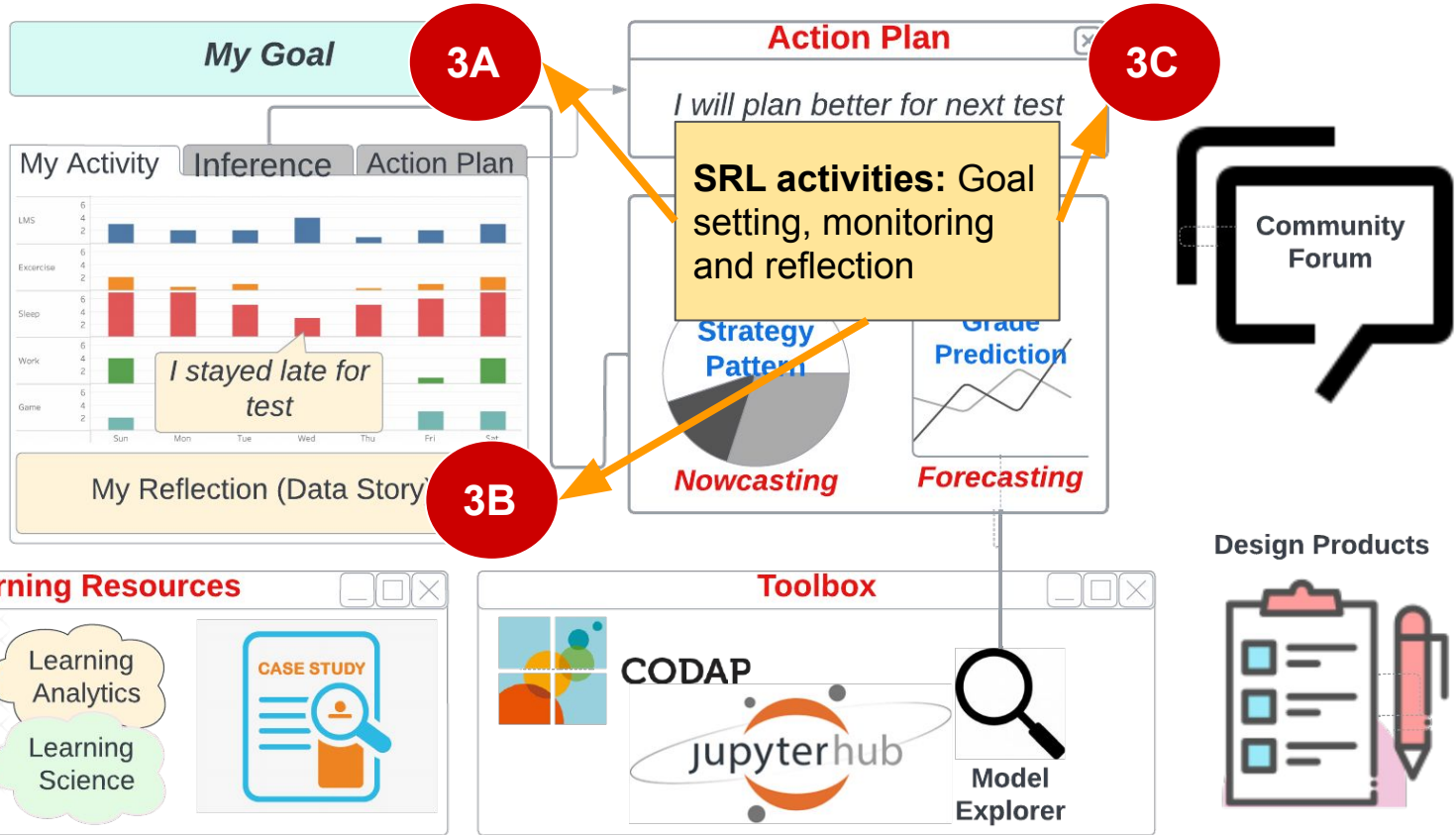
Task 1: Data/Technology Infrastructure - Living Data Lab

Jamal, K
(Freshman, IS)

- LMS activity
- Campus work
- Test
- Exercise
- Sleep
- Custom

Trusted Group

Christine
David



Task 1: Data/Technology Infrastructure - Living Data Lab

Jamal, K
(Freshman, IS)

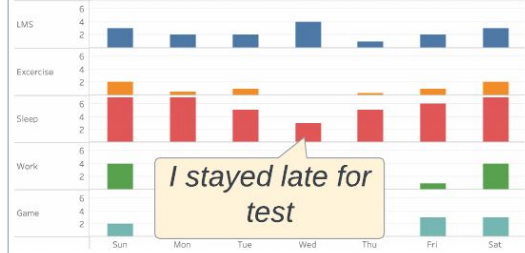
- LMS activity
- Campus work
- Test
- Exercise
- Sleep
- Custom

Trusted Group

Christine
David

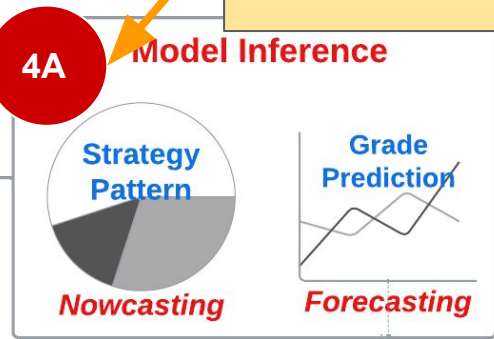
My Goal

My Activity Inference Action Plan



My Reflection (Data Story)

Model Activity: play with model with own data



Learning Resources

- Short Video Tutorial
- Learning Analytics
- Learning Science
- CASE STUDY

Model Activity: Exploring model to understand why (i.e. explainable model)

Toolbox

Jupyterhub

4B

Model Explorer

Design Products



Task 1: Data/Technology Infrastructure - Living Data Lab

Jamal, K
(Freshman, IS)

- LMS activity
- Campus work
- Test
- Exercise
- Sleep
- Custom

Trusted Group

Christine
David

My Goal

My Activity Inference Action Plan

Data/Model Activity: multiple interfaces for open-ended data exploration/modelling

Action Plan

I will plan better for next test

Model Inference

Strategy Pattern Grade Prediction

Nowcasting Forecasting



Learning Resources

Short Video Tutorial Learning Analytics Learning Science

Toolbox

5 CODAP Jupyterhub Model Explorer

Design Products



Task 1: Data/Technology Infrastructure - Living Data Lab

Jamal, K
(Freshman, IS)

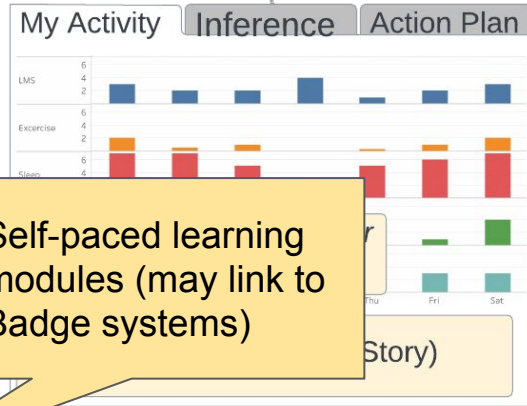
- LMS activity
- Campus work
- Test
- Exercise
- Sleep
- Custom

Trusted Group

Christine
David

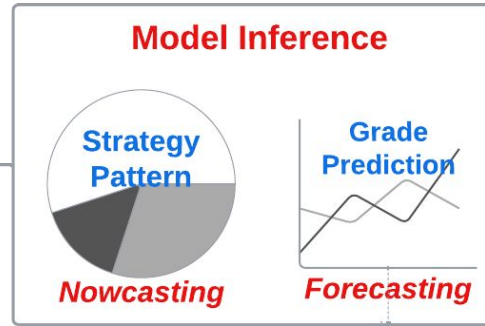
Self-paced learning
modules (may link to
Badge systems)

My Goal



Action Plan

I will plan better for next test



Design Products



6

Learning Resources



Short Video
Tutorial

Learning
Analytics

Learning
Science



CASE STUDY

Toolbox



CODAP



Jupyterhub



Model
Explorer

Task 1: Data/Technology Infrastructure - Living Data Lab

Jamal, K
(Freshman, IS)

- LMS activity
- Campus work
- Test
- Exercise
- Sleep
- Custom

Trusted Group

Christine
David



Action Plan

I will plan to

Model

Strategy Pattern Grade Prediction

Nowcast

Community Functions:
Discussion forum

7A



Community Functions:
Students' design artefacts

7B

Design Products



Learning Resources

Short Video Tutorial

Learning Analytics

Learning Science

CASE STUDY

To

CODAP

Jupyterhub

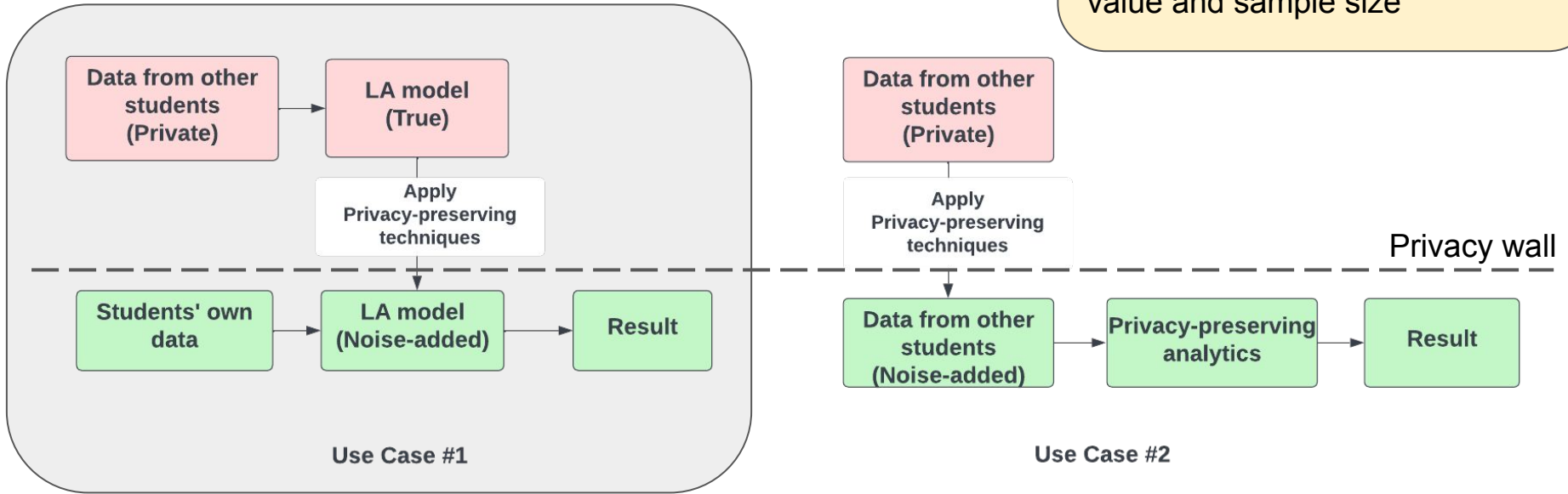
Model Explorer

Privacy-aware Learning Analytics

Goal: protect private data while preserving utility of analysis

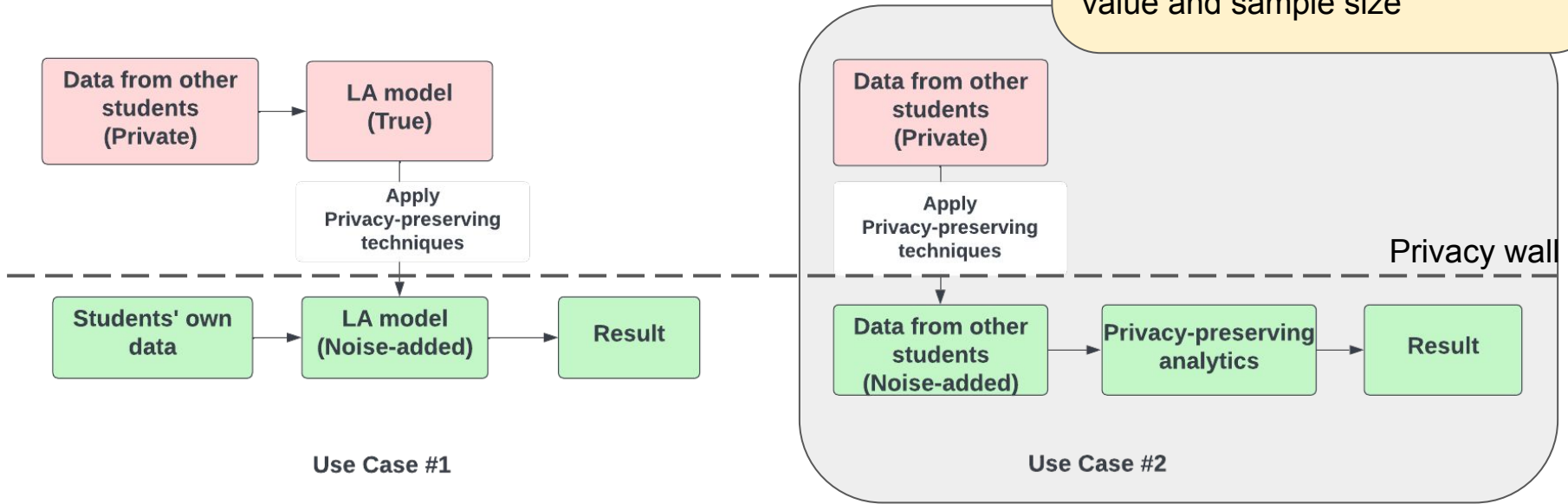
Method:

Differential Privacy - a principled framework for trading off privacy, value and sample size

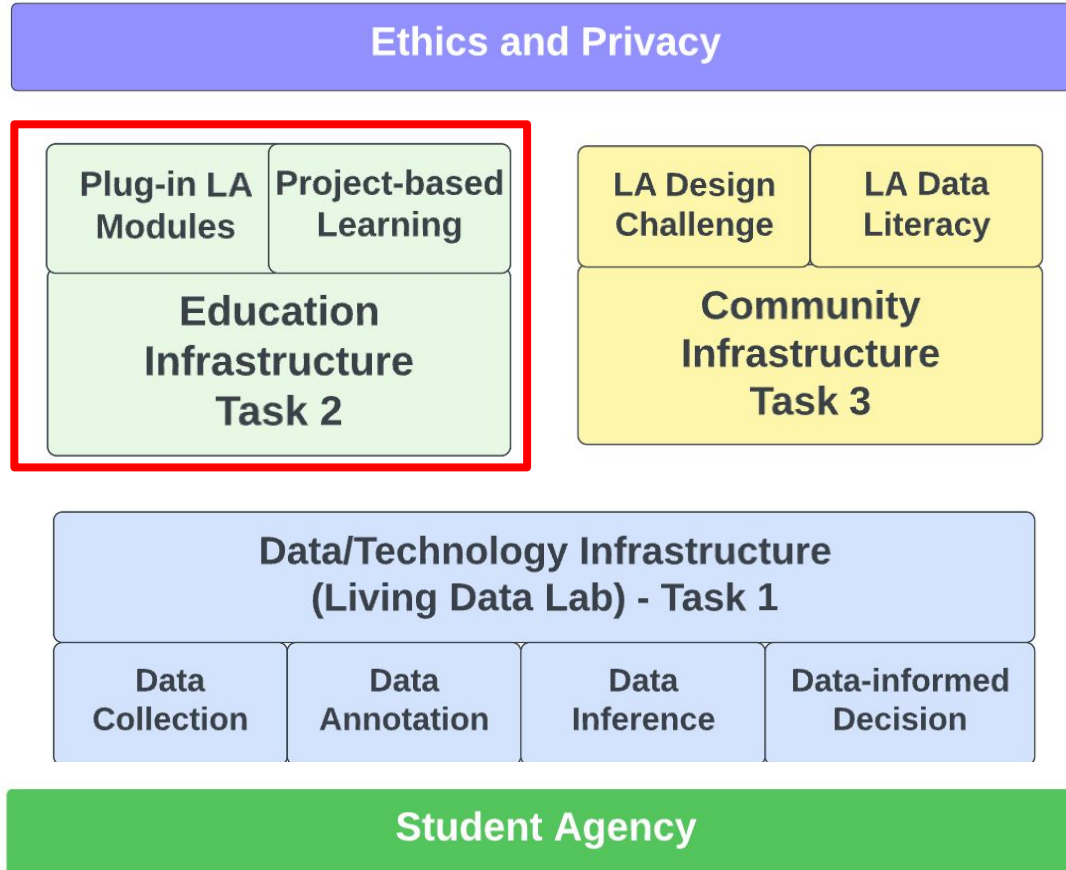


Privacy-aware Learning Analytics

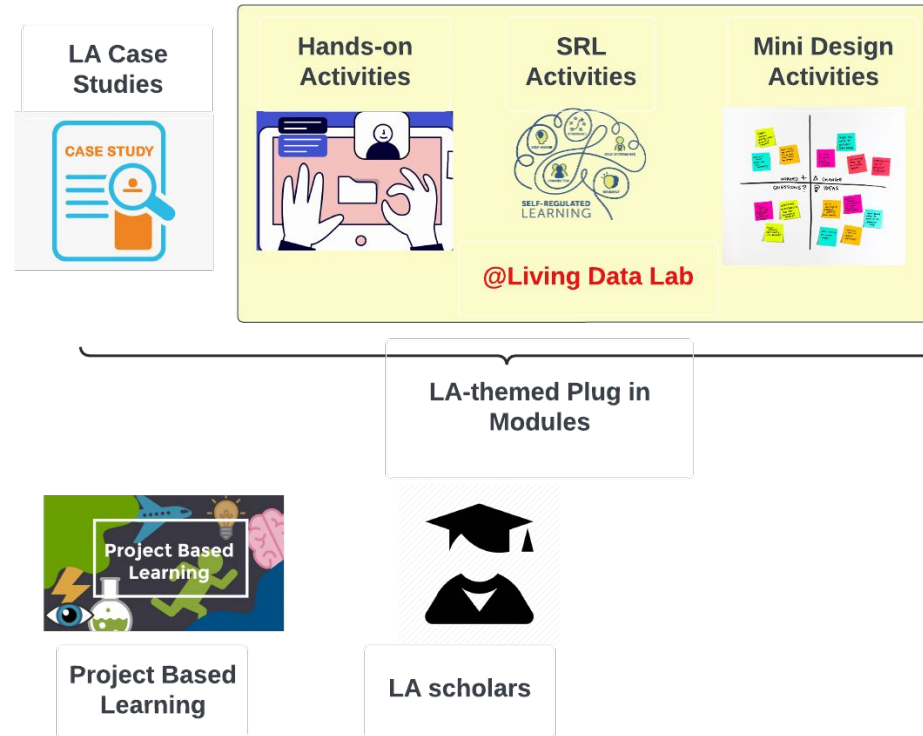
Goal: protect private data while preserving utility of analysis
Method: Differential Privacy - a principled framework for trading off privacy, value and sample size



Overview of Proposed Tasks



Education Infrastructure Overview



Case based methods - linking LA use cases to Big Ideas/KSA

Sample Case Studies	Big Ideas (KSA)
<ul style="list-style-type: none">● Predict student end-of-term course performance● Estimate students' engagement level given the course activity● Identify students' learning strategy and tactics from trace data	<ul style="list-style-type: none">● The complete LA life-cycle: data/model/inference/action● The fundamental inference problem● Sample size and model quality trade-off● Agility and model quality trade-off● Fairness and model quality trade-off● Privacy and model quality trade-off

Division of Information Technology

Analytics at UMBC

[Home](#) [Curated Reports and Dashboards](#) [Data Governance](#) [Support](#) [Outreach & Training](#) [Analytics Community](#)

Analytics Community

Data Science and Student Success Technologies

Instructional Technology Liaisons

IRADS Liaisons

UAA Liaisons

Learning Analytics Community of Practice

Publications and Presentations

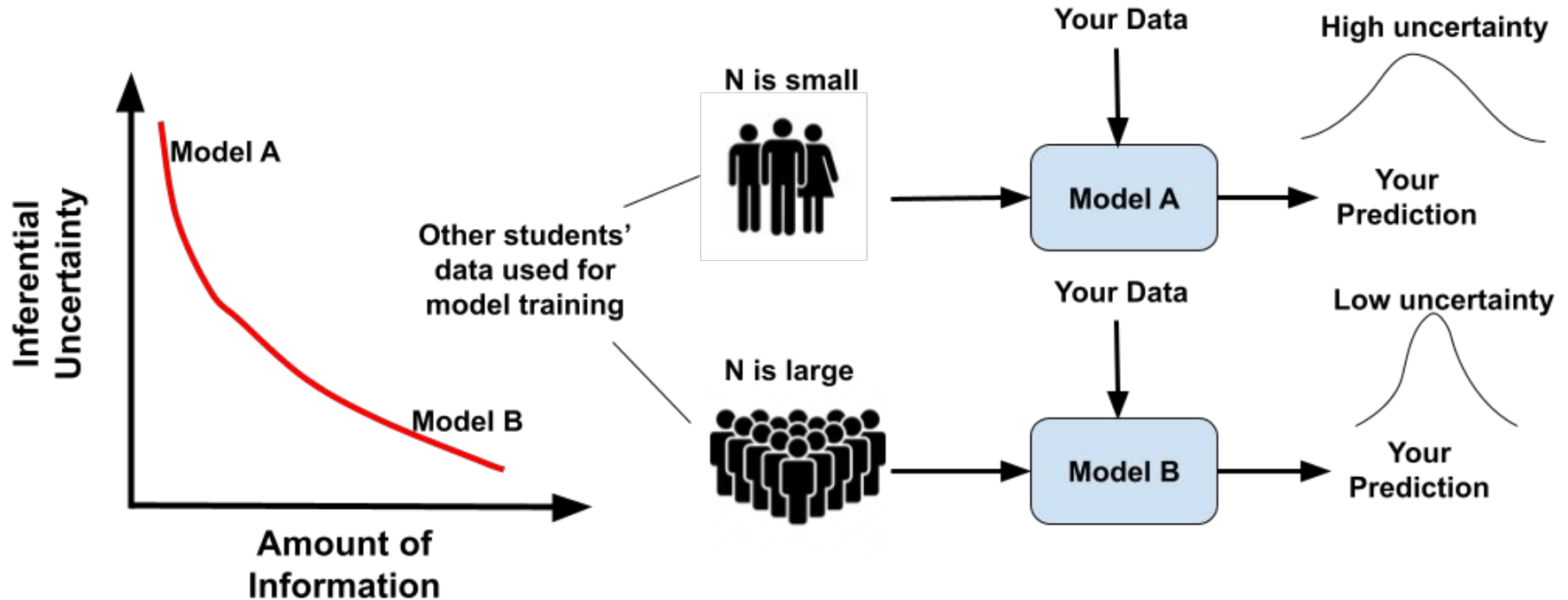
Selected Articles, Case Studies, Presentations and Scholarship

05/11/22: "[Analytics without Action is Just Analysis](#)," keynote [presentation](#) & [recording](#), [Indiana University Learning Analytics Summit](#).

01/21/22: "[Storytelling with Learning Analytics: Shifting of Faculty Perspectives About Student Success](#)," AAC&U Annual Meeting (presentation with Indiana University & University of Southern Indiana).

Big Ideas: Value of Information:

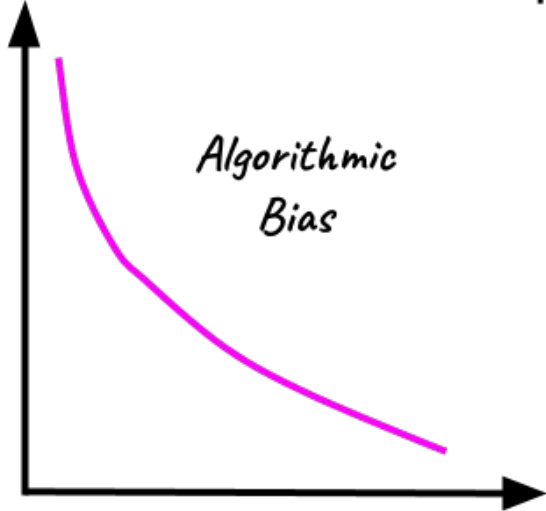
the Trade off between amount of data and model quality



Big Ideas:

Trade off as related to data ethics and privacy

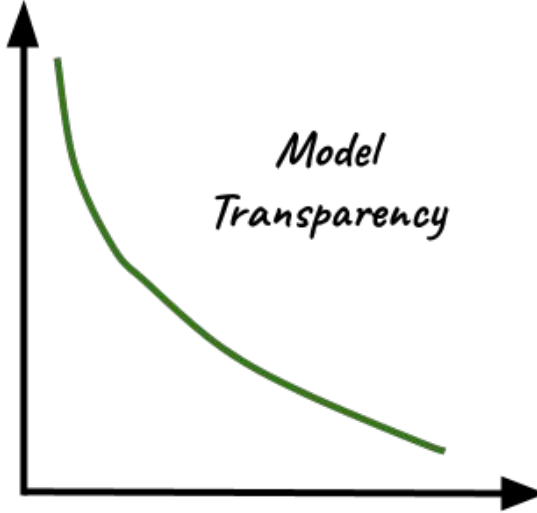
Model Quality



*Algorithmic
Bias*

Fairness

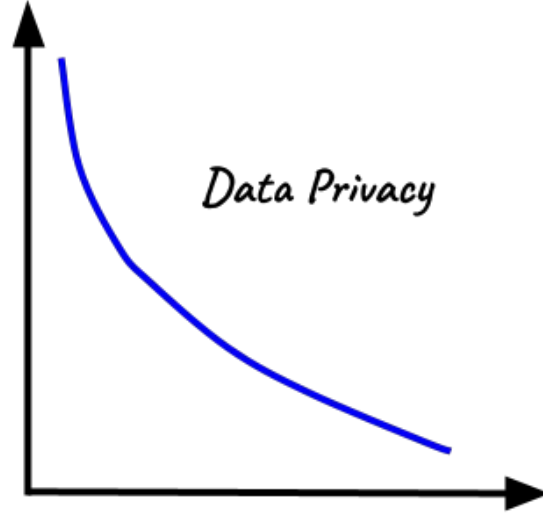
Model Quality



*Model
Transparency*

Explainability

Model Quality



Data Privacy

Privacy Protection

Project-Based Learning



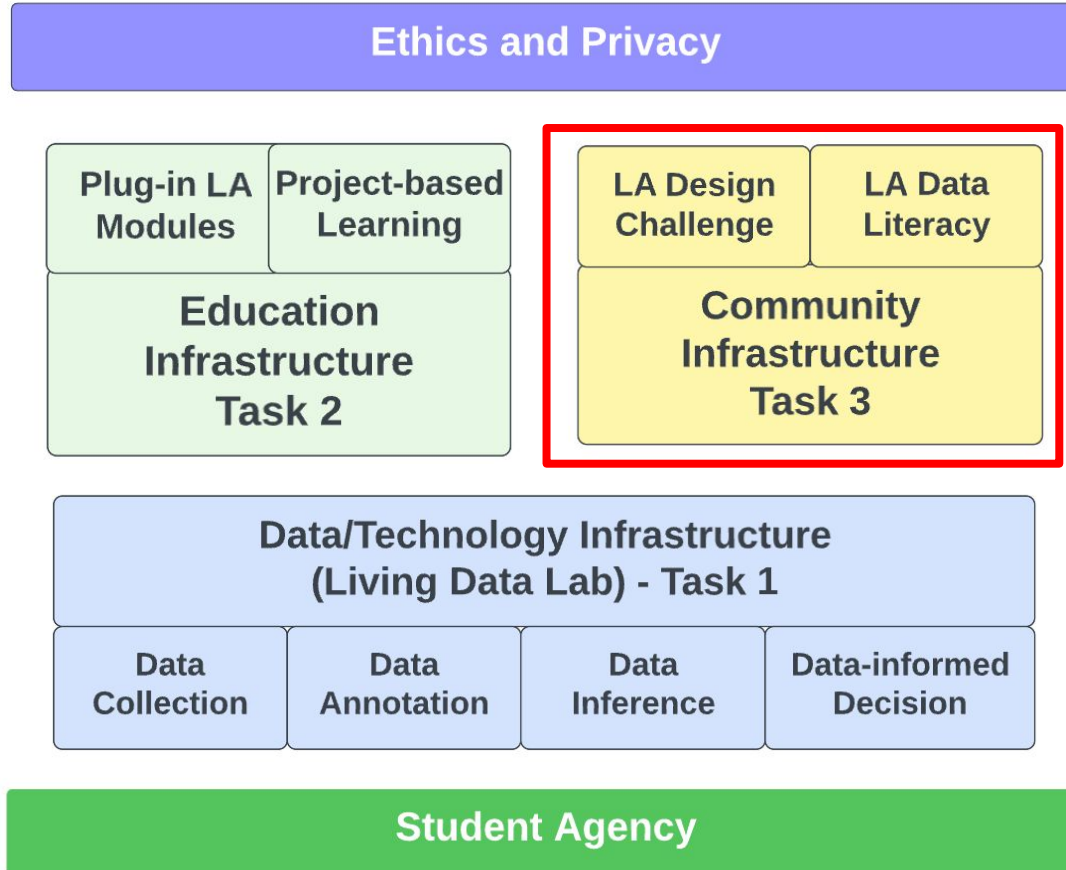
- As part of the HCC (human-centered design courses, UG or Graduate)
- Themed around “Redesigning CMA” - at least initially
 - In later years, may expand to other areas based on students’ feedback
- May be formatted as capstone projects or independent study project
- Design activities
 - starting from the design ideas “crowd-sourced” from students’ mini design activities; the initial iteration may involve analyzing the existing CMA feedback collected from students
 - Students lead design workshop and focus group discussions/interviews, as appropriate
 - The deliverables are design document and low/high fidelity prototypes
 - Design artefacts will be posted on Living Data Lab - community section for student feedback

LA Scholars



- Modeled after “Data Science Scholars”
 - Mentored by CWIT staff
 - Participating in CWIT programming
- Multiple roles
 - UG Research assistant to implement functions of the data/technology infrastructure
 - Support design activities (e.g. design workshop)
 - Participating in LA community activities
 - Liaison with faculty and staffs working on related LA projects
 - Representing students’ voices, i.e. LA ambassador

Overview of Proposed Tasks



Community Infrastructure

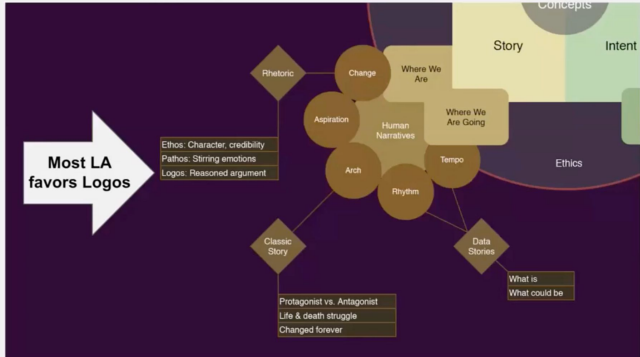
- Expanding sphere of influence to a wider audience on campus
- Goal is to improve learning analytics literacy (sense making + acting on it)
- Collaborate with Student Success Center and AETP (First year seminar/IHU course and transfer seminar)
 - single session workshop (e.g. “Learning Analytics 101”)
 - self-paced learning + reflections
- Make LA modules available as part of the data analytics GWP micro-credential programs
- Organize student competition (data challenge and design challenge) collaborating with HackUMBC

Digital (LA) Data Storytelling

- Collaborate with the Montgomery College Digital Storytelling Internship Program and UMBC's digital storytelling working group
- Create LA-themed digital data stories to be shared with the students across the campus, example storylines:
 - **Grade surprise story:** What does it look like? What's the prevalence (descriptive)? What are the plausible factors contributing to grade surprise (inference)? How grade surprise may be resolved (actions)?
 - **Practice Makes Perfect story:** story of how the student was able to improve grades by taking advantage of the spaced practice opportunity offered in introductory chemistry class. What is spaced practice, and what is the science behind it? What is the evidence as seen from the data? (with Tara Carpenter)
 - **Come back story:** stories about students improving performance by proactively leverage the resources available on campus and improve SRL

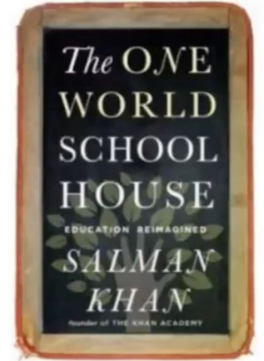
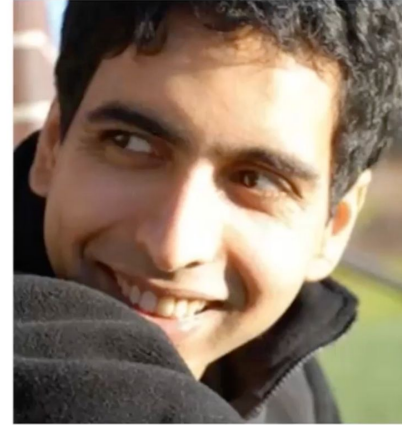
LA Storytelling: Finding our own “Marcella”

Could Better (Any?) LA Storytelling Help?



Finding “Marcella”

One of the best learning analytics stories ever.



Khan, S. (2012). *The one world schoolhouse: Education reimaged* (Hodder & Stoughton).

IU LA Summit "Lightning Round" talk by John Fritz, May 2021

["Using Learning Analytics and Instructional Design to Inform, Find, and Scale Quality Online Learning," in *Online Learning Analytics*](#)

Drizzle of TEEM

(How I incorporate LA topics
in data science course)

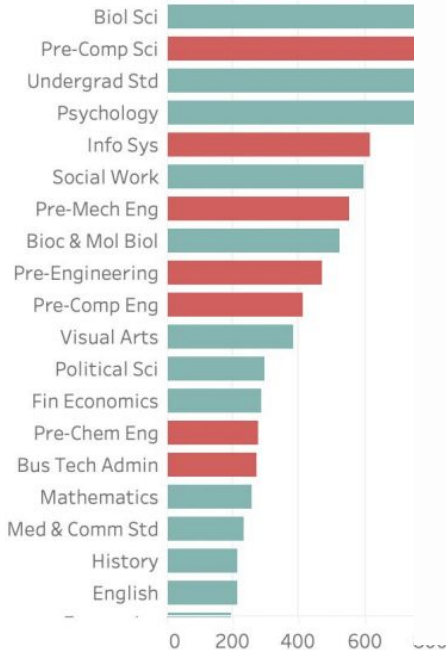
IS 296 (Foundations of Data Science)

- Adapted curriculum from UC Berkeley (Data8) - as part of the NSF IUSE grant (PI Janeja - IS department chair)
- First course in data science, only high-school algebra is required
- Teach python programming (via Jupyter Hub) with data and statistical reasoning
- Large proportion are freshman or new transfer students
- Hosted at IS, but open to other majors (e.g. History, English, Psychology, Economics etc.)

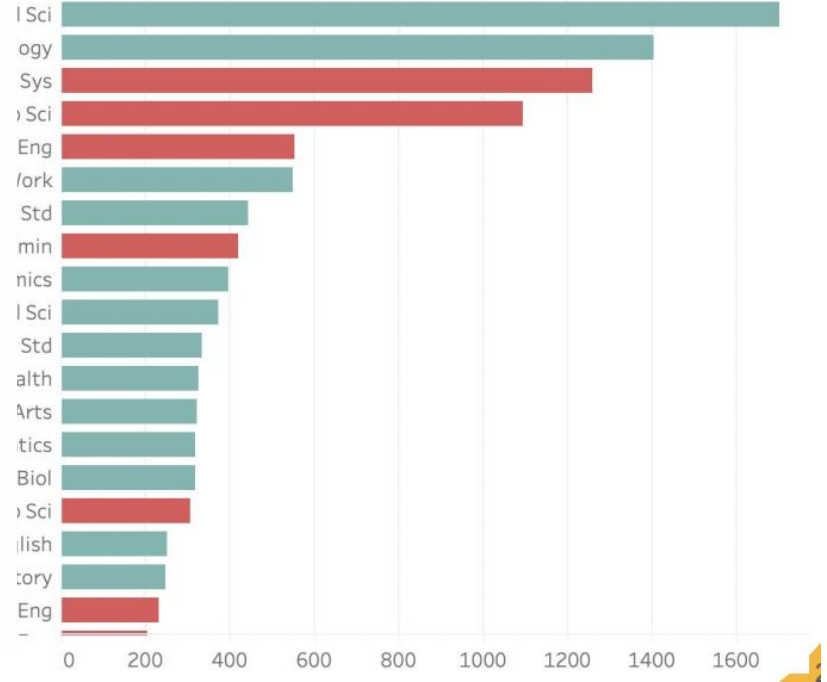
Most Popular Majors at UMBC

n= 13,550, Fall 2015 - Spring 2019 Cohort

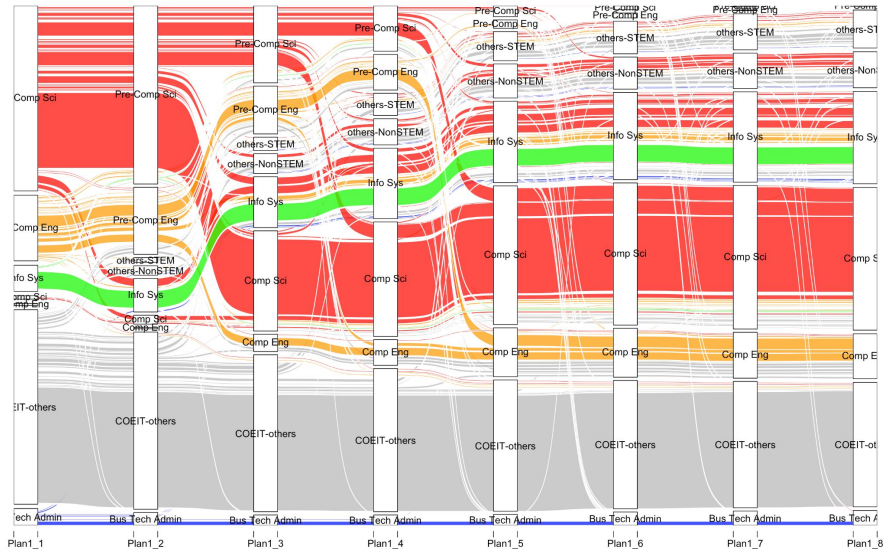
First Major



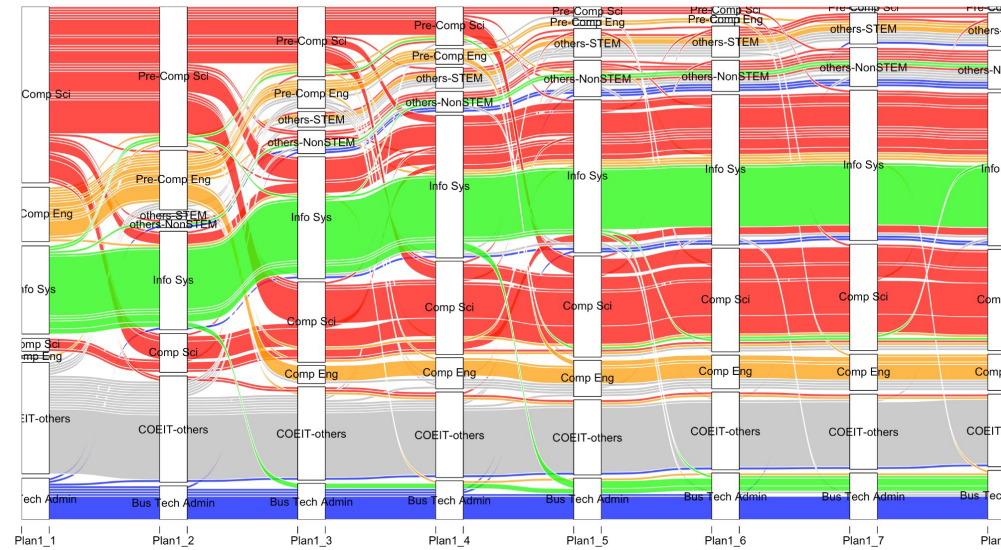
Last Major



Sankey Diagram Illustrating COIET students' major switch patterns



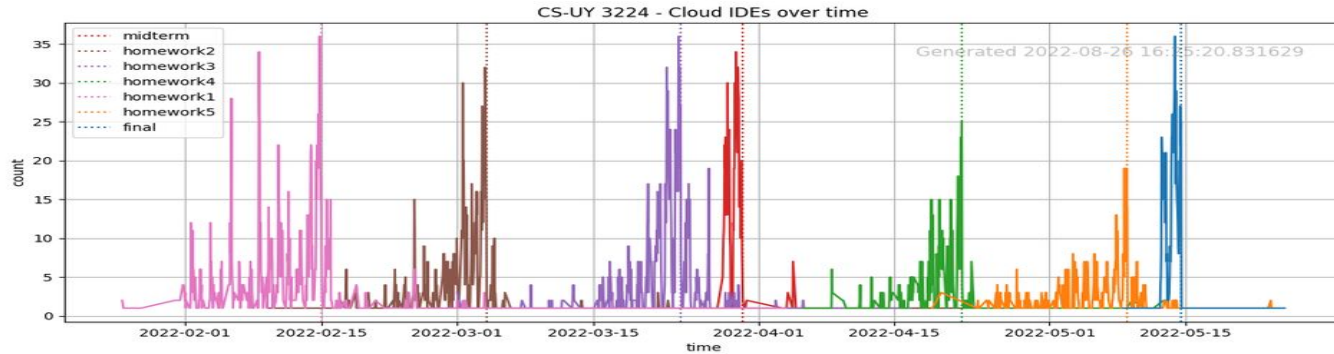
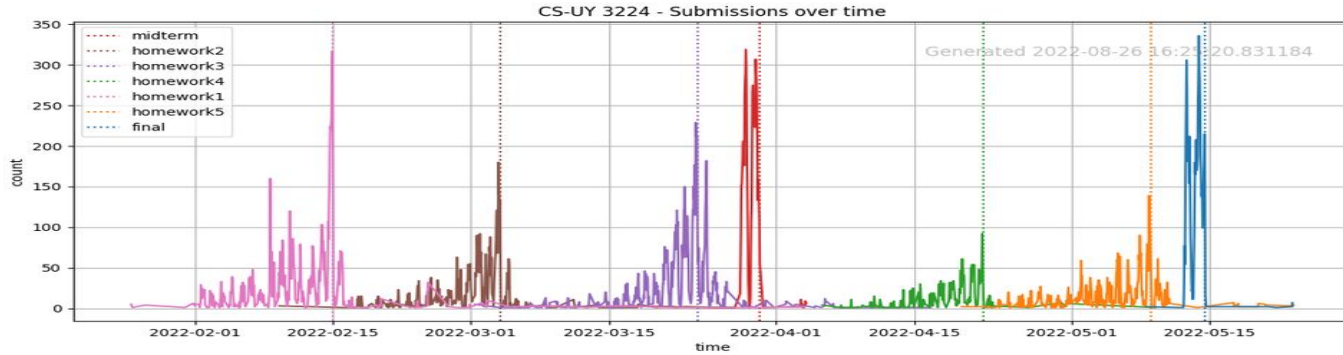
Transfer Students



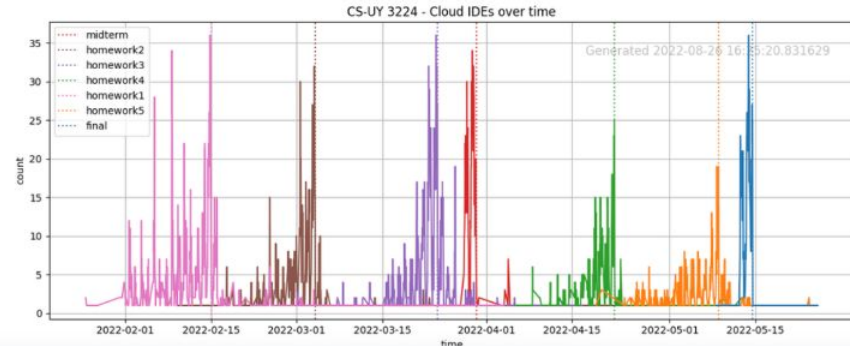
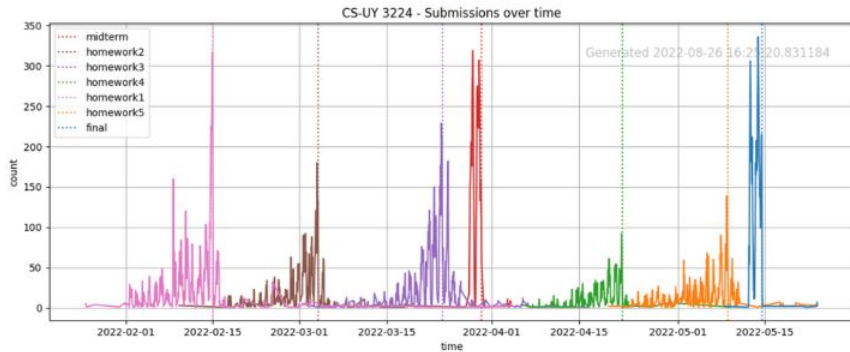
First Time Freshmen

Minute by Minute Usage Data from LMS (e.g. Blackboard) from a university

**In-class discussion
In IS 296 Fall 2022**



What is your proposed headline for this data story?



Students' lively discussion around

- Procrastination
- Time management/planning
- Challenges of meeting deadline
- Healthy dosage of stress (e.g. deadline) may improve learning

Quantified Self: My **Wellness Report** from Fitbit tracker



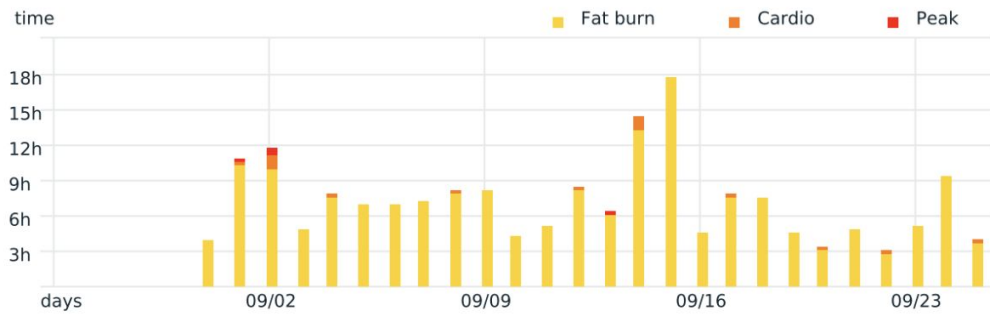
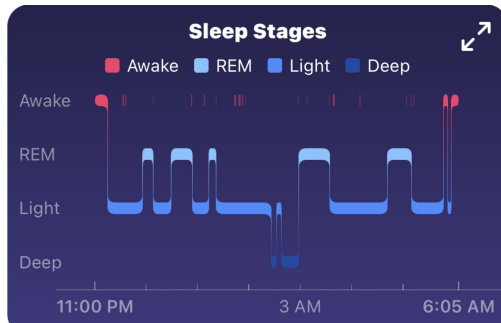
Resting Heart Rate



Heart Rate Variability



Resting Breathing Rate



3 years'
sleep and
exercise
data ready
for
students to
play

Students' curious questions about my fitbit data

- Exercise ~ sleep quality (wake, sleep hour, REM sleep) t-1 vs t vs t+1
- How my data compare with faculty?
- **What day I slept the most**
- **Calculate overall % in REM, Light and Deep sleep**
- Nightmare vs HR (what's the heart rate pattern during REM, high HR ~ nightmare?)
- Relationship between Carolie, step and distance

Talked about related topics in

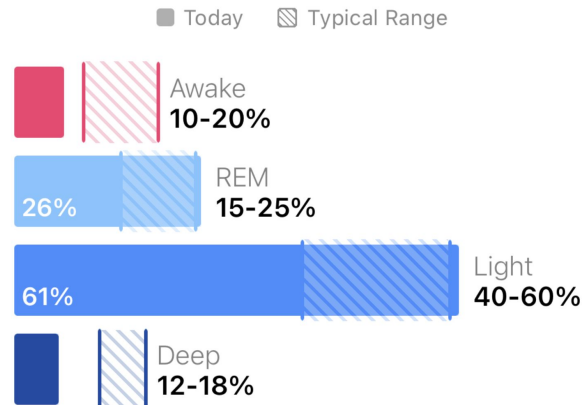
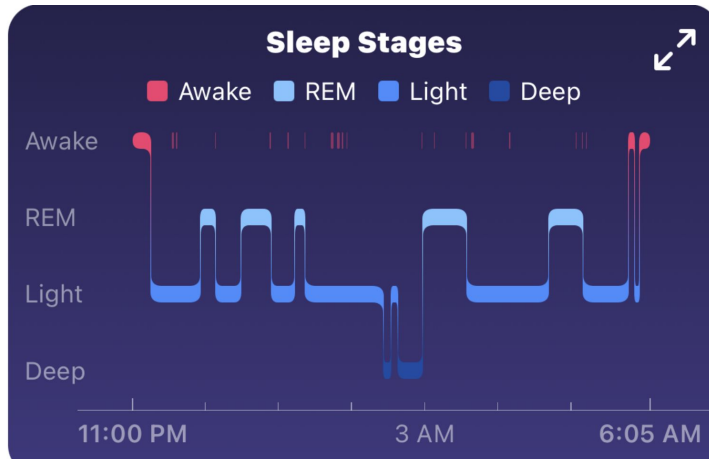
- Sleep quality (REM/Deep sleep) and learning
- Exercise and learning

Help wanted: Be my sleep detective

Q1: which night I slept the most, and how long did I sleep?

Q2: During that sleep, what is the percentage are REM?

Q3: How does it compare other days? you can use the average of other days' REM as comparison.



Student's Quantified Self Project using Expiwell App (EMA)

- First day: 8-question flourish/well-being survey
- In the next 7 days (three surveys per day)
 - Noon - 2:00pm
 - 4:00pm - 6:00pm
 - 8:00pm-10:00pm

**Student project
In IS 296 Spring 2022**

Student's Quantified Self Project using Expiwell App (EMA)

What is your emotional state in the last 4 hours?
Check all that apply

relaxed

stressed

frustrated

contended

engaged

interested

END

NEXT

Where did you exercise in the last 4 hours?
Check all that apply

At home

UMBC REC

UMBC outside REC

Local Community

I didn't exercise

What type of exercise were you engaged in the last 4 hours? Check all that apply

walking

jogging

running

swimming

team sport (e.g. basketball, soccer etc.)

others

I didn't exercise

BACK

NEXT

Did you interact with your friends/family members/classmates/colleagues in the last 4 hours? Check all that apply?

Yes, virtually

Yes, in-person

No, I was by myself

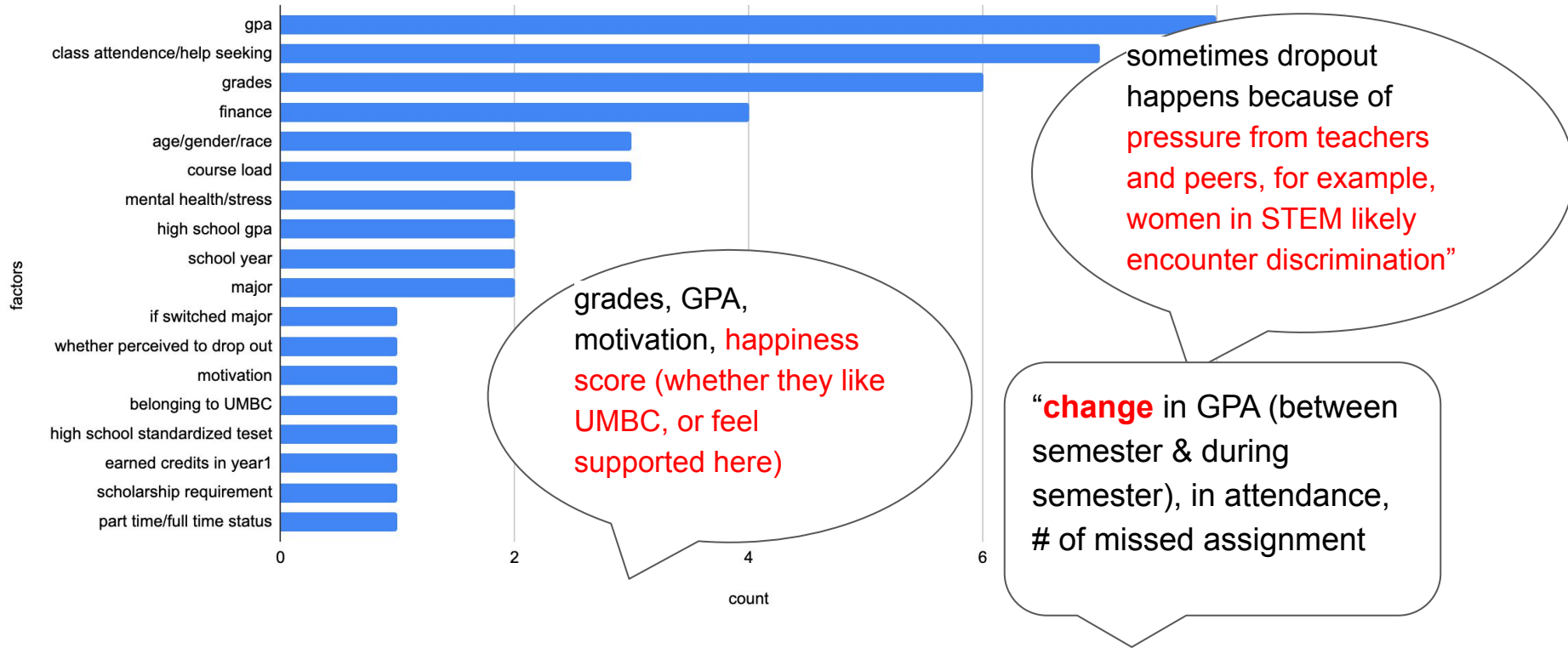
Spring IS 296 Final exam question & responses

You are helping UMBC's new president to build a predictive model to identify students who are at-risk of dropping out of college. Research shows that the earlier we could identify at-risk students, the better chance that we could provide support to prevent their dropping-out. You plan to build the model with historical data you can gather and specific outcome you would like to predict is whether or not a given student will leave college and will not come back after the end of first year.

Q1: Describe what kind of data you think is useful to collect.

Summary of students' responses on variables to include for drop-out prediction model (n=25)

count vs. factors



Long Term Vision

**DATA SCIENCE
RESEARCHER & EDUCATOR
INTERDISCIPLINARY
EDUCATIONAL RESEARCHER**

PIER@ Carnegie Mellon
PROGRAM IN INTERDISCIPLINARY EDUCATION RESEARCH

**MULTIMODAL
LEARNING
ANALYTICS**



**DATA SCIENCE
PROBLEM SOLVING
(CASELET
PROJECT)**



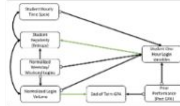
**INSTRUCTOR FOR DATA
SCIENCE/ANALYTICS > 10 YEARS**

LONG TERM CAREER VISION: EMPOWERED LEARNING ANALYTICS 4 ALL



DOIT LA Mini Grant

**LEARNING
ANALYTICS
(LMS)**

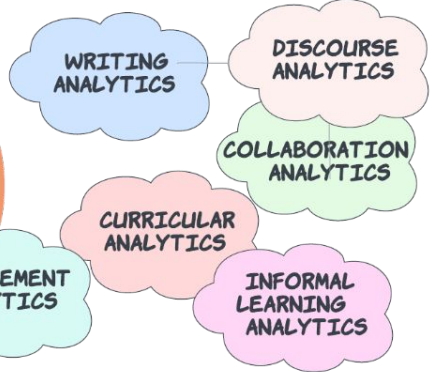
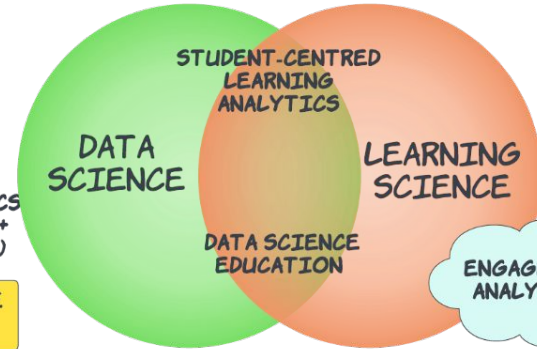


**DATA ETHICS
(CASELET+
PROJECT)**

**INSTRUCTOR FOR DATA SCIENCE
COURSES (UG & GRADUATE)**

**CAREER: TEACHING TO EMPOWER
(TEAM) INFRASTRUCTURE**

**EXTEND TO OTHER
LEARNING ANALYTICS**



BROADER IMPACTS VIA K-12 & COMMUNITY COLLEGES OUTREACH

Questions to Audience

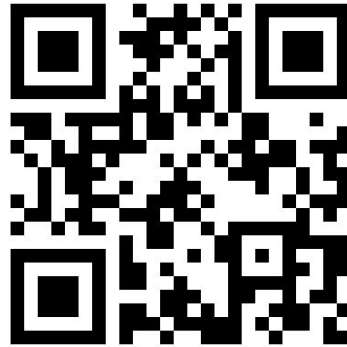
What is your idea of engaging and empowering students in LA initiative?

If you are an instructor - love to talk about how to have some drizzle of TEEM with your students

If you are a LA practitioner - love to bring your LA case studies into classroom

If you work for a student-facing campus unit - love to see we could support your students to thrive (with data)

Thank you!
Karen Chen (lujiec@umbc.edu)



[link](#) to evaluation

<http://tiny.cc/108204>