



ARIZONA STATE UNIVERSITY

EdPlus Briefing Materials for the ACAO Digital Fellows Program

July 18, 2017





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Adaptive Learning Systems

Evaluating and Implementing Options

Arthur “Art” Blakemore
Vice Provost for Academic Success

Sean Hobson
Chief Design Officer and
Acting Chief of Staff, Ed Plus



Our Experience with Adaptive Courseware

- Cengage Learning Objects** – psychology
- Cerego** – astronomy
- CogBooks** – biology and US history
- Khan Academy** – remedial math
- Knewton** – remedial math
- McGraw Hill ALEKS** - college algebra
- McGraw Hill LearnSmart Master** - remedial math
- McGraw Hill LearnSmart Connect** - chemistry
- Pearson MyMathLab with Knewton** - college algebra
- Pearson Mastering with Knewton** - physics
- SmartSparrow** – science courses

Adaptive software is necessary but not sufficient to ensure student success.



What pedagogy did ASU decide upon?

- Our best results have been with “Flipped and Synced”

**Active Learning
in class**

**Adaptive Learning
before class**

Bloom's Taxonomy

Optimize high-tech (adaptive) and high-touch (active) learning

ASU3

How does this model work in practice?

1. ACQUIRE INFO
Read textbook, watch video, do simulation, etc.

2. ANALYZE
Do practice problems, take quiz before class

4. ASSIMILATE
Write essay, solve problems, take quiz, etc.

3. APPLY
Solve an applied problem (case study) with classmates.

ASU4

General Education Courses

Completed:

- Astronomy
- College Algebra
- College Math
- BIO intro
- CHEM intro
- History (two)
- PSY
- Econ (two)

To come:

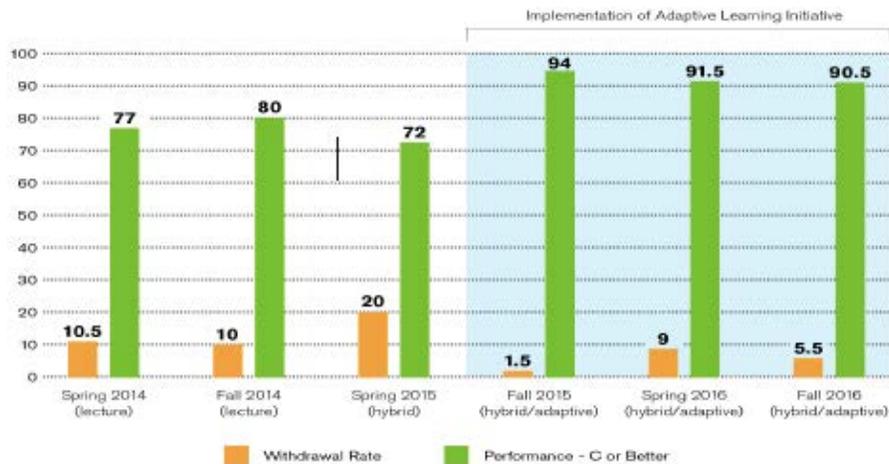
- Pre-calculus
- Calculus for Business
- Calculus for Engineers
- Physics
- other



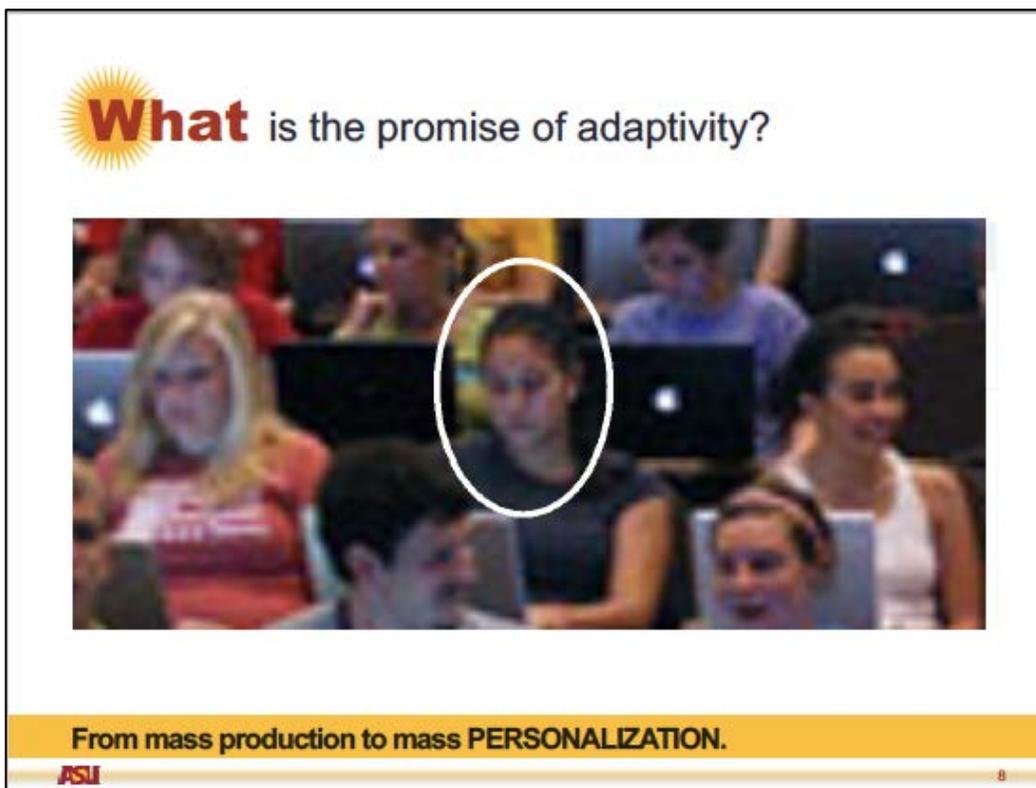
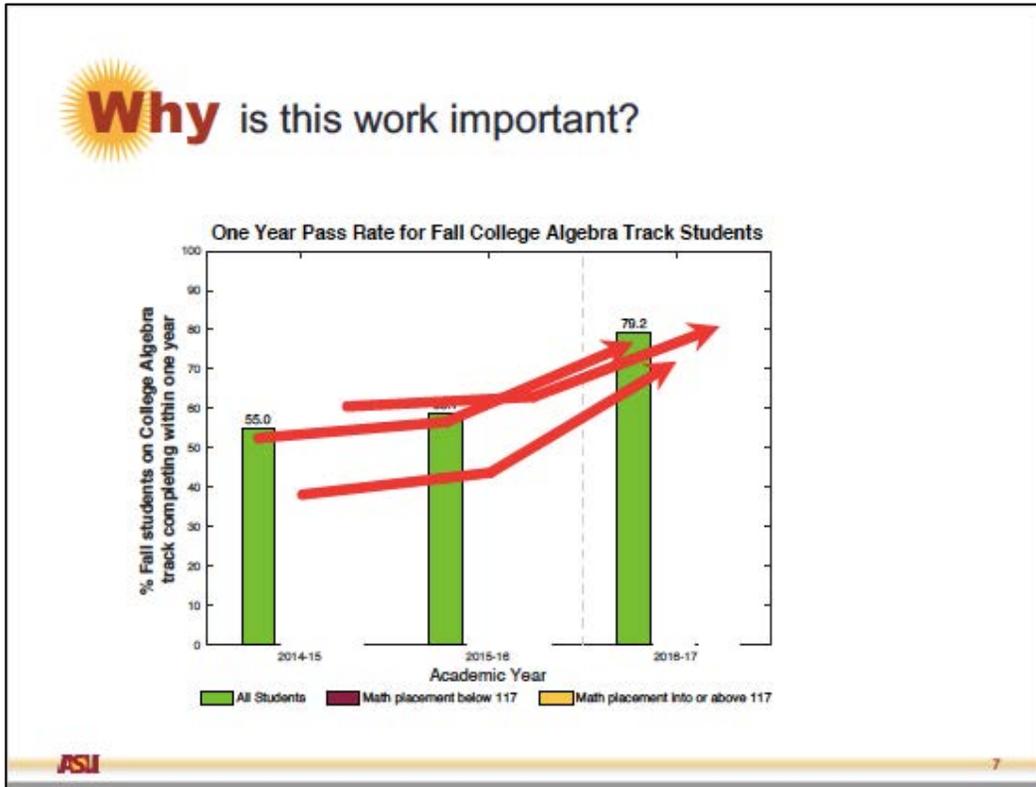
5

Why is this work important?

BIO 100 - Withdrawal Rate and Performance (in %)



6



How are adaptive systems different?

	LMS	ADAPTIVE
- Lesson Plan	Fixed	Variable
- Presentation	Group	Individual
- Content	Common	Personalized

ASU 9

How do the systems help faculty?

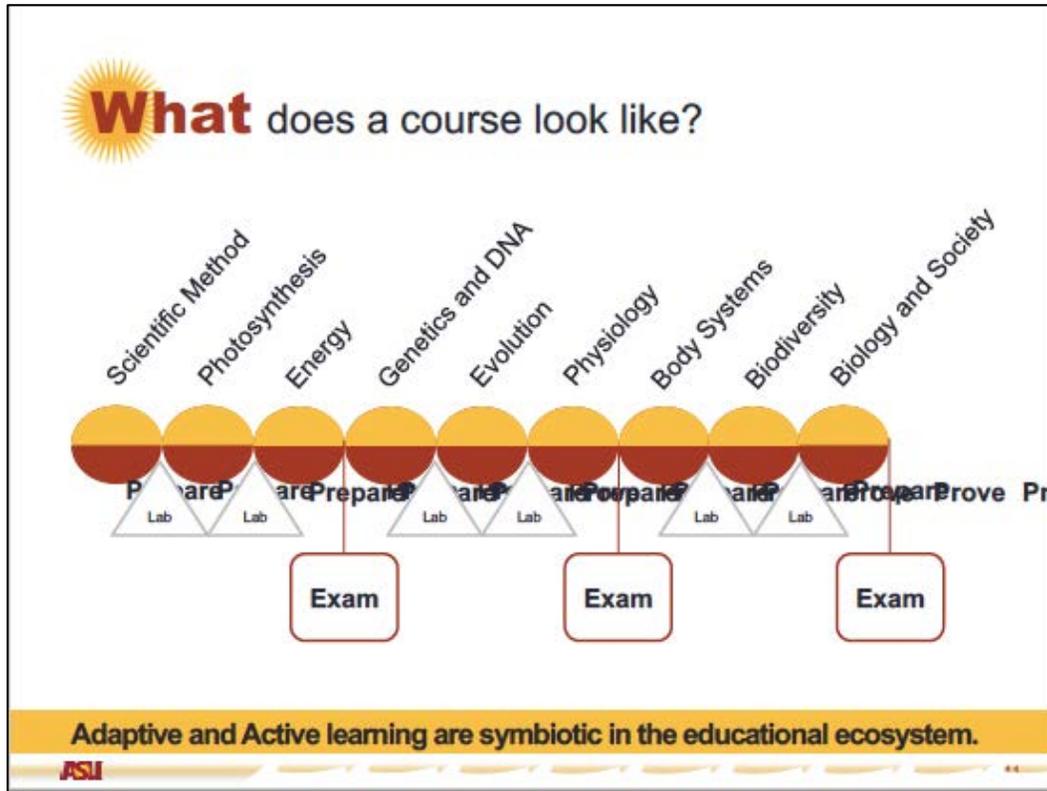
3 Ms

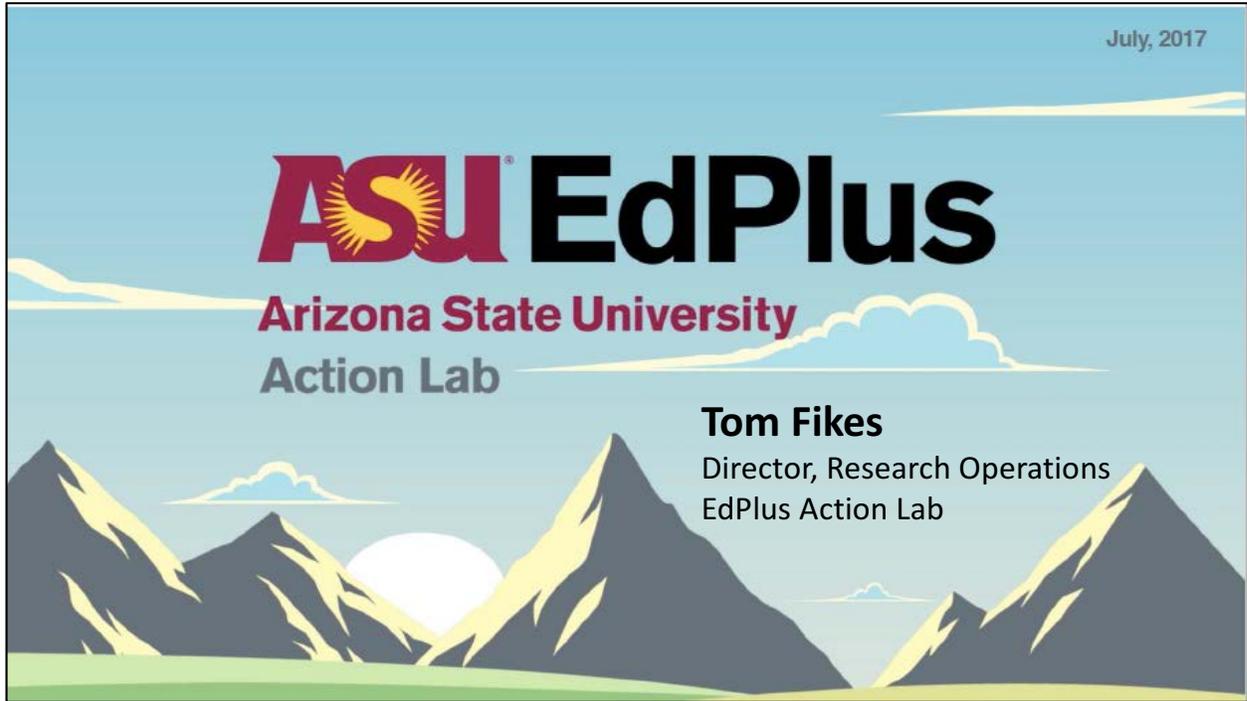
- Monitor** which students need assistance
- Measure** curriculum performance
- Maximize** course outcomes

Tracking →



ASU 10



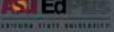


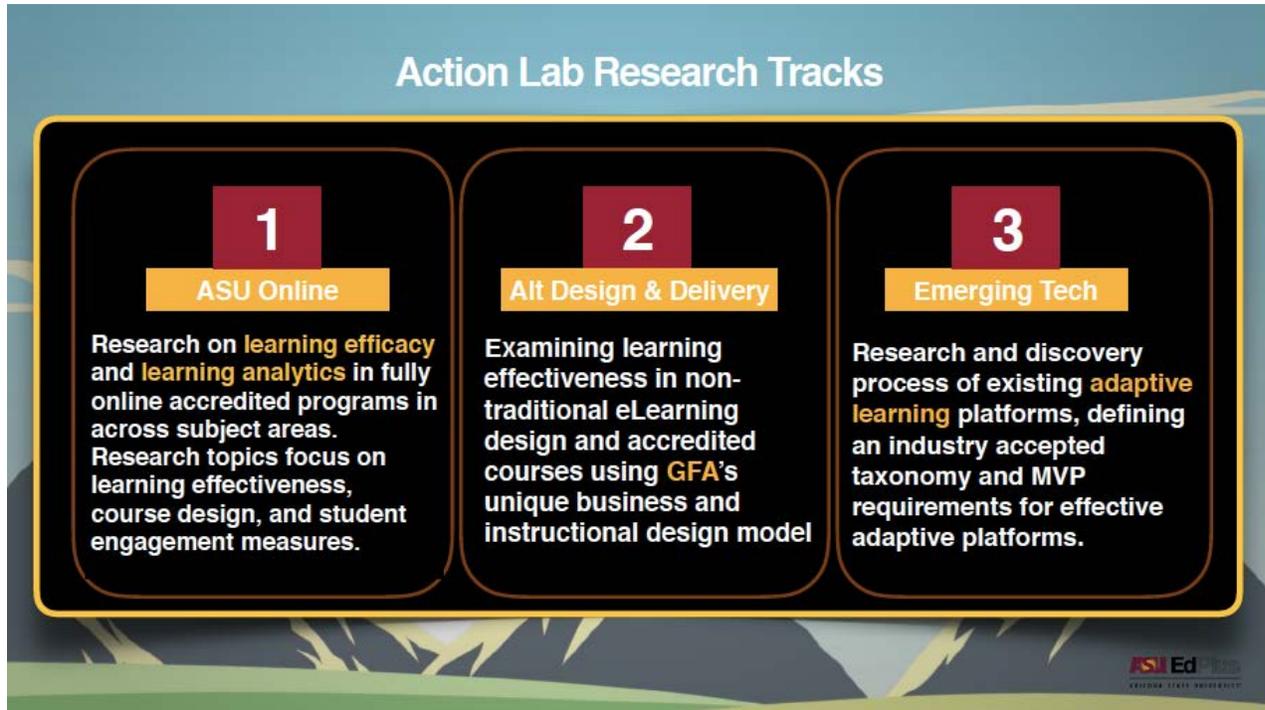
Action Lab Charter

Action Lab is Higher Education's First Dedicated Research Lab Designed for Longitudinal Digital Learning Innovation Research



- INSIGHT**
 - Multi dimensional in research design and focus
 - Cognition, behavioral, and digital learning design focus
- ACTION**
 - Practical application of research in continuous course design improvement
 - Private/Public sector co-creation of EdTech innovation
- IMPACT**
 - Sustainable increases in continued student success
 - Increased success rates in innovative digital learning market solutions





ASU-Online Study: Phase 1



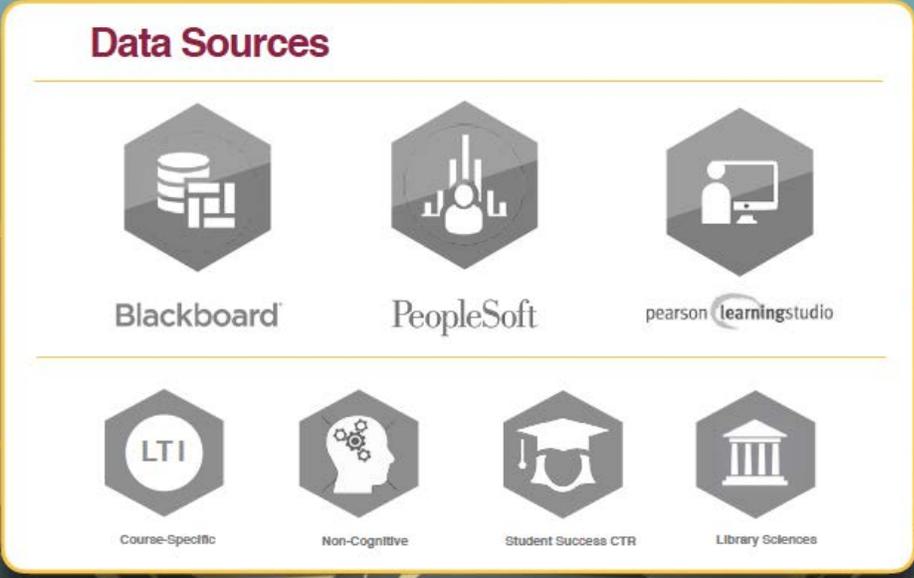
I. Efficacy

Does **student success** differ in face-to-face and ASU Online modalities?

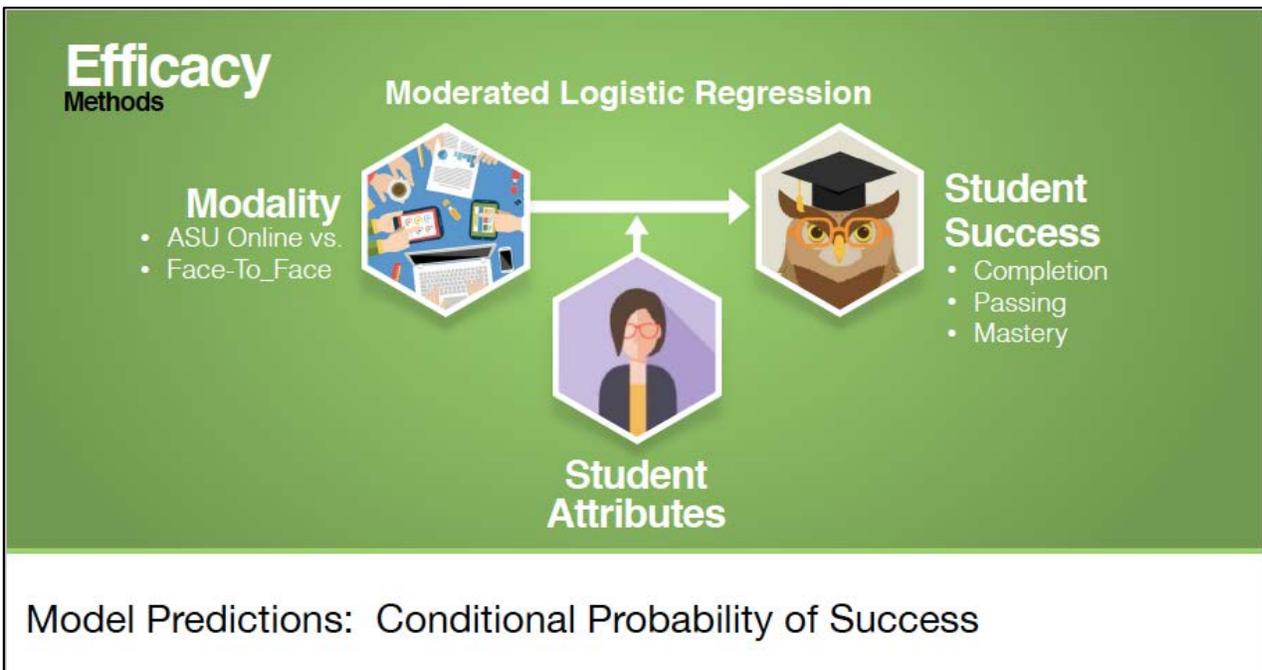
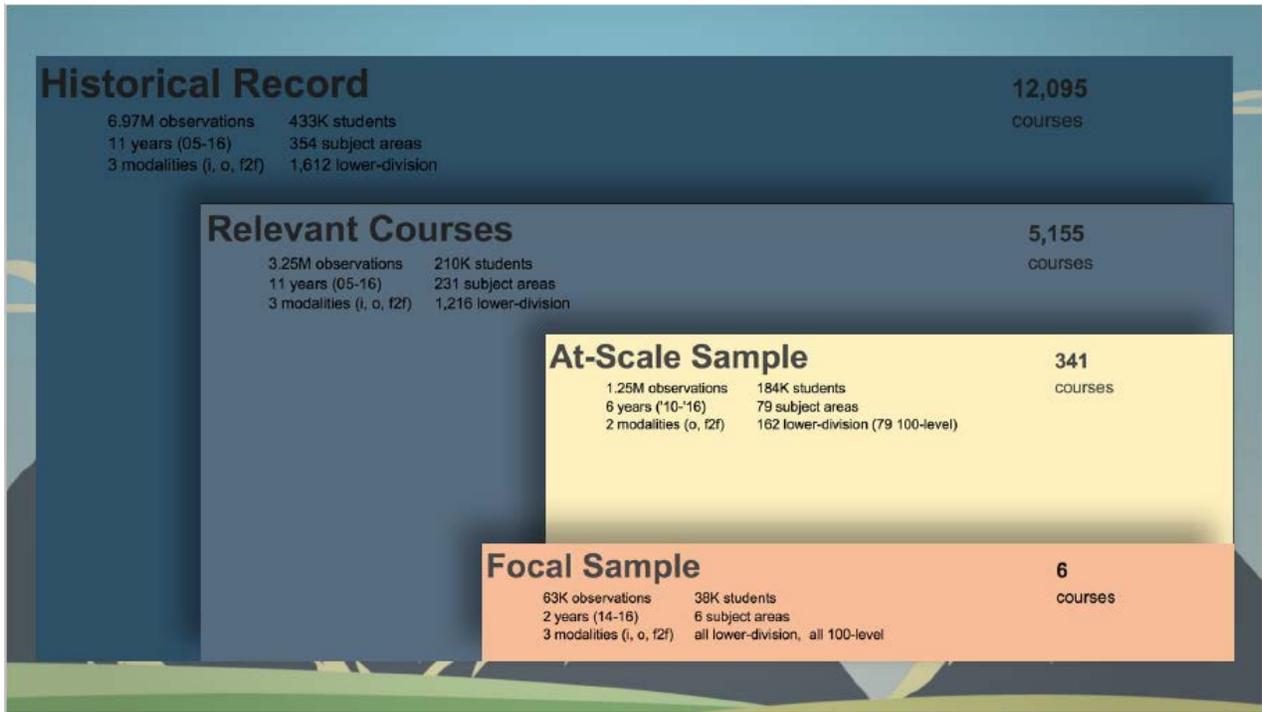
II. Learning Analytics

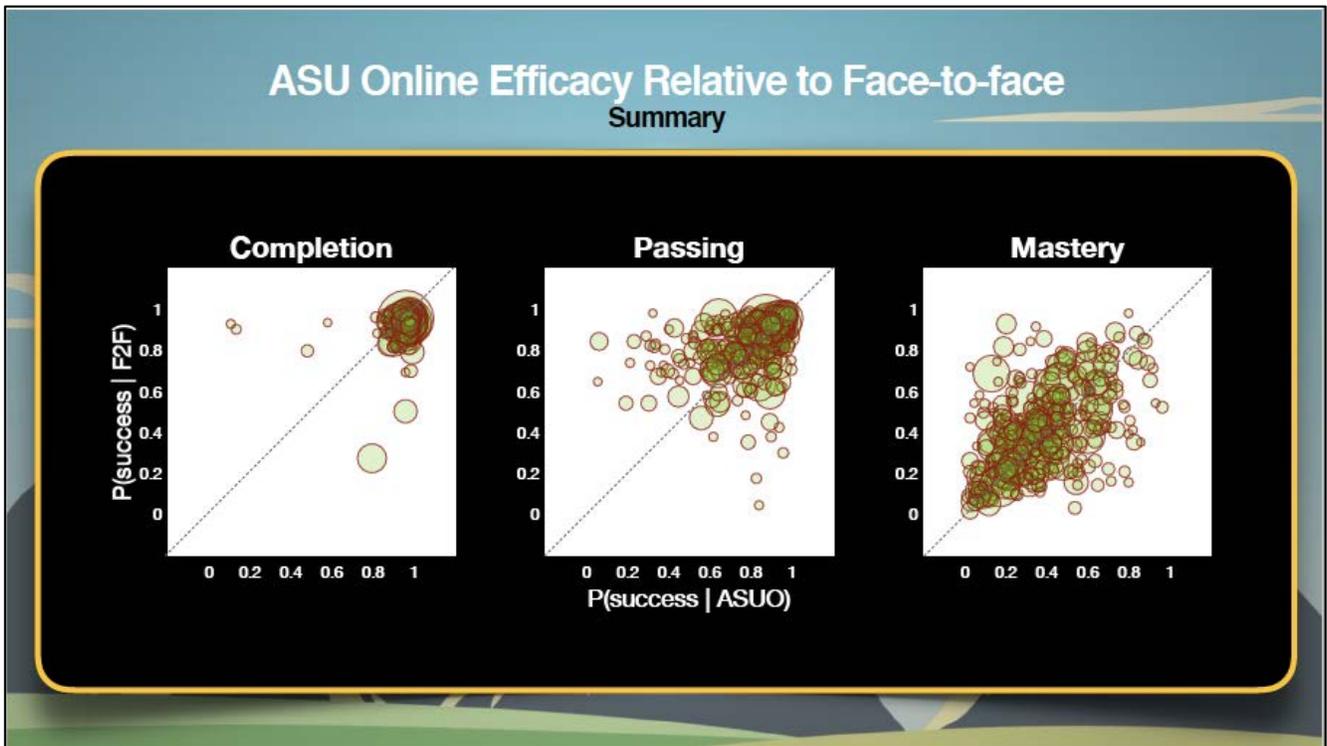
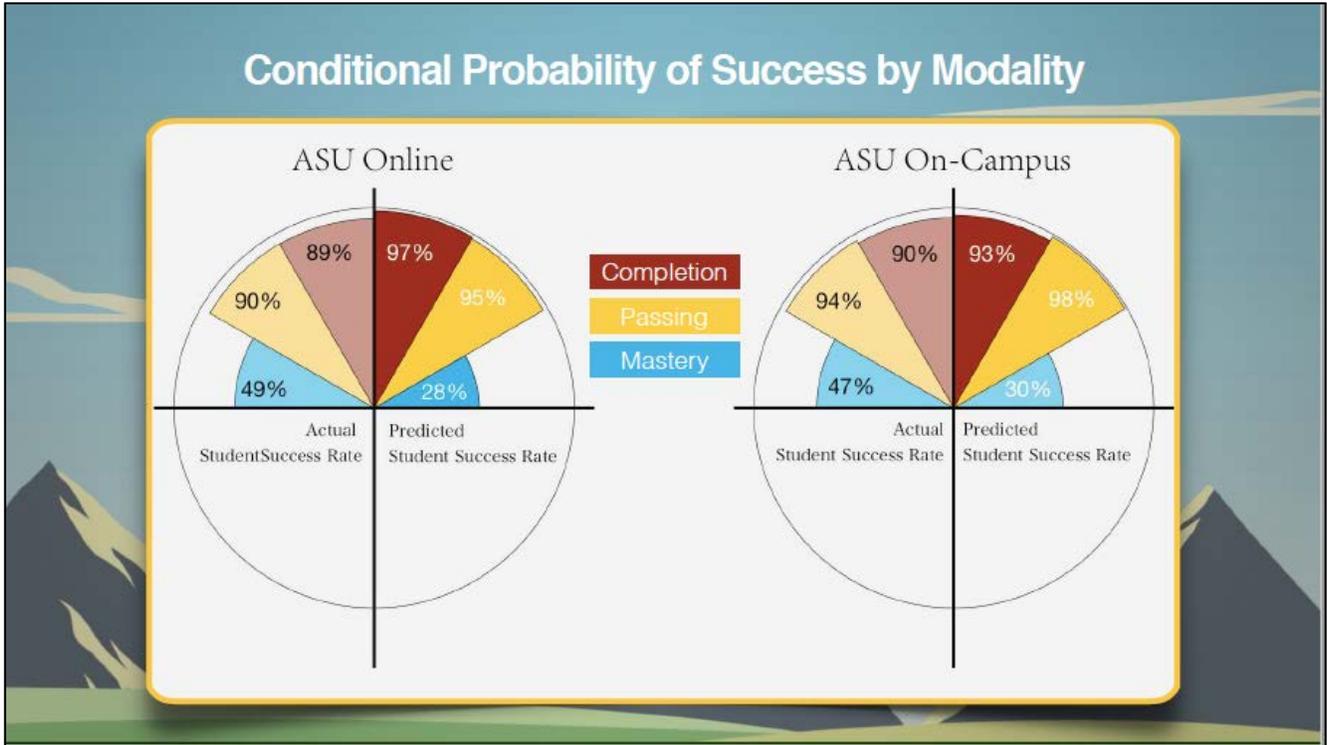
Do **clickstream LMS data on student behavior and course design elements** predict student success?

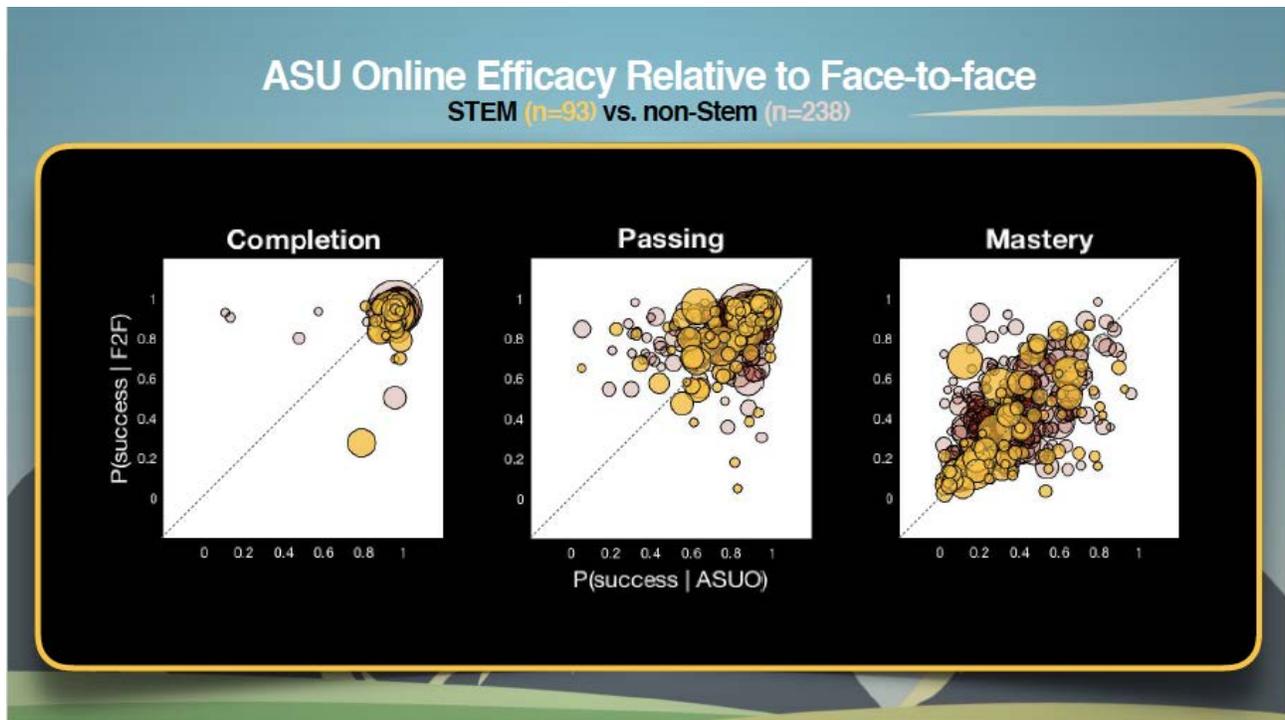
Data Sources

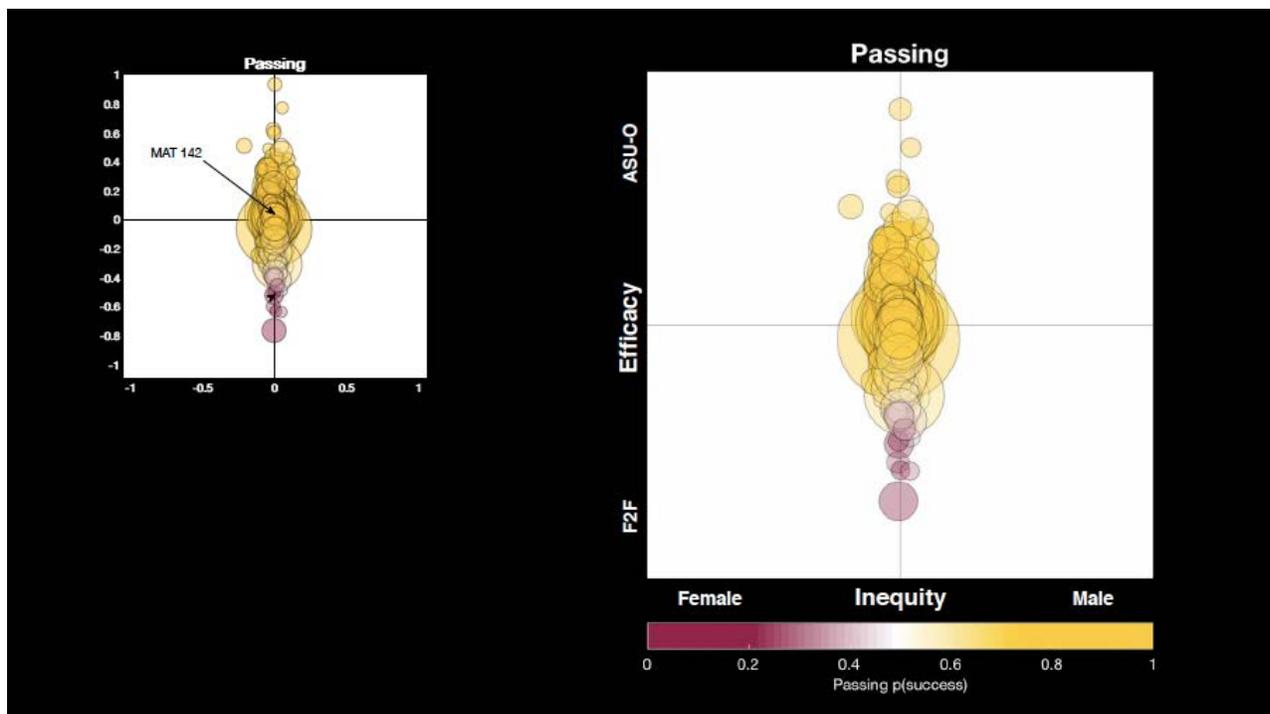
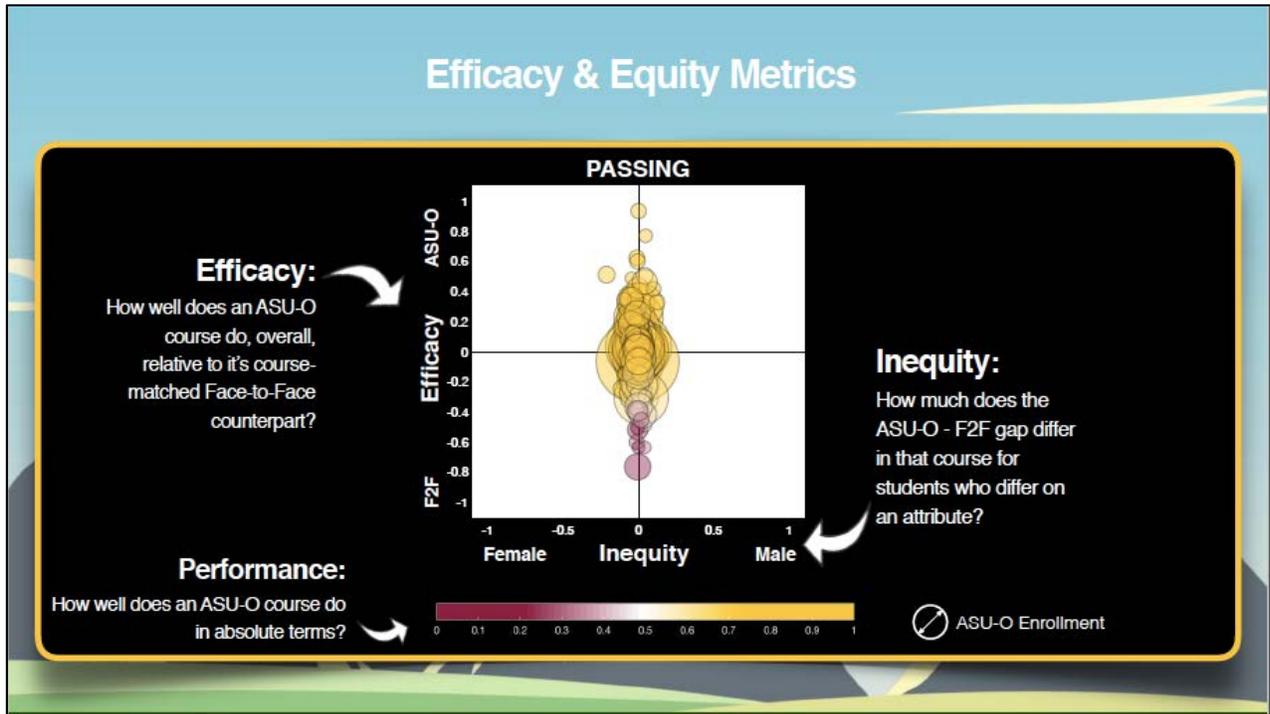


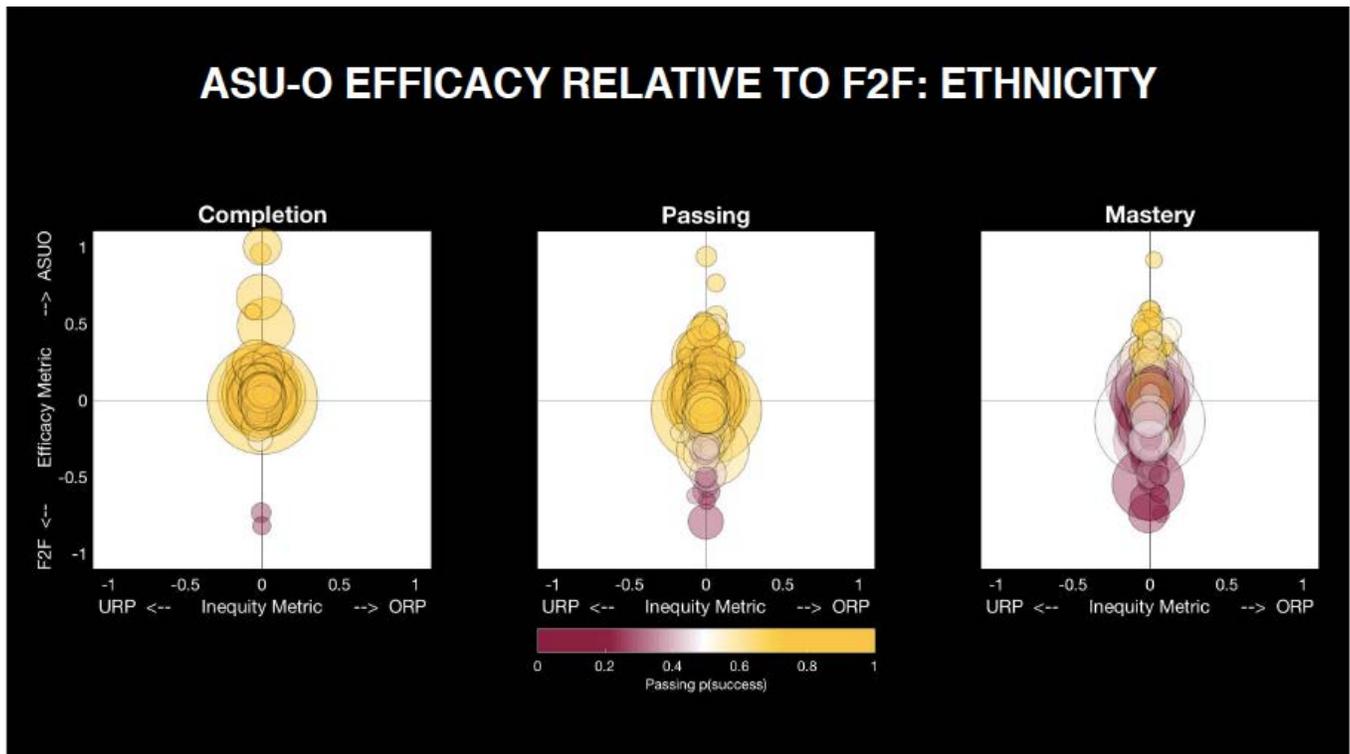
- Blackboard
- PeopleSoft
- pearson learningstudio
- LTI
- Non-Cognitive
- Student Success CTR
- Library Sciences









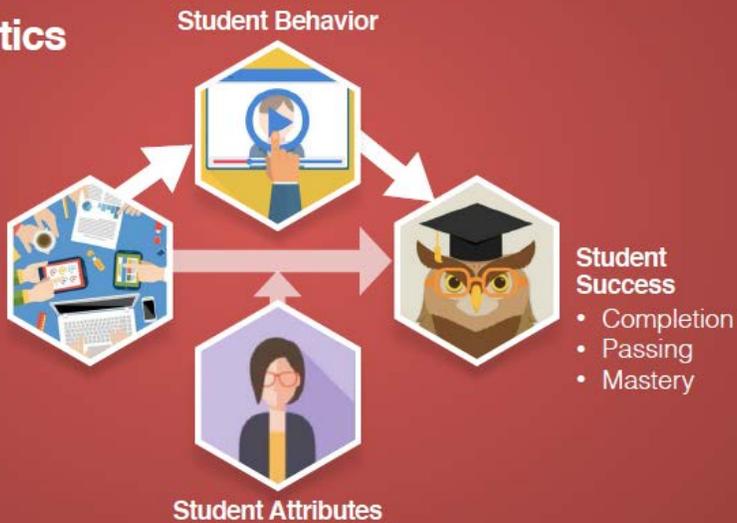


Learning Analytics

How well do **clickstream LMS data on student behavior and course design elements** allow us to predict student success?

Learning Analytics Results

Course Design:
ASU Online vs iCourse
Course Design Features

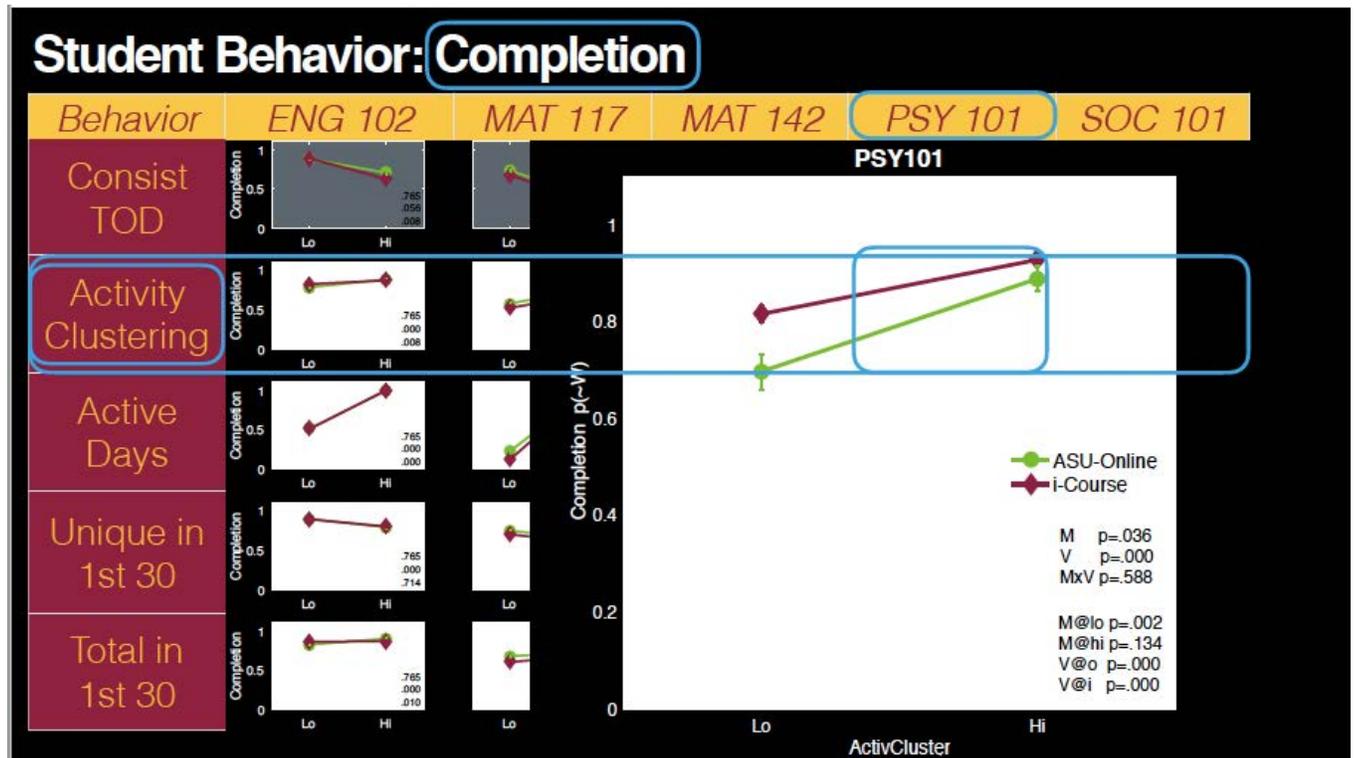
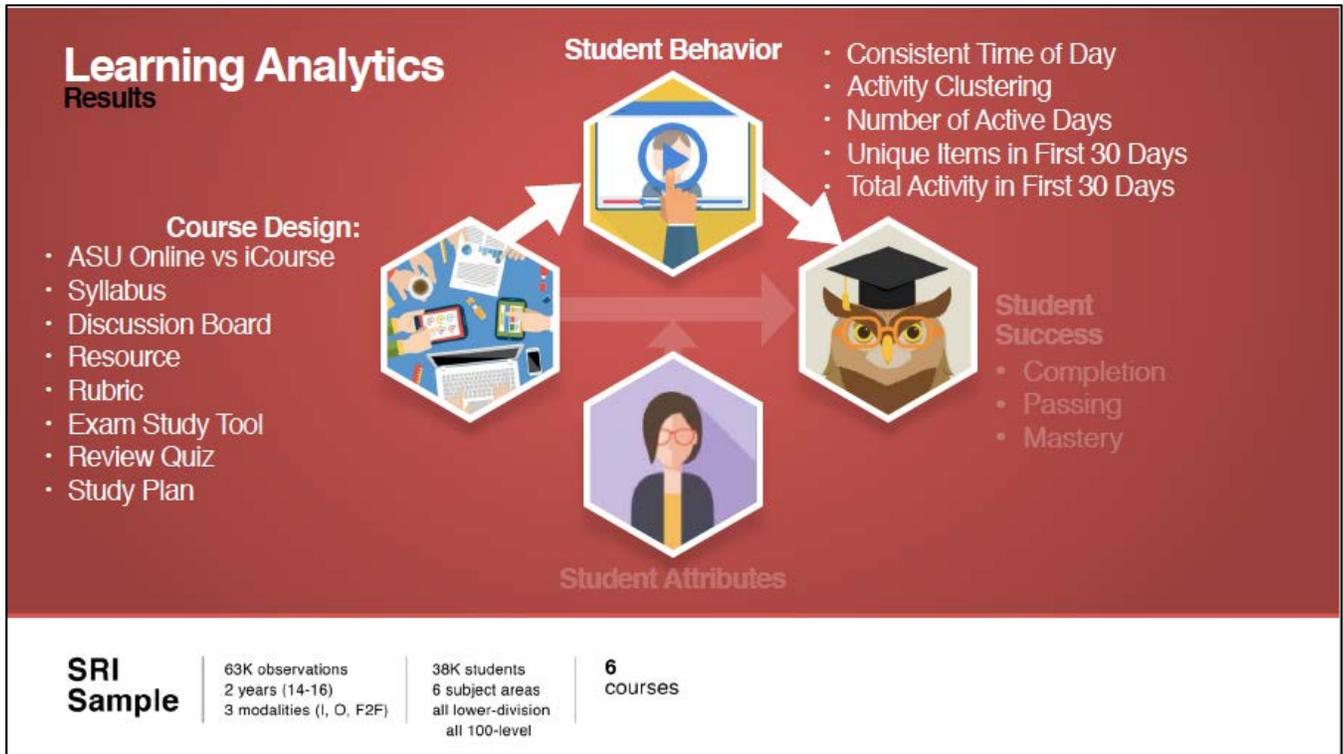


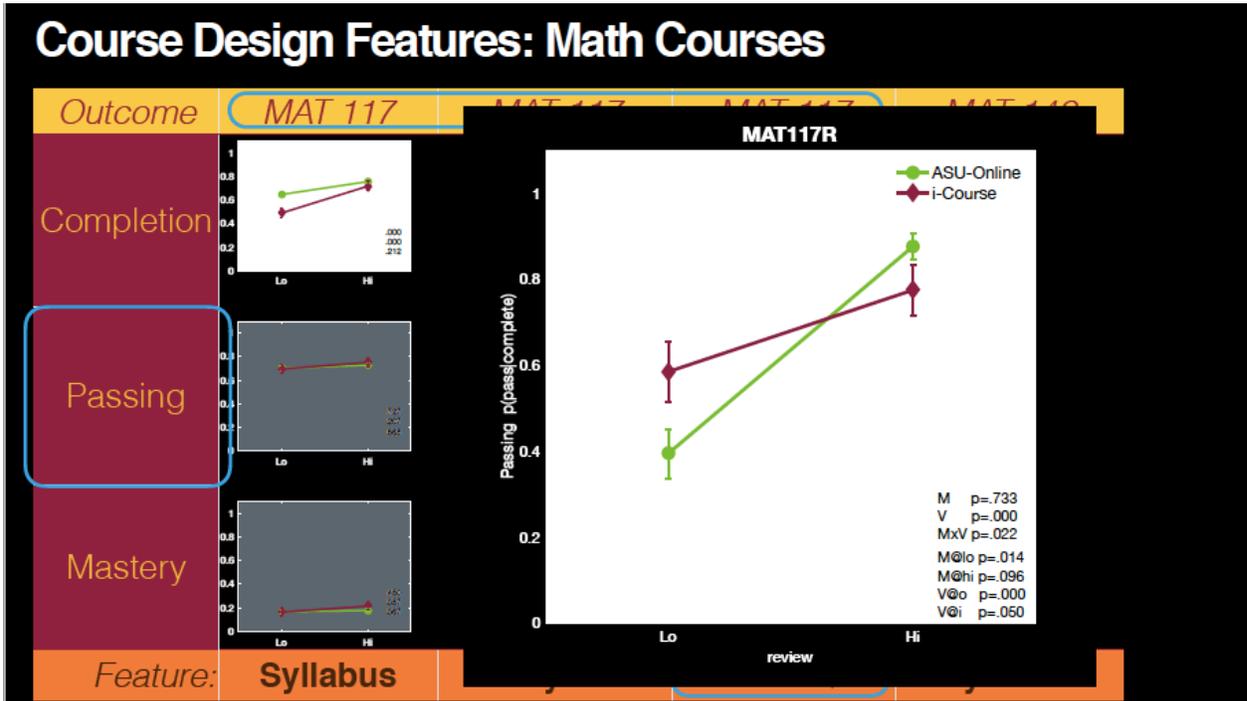
SRI Sample

63K observations
2 years (14-16)
3 modalities (I, O, F2F)

38K students
6 subject areas
all lower-division
all 100-level

6 courses





Primary Conclusions

OVERALL PERFORMANCE

- What is the overall effectiveness of ASU's digital teaching and learning program?

GENDER & ETHNICITY

- Does digital teaching and learning selectively disadvantage based on gender or ethnicity?
- What other student characteristics might be important to analyze here?

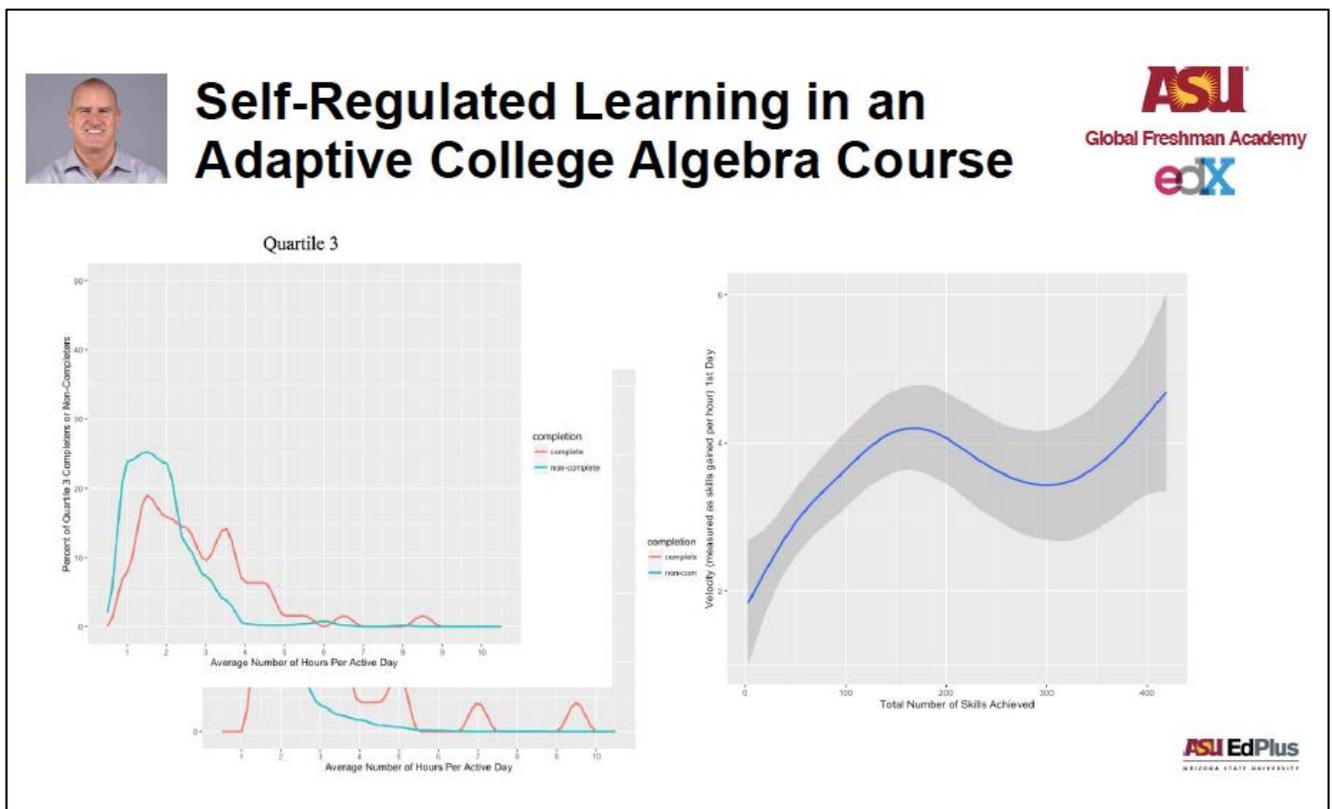
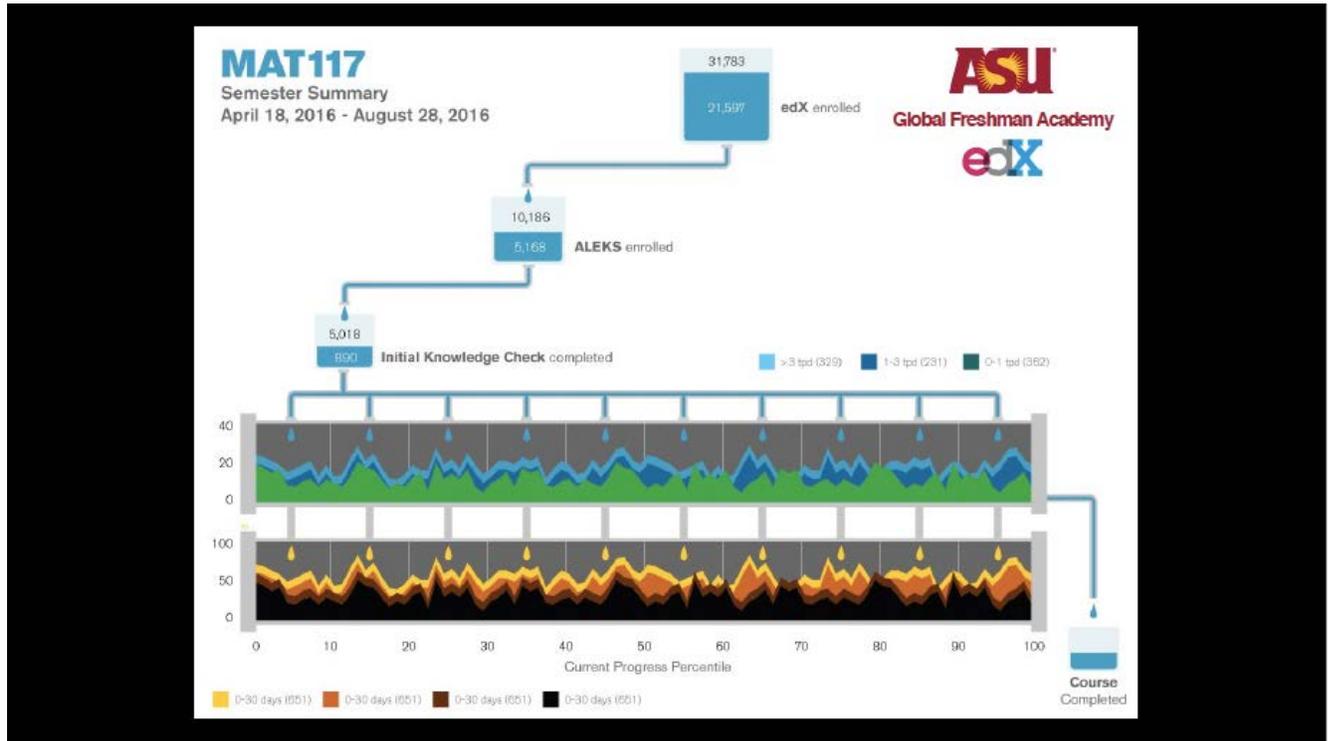
STEM

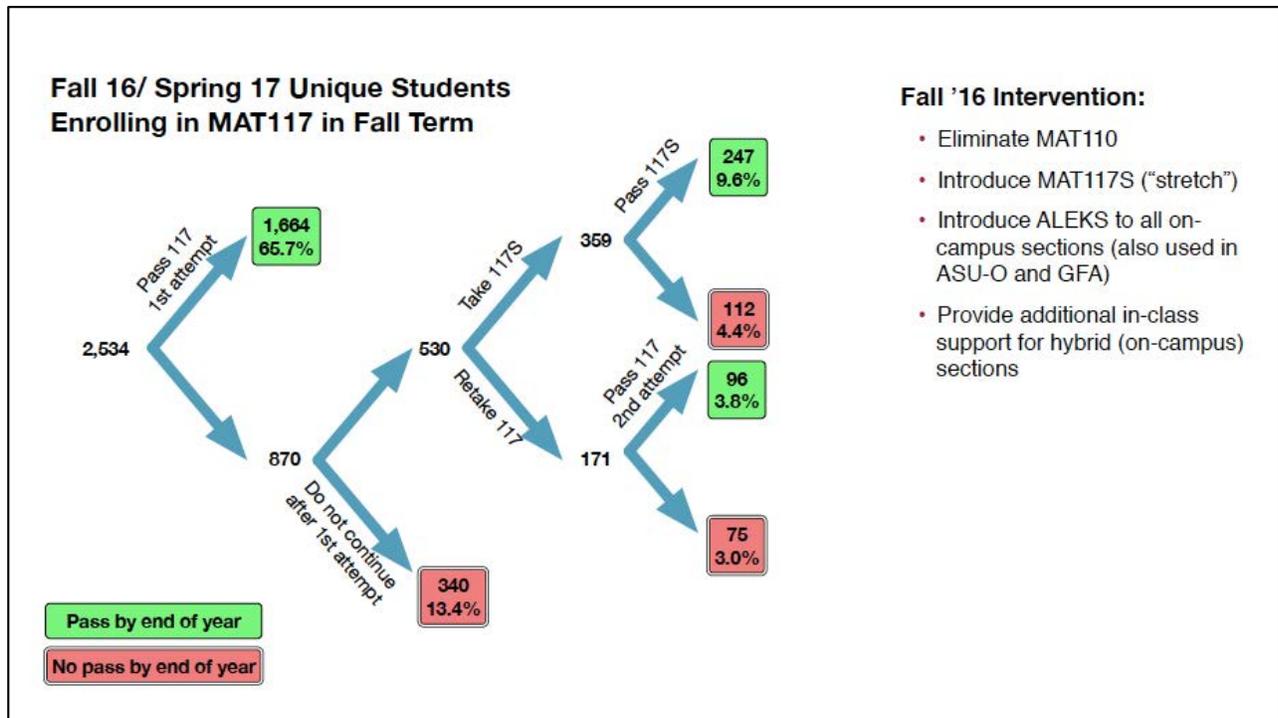
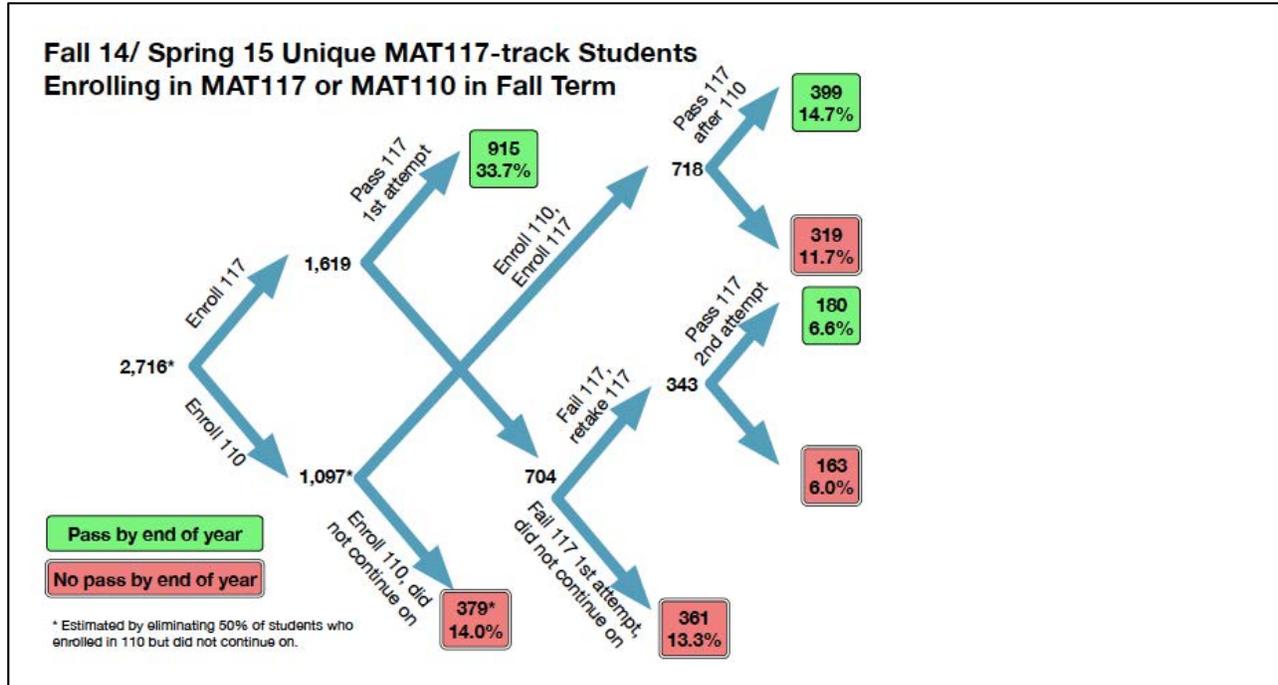
- STEM courses are particularly important for 21st century workforce...
- Do online programs selectively disadvantage students in these programs?
- What other course groupings might be important to focus on?

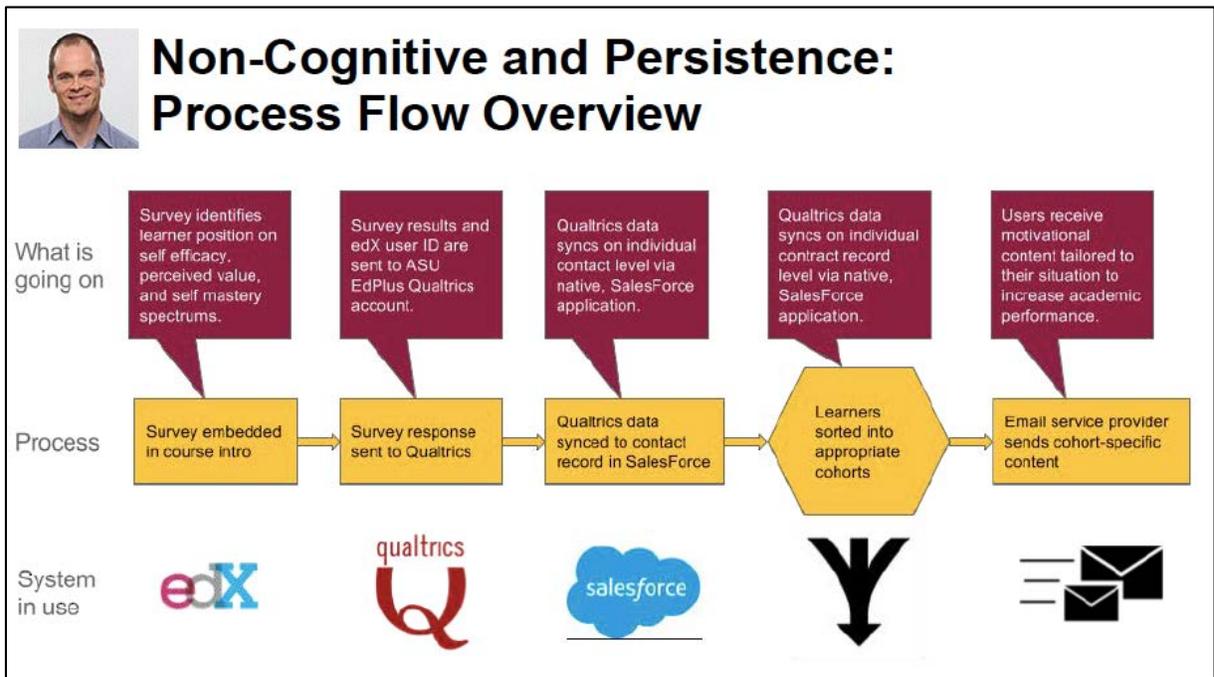
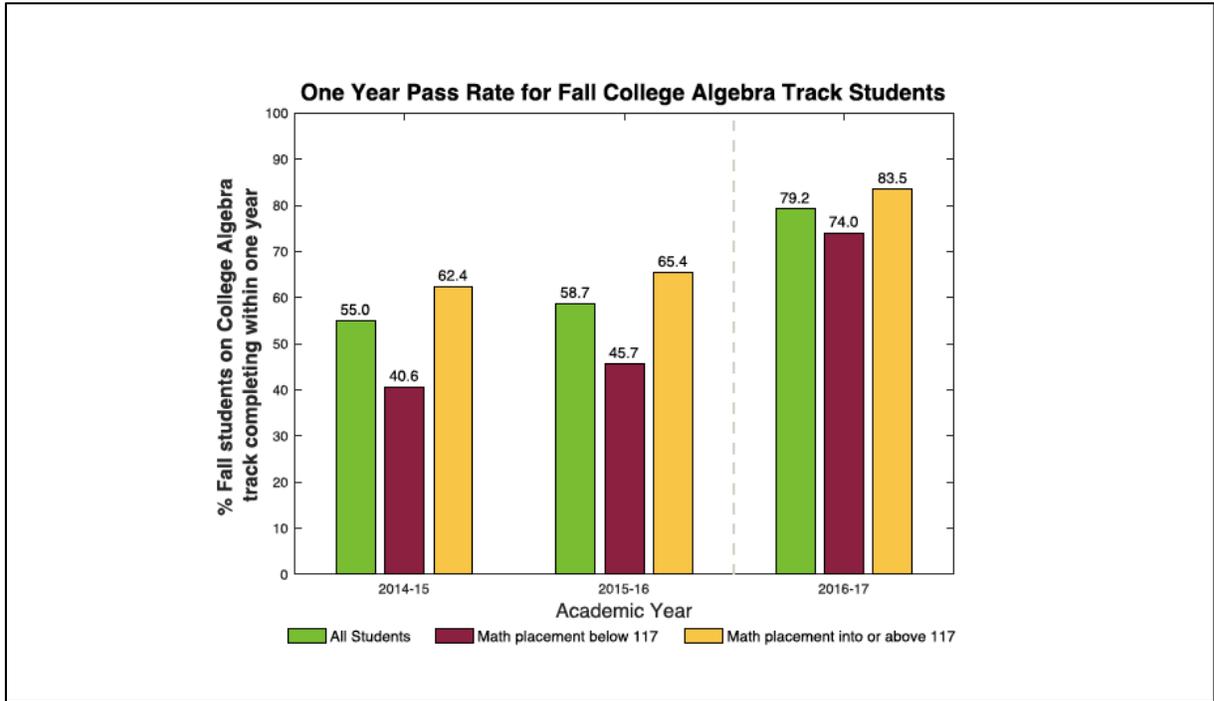
LEARNING ANALYTICS

- Do deeper analysis of student behavior and course features give us deeper understanding of student success?
- Are there learning analytics data that give us ability to advance the quality of teaching? (Continuous Improvement Environment)?









Using analytics to inform course redesign



High Risk Student

- + Goal Level
- Self Efficacy
- + Task Value
- Self Regulation



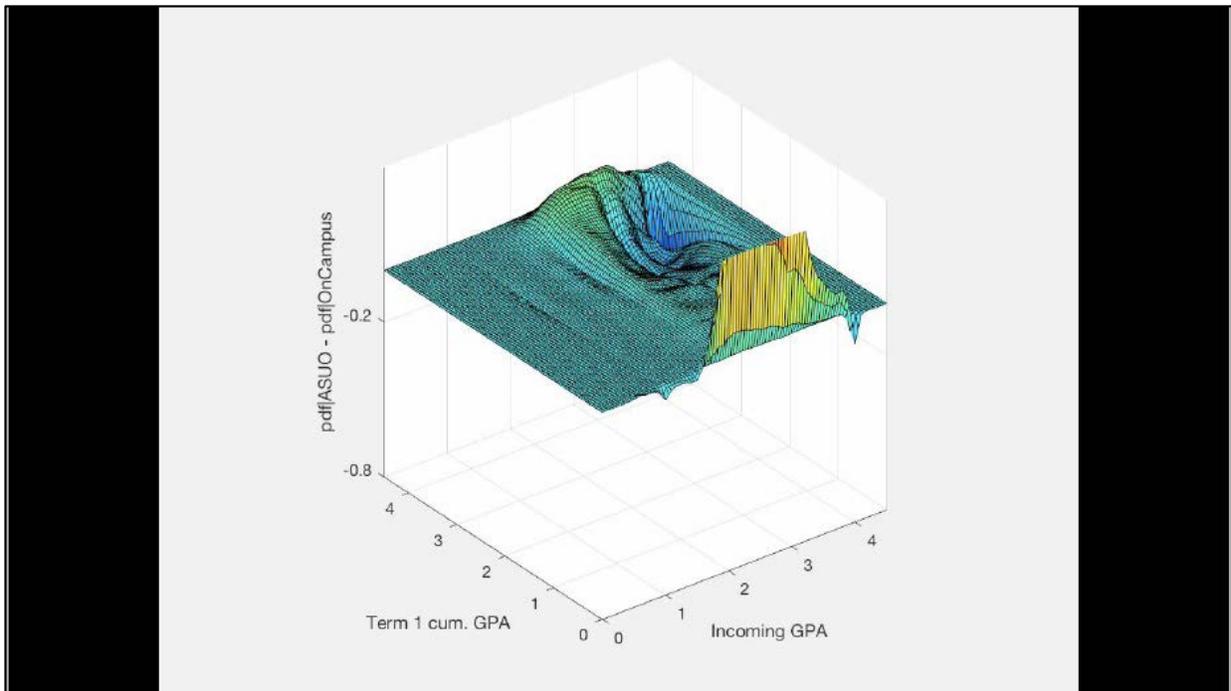
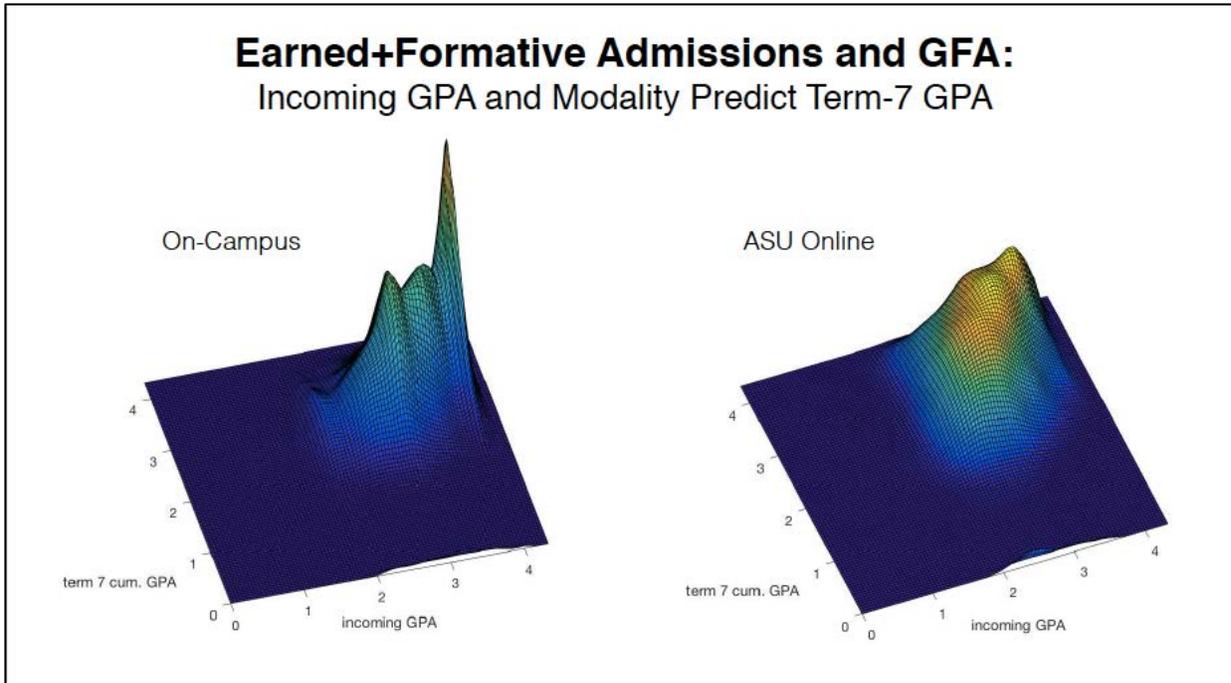
High Risk Student

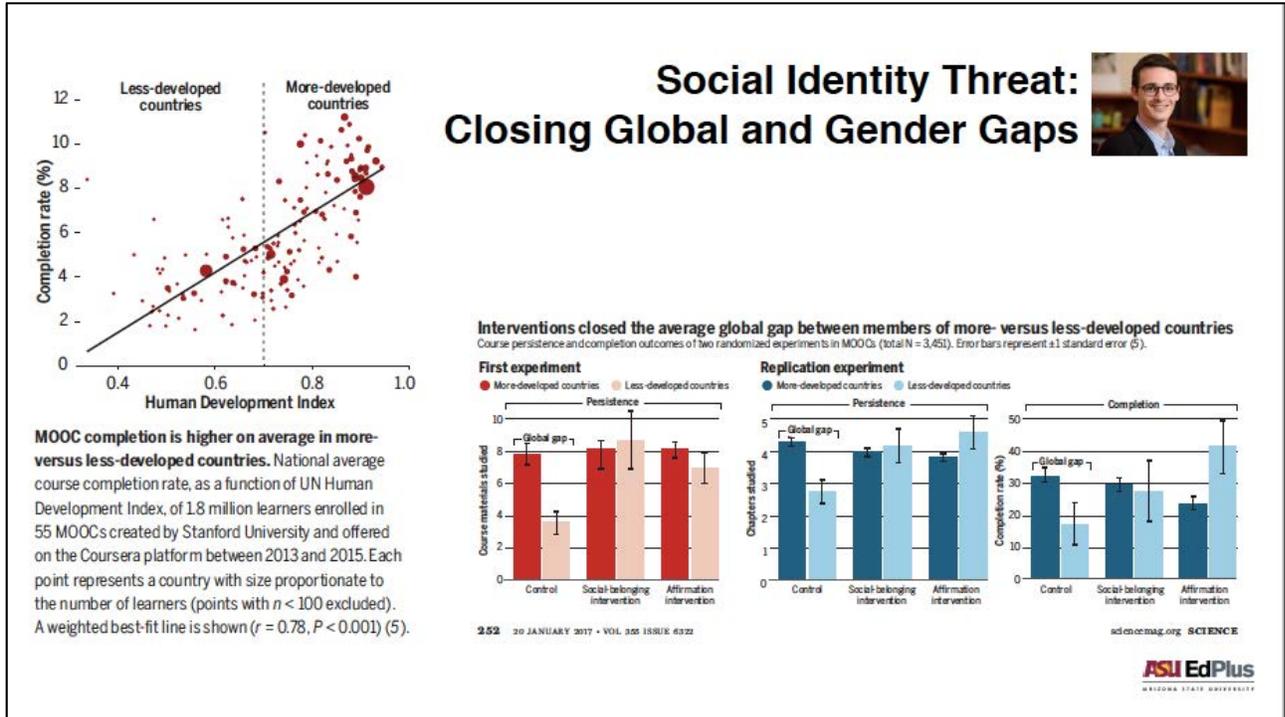
- + Goal Level
- Self Efficacy
- + Task Value
- Self Regulation



Design Opportunities

- Reframe videos to state importance of the readings toward course success.
- Reframe reading to help students focus on important points that will be later assessed.
- Add self-check questions after the videos and readings to help students focus and gain feedback on current understanding to main points.
- Add a pretest with remedial suggestions and support by pointing back to specific content





Next Steps

- **“Non-cognitive”** influences on student success (e.g., self-regulation, self efficacy, task value)
- **Student Success Center**
- **Learning outcomes**
 - Downstream “evidence trails” & surrogate outcomes
 - Learning analytics indicators: Learning objective mapping
- **Faculty attributes & faculty behavior**
- **Global Freshman Academy:** efficacy and learning analytics
- Data-driven **interventions** & continuous improvement cycle

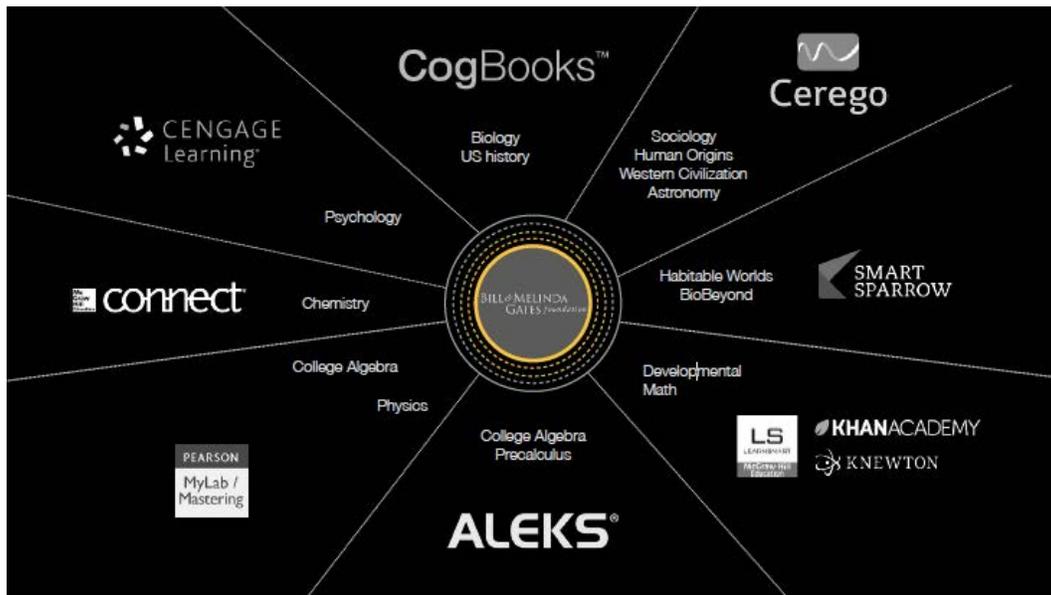
GLOBAL FRESHMAN ACADEMY

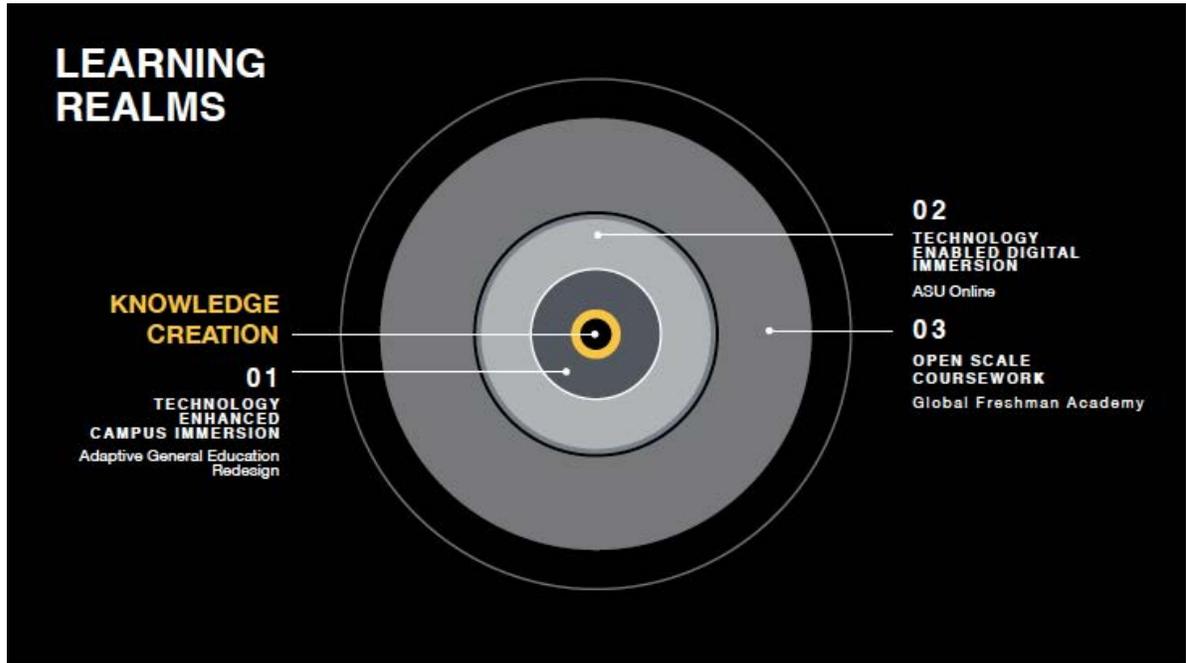
Reimagine your first year of university with edX and ASU.

Adrian Sannier
Chief Academic Technology Officer
EdPlus @ ASU
www.edx.org/globalfreshmanacademy

edX | ASU ARIZONA STATE UNIVERSITY

www.edx.org/globalfreshmanacademy





ASU
Global Freshman^{Math} Academy

**Admission, Orientation
Discussion and Examination**

Personalized Adaptive Learning

Content, Coaching, and Credit



ASU
Global Freshman^{Math} Academy

Courses are always open

Learners at Every Level

Students Set and Track Their Own Goals



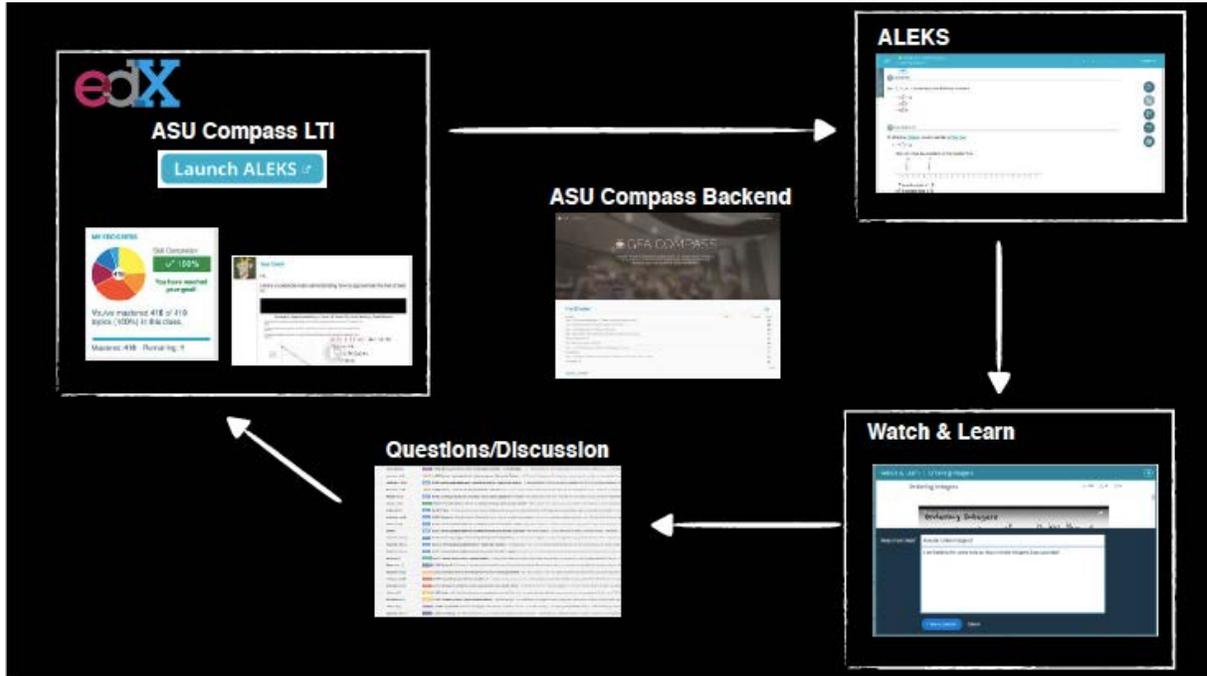
MY GOAL

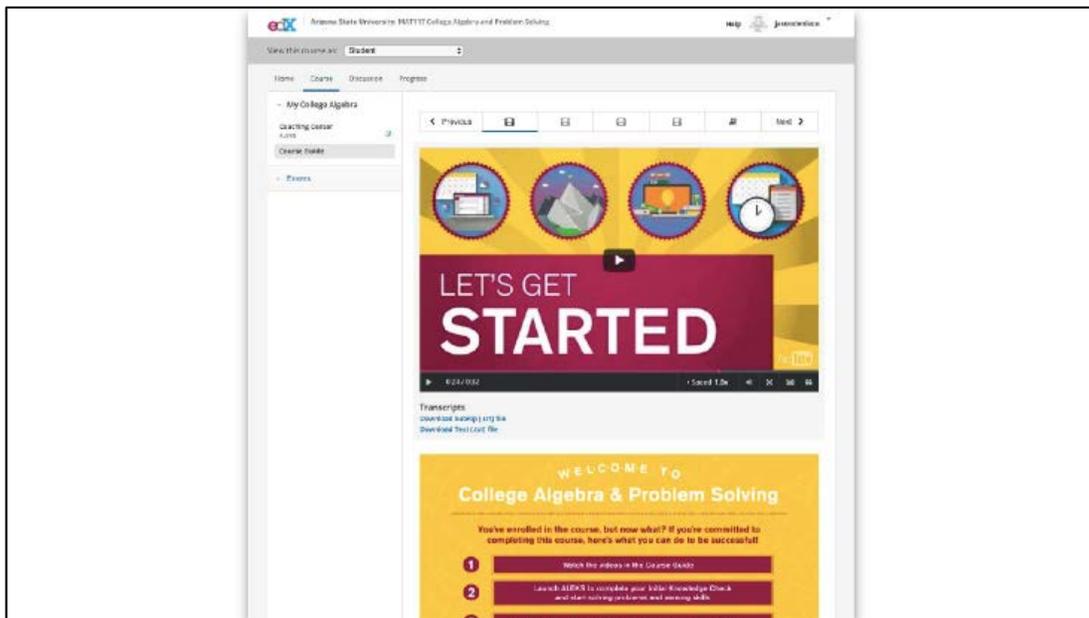
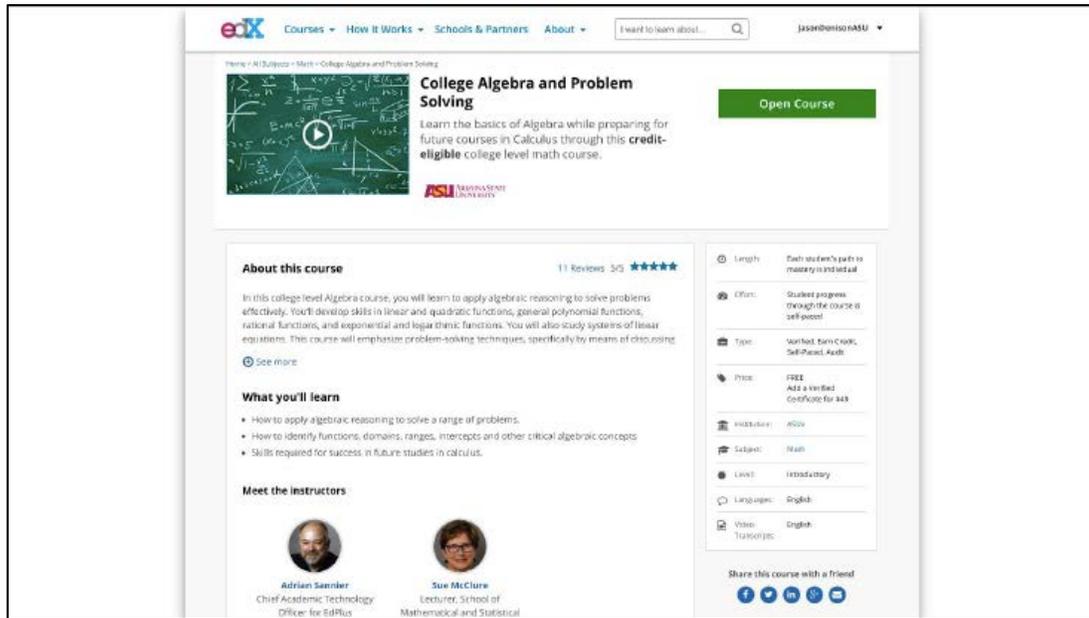
I will be ready to take the exam on
Apr 14, 2016

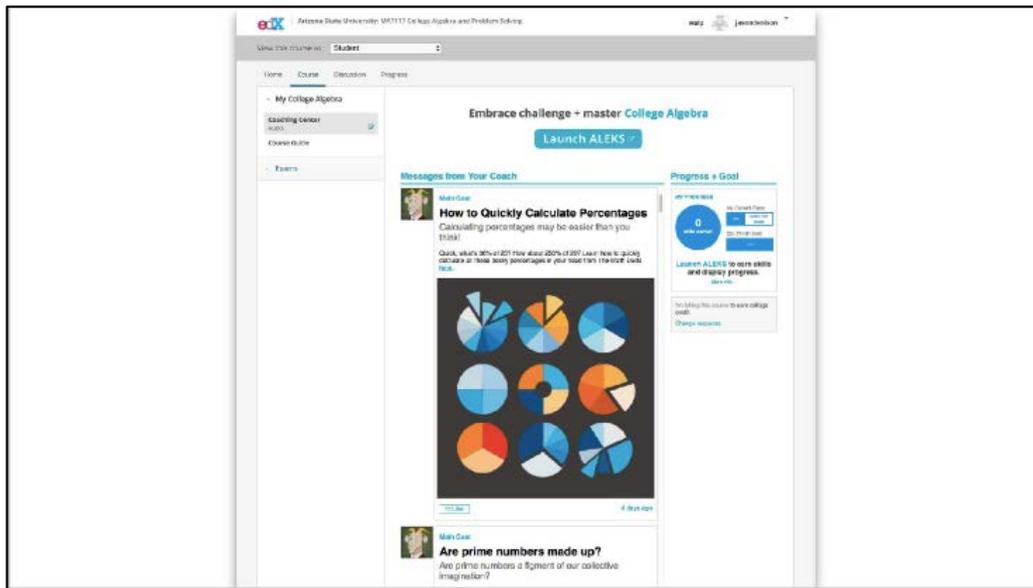
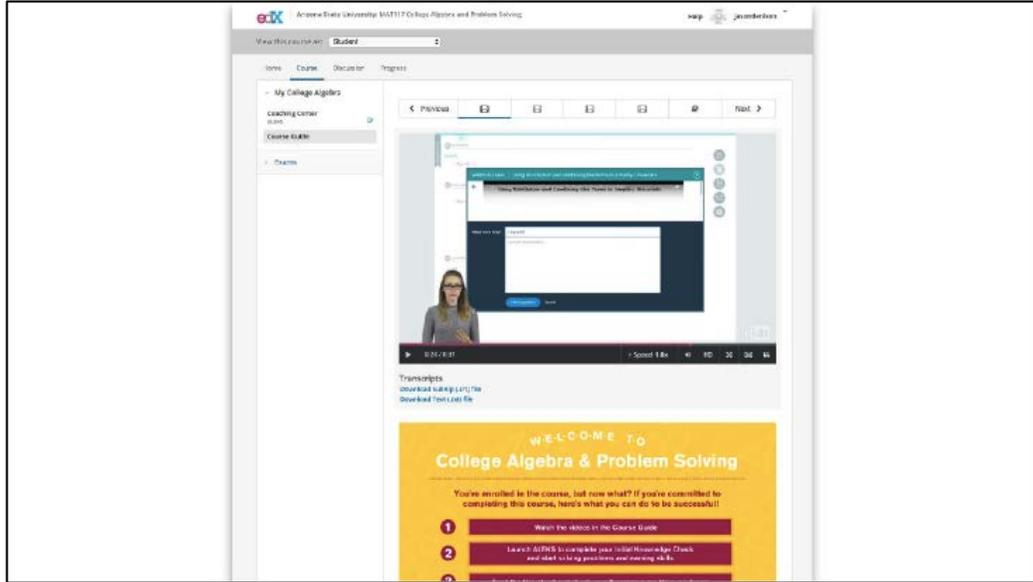
6.4
Weeks remaining

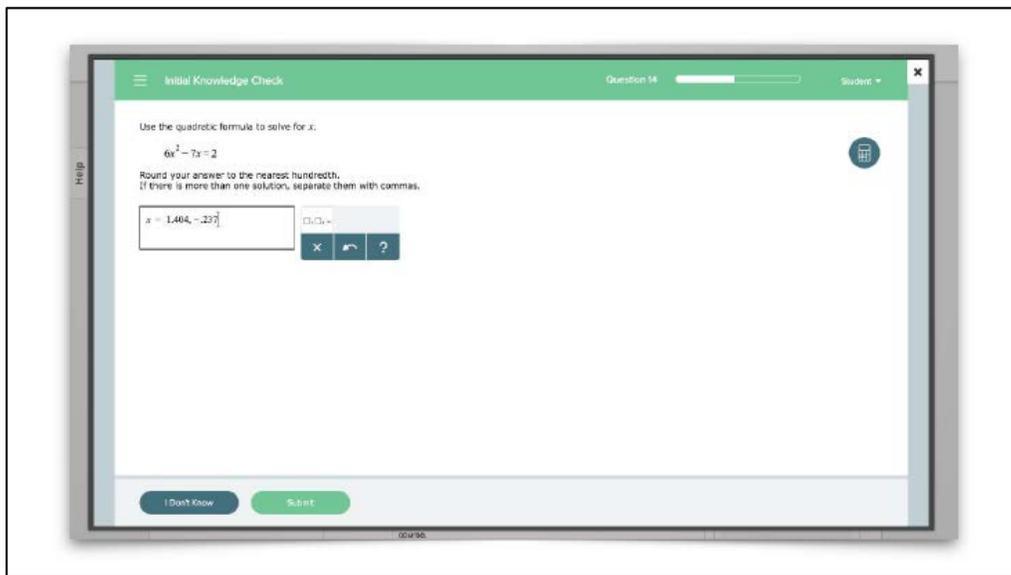
34
Skills to master each week to stay on track.

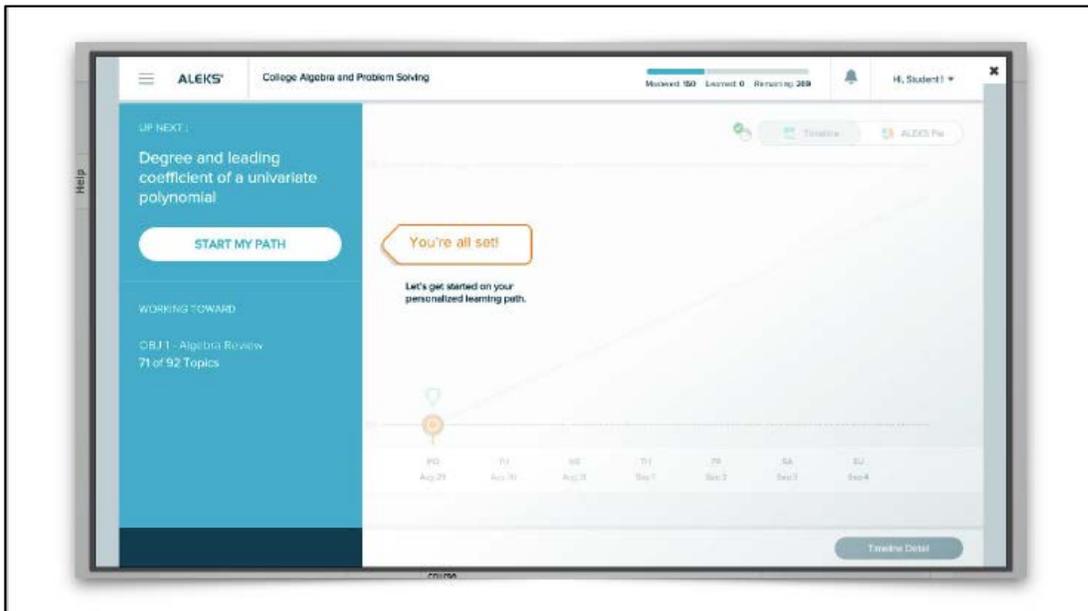
[Set New Exam Goal](#)

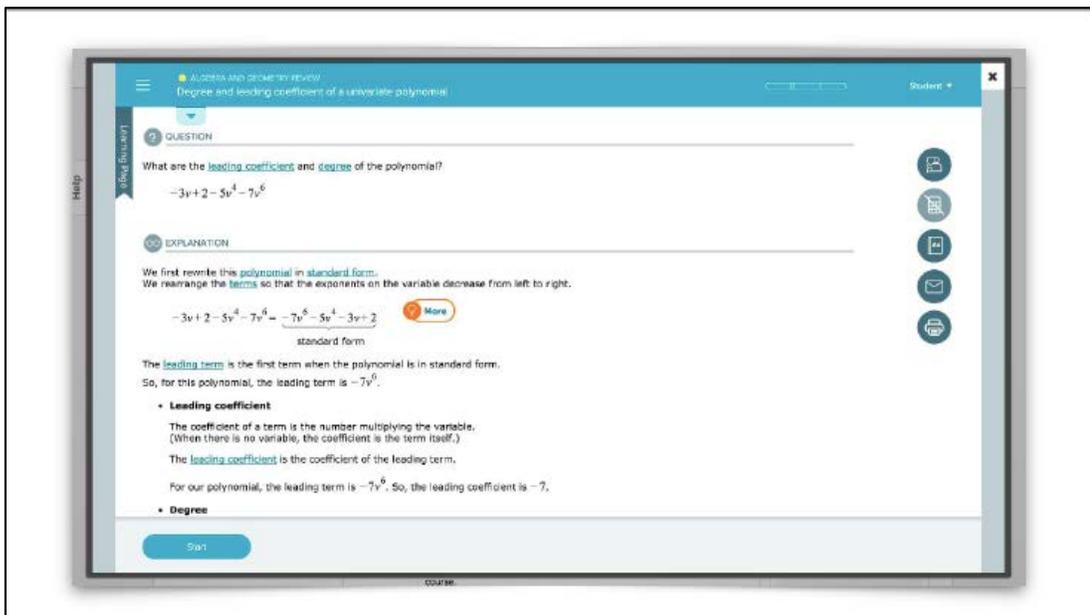


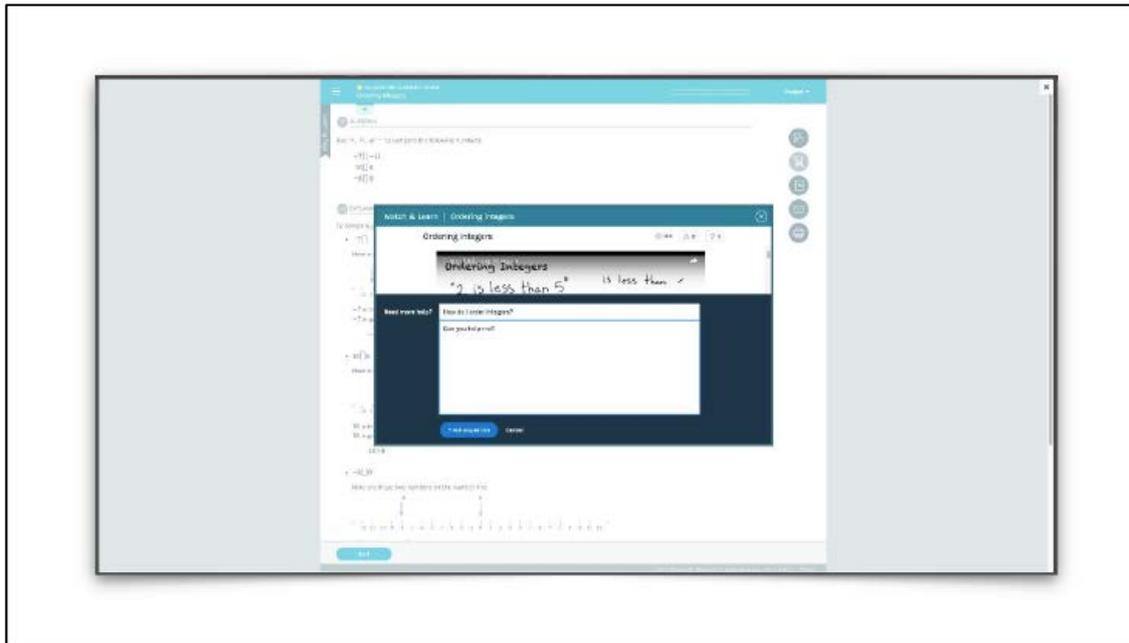
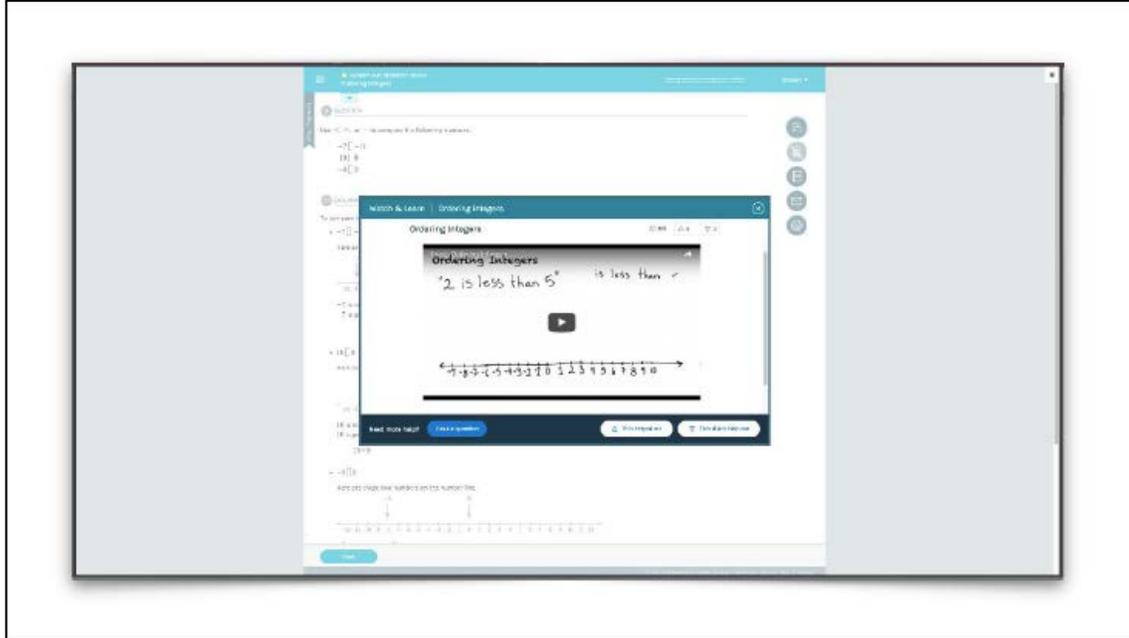


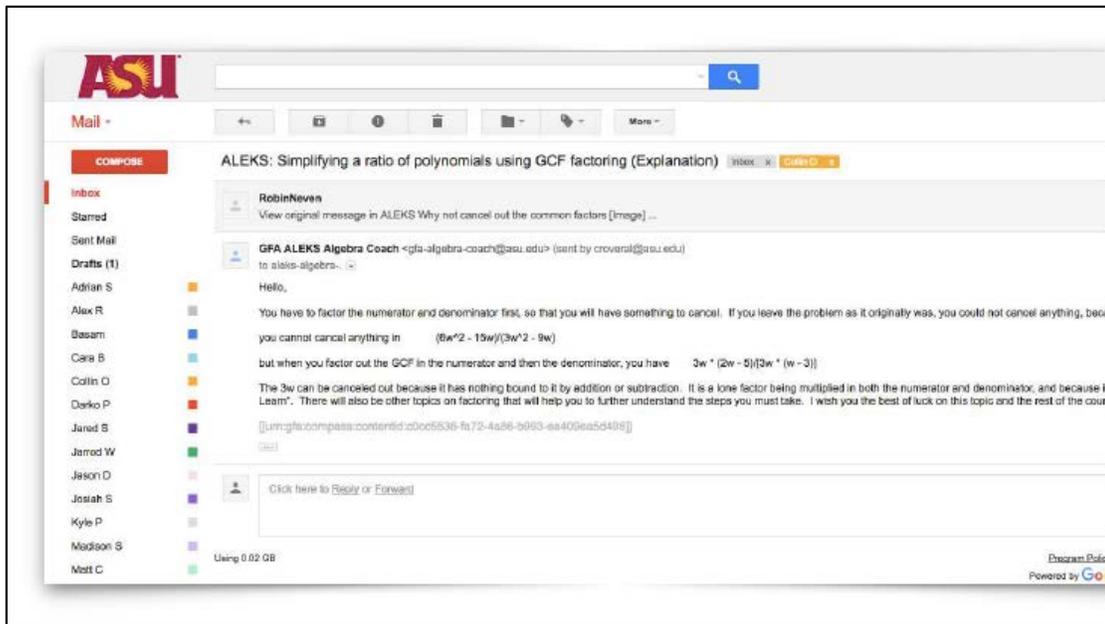
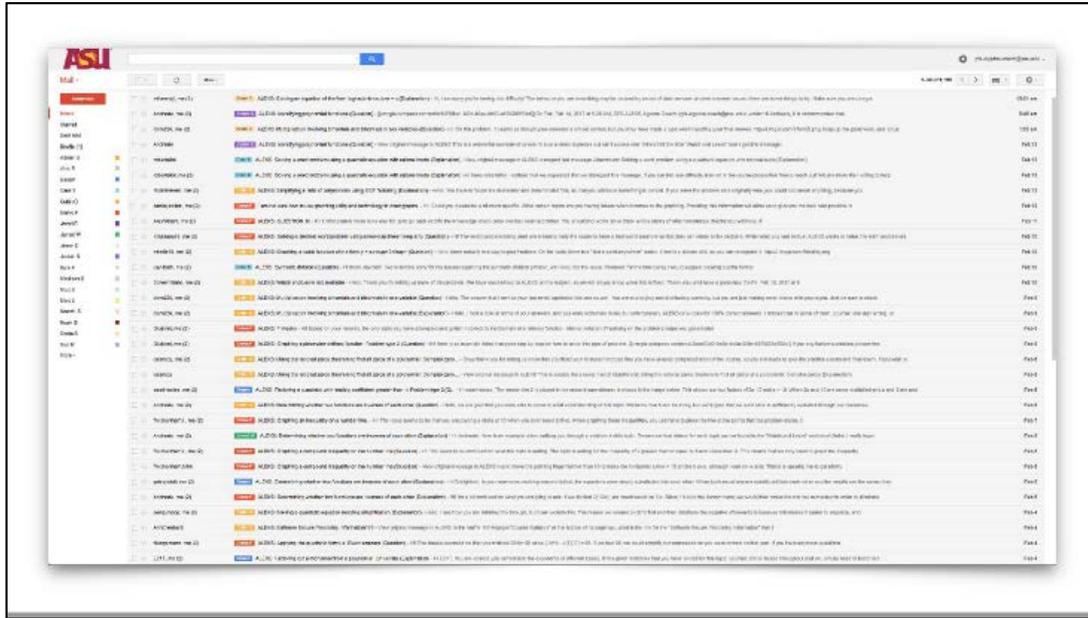












Embrace challenge + master College Algebra

[Launch ALEKS](#)

Messages from Your Coach

Your Coach

Hi,

You have to factor the numerator and denominator first, so that you will have something to cancel. If you leave the problem as it originally was, you do not cancel anything, because you cannot cancel things being added or subtracted. However, when things are multiplied, you can cancel. For example, in this case,

$$\frac{(3x^2 - 15x)(3x^2 - 3x)}{(2x^2 - 9)(2x^2 - 2)}$$

you cannot cancel anything in the numerator and then the denominator, you have $(2x^2 - 9)(2x^2 - 2)$

The bc can be canceled out because it has nothing bound to it by addition or subtraction. It is a nice factor being multiplied in both the numerator and denominator, and because it is common, you can cancel it out, because $2x^2 - 9 = 1$. I hope this makes sense. I will send you the video we have for this topic, which can also be viewed in "Watch and Learn". There will also be other topics on factoring that will help you to further understand the steps you must take. I wish you the best of luck on this topic and the rest of the course. Thank you, and have a great day!

Something is wrong with this video. Refreshing...

$$\frac{3x^2 - 15x}{2x^2 + 12x}$$

Progress + Goal

MY PROGRESS

Real PACE 2017

100% **100%**

Real Pace

100% **100%**

My Current Pace

100% **100%**

Status: On Track

You've mastered 250 of 418 topics (20%) in this class.

Mastered: 220 Forfeiting: 188

The history of this course is worth college credit.

[Change response](#)

Embrace challenge + master College Algebra

[Launch ALEKS](#)

My College Algebra

Exams

About Exams

Practice/Fractional Exam

Practice Exam 1

Final Exam Eligibility Check

Practice Exam 2

Practice Final Exam

Final Exam

Messages from Your Coach

Math Coach

How to Quickly Calculate Percentages

Calculating percentages may be easier than you think!

Goal: when 20% of 200 is about 20% of 200? Let's look at quickly calculating other percentages in your head! Try the 50% rule.

[Close](#) [Image](#)

Math Coach

Are prime numbers made up?

Are prime numbers a gift from our collective

Progress + Goal

MY PROGRESS

Real PACE 2017

100% **100%**

Real Pace

100% **100%**

My Current Pace

100% **100%**

Status: On Track

You've mastered 402 of 418 topics (20%) in this class.

Mastered: 418 Forfeiting: 8

The history of this course is worth college credit.

[Change response](#)

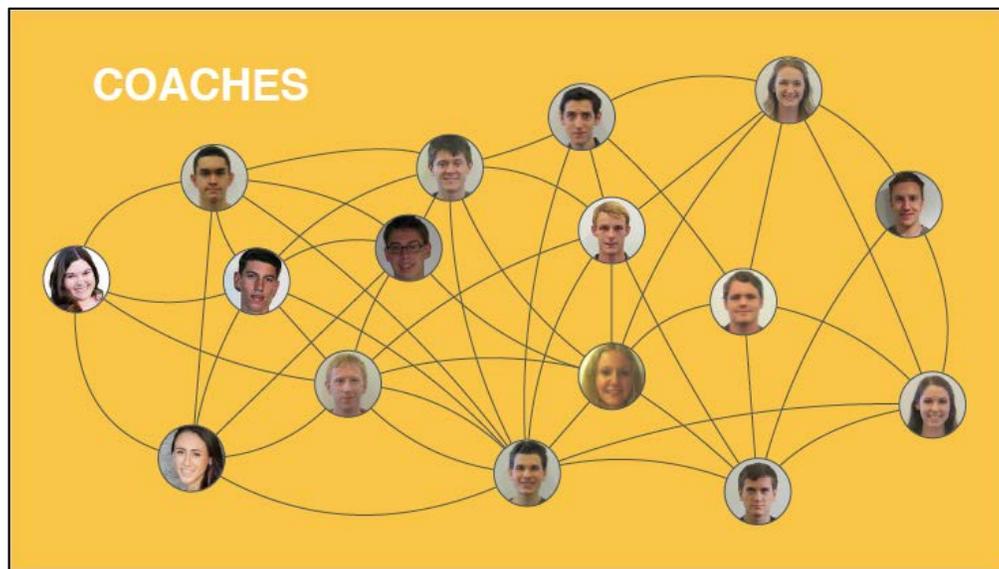
**“ IMPROVEMENT IN POST SECONDARY
EDUCATION WILL REQUIRE CONVERTING
TEACHING FROM A SOLO SPORT TO A
COMMUNITY BASED RESEARCH ACTIVITY. ”**



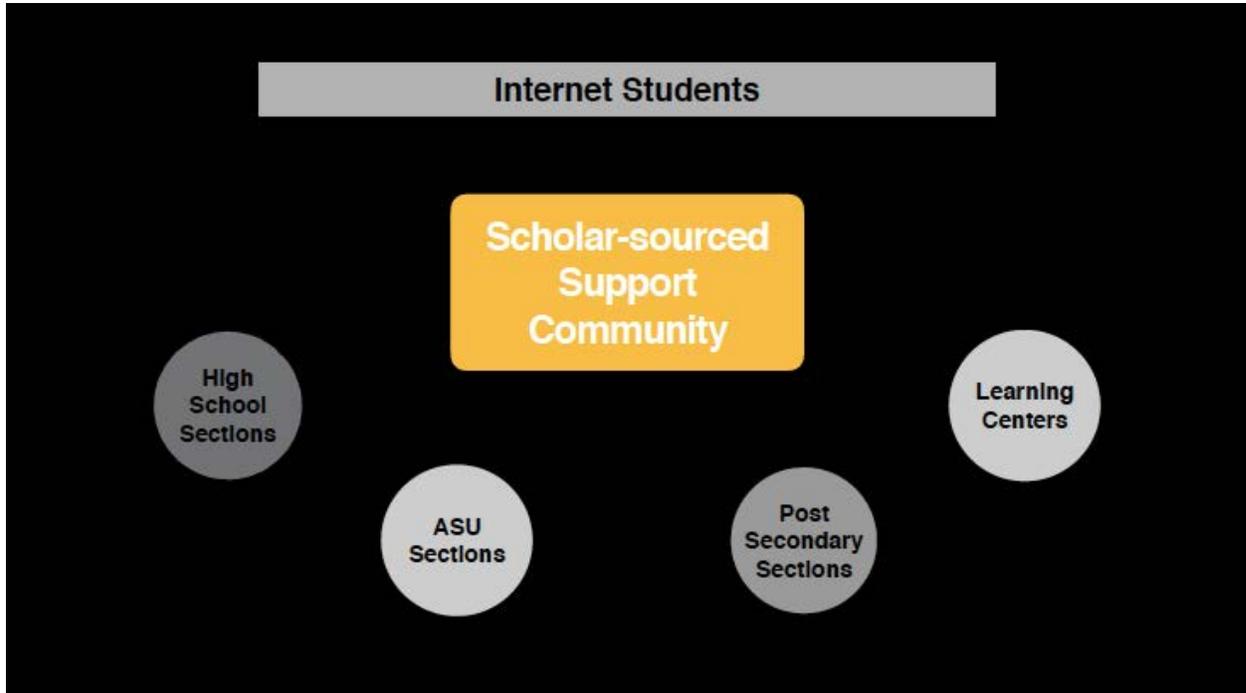
Herbert Simon
Nobel Laureate



Sue McClure
School of Mathematical
and Statistical Science







Realm 3

- 50,000** students enrolled
- 20,000** students in ALEKs math
- 10,000** active learners
- 500** course completers

Realm 3

1,500,000 math skills tested
500,000 new math skills learned
150,000 hours worked by students in the course
100,000 days worked in the course
1,500 new math skills learned each day

Coached students are
27 x more likely to complete
 than uncoached students

GLOBAL FRESHMAN ACADEMY FIRST YEAR CONCENTRATIONS

General Education	Engineering Track	Business Track	Healthcare Track (Projected)	Humanities Track (Projected)
ENG 101 First Year Composition	CHEM 114 Chemistry for Engineering	BSB 100 Business Applications and Entrepreneurial Leadership	CHM 101 Principles of Chemistry	ANG 102 Ancient Greek Civilization in Context
ENG 102 First Year Composition	CSC 100 Principles of Programming	BSN 210 Microbiology Principles	CHS 100 Introduction to Health Sciences	PHL 100 Philosophy of the World
PHI 100 Principles of Philosophy	PHS 100 Introduction to Engineering	BSN 210 Microbiology Principles	EAH 101 Introduction to Health and Wellness	ADAM 100 Human Origins
MAT 107 College Algebra	MAT 200 Calculus for Engineers I	MAT 210 Calculus	STP 210 Elements of Statistics	ENG 102 Survey of English Literature
PHI 100 Principles of Social Reasoning				
PHI 101 Introduction to Sociology				



ARIZONA STATE UNIVERSITY
Instructional Design & New Media

Vicki Harmon
Senior Instructional Designer &
Manager, Professional
Development

Athena Kennedy
Senior Instructional Designer

MEET THE TEAM



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ARIZONA STATE UNIVERSITY

EDPLUS.ASU.EDU ASUONLINE.ASU.EDU TEACHONLINE.ASU.EDU SUCCEEDONLINE.ASU.EDU



Workload
HIGHCAPACITY

900 Course Projects
1/3 New Builds - 2/3 Enhancements

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Doing
THEWORK

BOUTIQUE ← → FACTORY

TARGET

Master Course Model

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Embrace
THEPROCESS

DISCOVER
PROTOTYPE
LAUNCH
EVALUATE
ENHANCE

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EDPLUS.ASU.EDU ASUONLINE.ASU.EDU TEACHONLINE.ASU.EDU SUCCEEDONLINE.ASU.EDU

The goal
BUILDFOR SPEED

PROTOTYPE → *Course maps*
Templates
Checklists
Rapid dev tools

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The goal
BUILD FOR QUALITY

Quality Matters → **QUALITY MATTERS PROGRAM QM**

Workshops and training

Faculty Center

Readiness checks

360 Course Reviews

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The goal
BUILD FOR QUALITY

- Specific to the need online degree program instructors
- Establish a community of learners who are online instructors
- Cross-disciplinary
- All levels of online teaching experience
- Facilitated by the instructional design team



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Embrace
THE PHILOSOPHY

ACTIVE
VS
PASSIVE

Discussion
Problem solving
Group work
Peer review
Design projects
Lab exercises
Collab writing



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Assess quality
360 REVIEW



WORKSHOP COMPLETION
PASS RATES
WITHDRAWAL RATES
FINAL GRADES
COURSE EVALS
TERM START QA CHECK
BLACKBOARD ANALYTICS
INSTRUCTIONAL DESIGNERS
STUDENT SERVICES
SUCCESS COACHES
FACULTY SELF STUDY



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ASU Home My ASU Colleges & Schools Map & Locations Directory More SIGN OUT

ASU online
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Digital Learning Platform

Over 100,000 online courses and resources are available through ASU's Digital Learning Platform. This platform provides a comprehensive, flexible, and accessible way to use the resources of ASU's online courses and learning experiences. It works across ASU's instructional programs and the learning management system with our content management system to deliver a unified experience.

Support

ACADEMIC INTEGRITY

Cheaters Never Prosper

Solutions are Pedagogical
Technological
Community-Based

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Coach Cases

- ***New Student Welcome:** Created when a student has transitioned from enrollment advisor to success coach and is registered for their first credit bearing course.
- ***Dropped/Withdrawn One Course:** Created when a student drops or withdraws from a course.
- ***Dropped All Courses in Session:** Created when a student has dropped all courses in session.
- ***DEW Grade:** Created when a D or E grade posts to a student's transcript.
- ***Graduation Applied:** Created when a student applies for graduation.
- ***Borderline Probation:** Created when a student is close to academic probation determined by cumulative GPA (2.2 for undergrad and 3.2 for Grad).
- ***Difficult Course:** Created when a student is currently registered for a course that historically has high DEW rates.
- ***Student/Coach Appointments (set by coach):** Created by the coach when a student requests a coaching session.
- ***New Student Assigned:** Created when a student has a coach reassignment.
- ***Blackboard Activity:** Created when a student has no activity in blackboard in the past 10 days when other students have had activity in the course.
- ***Not Registered– 1 Month:** Created when a student has not registered for the next session (one month prior to session start).
- ***Not Registered– 2 Weeks:** Created when a student has not registered for the next session (2 weeks prior to session start).
- ***Mid-point Check-in:** Created for all students mid-point for the first four sessions.
- ***Course Prep Check-in:** Created for all students prior to course starts.
- Academic Probation:** Created when a student has been placed on Academic Probation.

Program Change: Created when a student completes a program change.

***Welcome Back:** Created anytime a student takes a full semester off and returns to take classes.

Starbucks College Achievement Plan Ineligible: Created when a student is no longer eligible for CAP.

***First Week Check-in:** A student in the first week of first four sessions of courses.

ASR: Created anytime a student receives an ASR.

Holds: Created when a student receives any type of hold (registration hold, financial hold)

Provisionally Admitted: Created when a student is provisionally admitted into their program. **May relate to Grad only

Graduated: Creating once a student has graduated from their program.

Re-apply warning: Created before the student has to re-enroll/re-apply with Pearson.

*** Currently automated and in use**

Greetings from ASU Online

We are excited and honored to be working with you. To assist with online course development and enhancement, we provide:

- Access to the **ASU Online Faculty Center**, which includes a **30-minute Orientation to ASU Online** * <http://links.asu.edu/ASUofacultycenter>
- An **Instructional Designer** who will provide support for the design, development, and revision of online courses <http://links.asu.edu/ID>
- The **New Media Studio**, for studio and location video production welcome videos, micro-lectures, and interviews <http://onlinestudio.asu.edu>
- The **Master Class for Teaching Online Workshop** * on effective pedagogy and course design <http://asuonline.eventbrite.com>
- A **Course Development Checklist** that will help you and your Instructional Designer design your online courses so they meet quality standards for course design and are ready for launch at least two weeks prior to course start dates.
- **Milestones** for new course development that clarify the steps and timeframe for course development.
- List of **Best Practices for Teaching Online**
- **Course Quality Assurance** practices including course readiness checks and end of session reviews <http://links.asu.edu/ASUOQuality>

* Completion is an expectation

Design Standards	Course Development Checklist	- Adapted from Quality Matters
ASU Online	<input type="checkbox"/> 1. Course uses ASU Online course template and design theme	
	<input type="checkbox"/> 2. Syllabus uses ASU Online syllabus template or includes required syllabus criteria	
	<input type="checkbox"/> 3. Course designed for 7.5 weeks and includes an Instructor Guide http://links.asu.edu/Instructorguide	
	<input type="checkbox"/> 4. Course includes videos (mini-lectures, demonstrations, interviews) to engage students	
Course Overview & Introduction	<input type="checkbox"/> 5. Students are introduced to the purpose, navigation, and structure of course including instructions on how to get started and where to find various course components (QM 1.2)	
	<input type="checkbox"/> 6. Instructor Welcome created and placed in course (Instructor welcome video highly encouraged) (QM 1.8)	
Learning Objectives	<input type="checkbox"/> 7. Measurable learning objectives exist at the course and unit level (QM 2.1 and 2.2)	
Assessment & Measurement	<input type="checkbox"/> 8. Assessments measure stated learning objectives (QM 3.1)	
	<input type="checkbox"/> 9. Course grading policy is stated clearly (QM 3.2)	
	<input type="checkbox"/> 10. Specific & descriptive criteria (rubrics) are provided for evaluation of student work and tied to course grading policy (QM 3.3)	
Instructional Materials	<input type="checkbox"/> 11. Instructional materials contribute to achievement of stated course and unit objectives (QM 4.1)	
	<input type="checkbox"/> 12. Instructional materials and a description of how materials are to be used for learning activities are clearly explained (QM 4.2)	
	<input type="checkbox"/> 13. All instructional materials are appropriately cited and adhere to copyright guidelines (QM 4.3)	
Learner Activities & Learner Interaction	<input type="checkbox"/> 14. Learning activities promote achievement of stated learning objectives (QM 5.1)	
	<input type="checkbox"/> 15. Learning activities provide opportunities for interaction that supports active learning (QM 5.2)	
	<input type="checkbox"/> 16. Instructor's plan for classroom response time and feedback on assignments is clearly stated (QM 5.3)	
Course Technology	<input type="checkbox"/> 17. Tools used in the course support learning objectives (QM 6.1)	
	<input type="checkbox"/> 18. Course tools promote learner engagement and active learning (QM 6.2)	
Learner Support	<input type="checkbox"/> 19. Technical support information, and how to access it, is provided (QM 7.1)	
	<input type="checkbox"/> 20. Course instructions articulate or link to ASU's accessibility policies and services (QM 7.2)	
Accessibility & Usability	<input type="checkbox"/> 21. Course navigation facilitates ease of use (QM 8.1)	
	<input type="checkbox"/> 22. Course materials are accessible on Mac and PC. Accessibility information is provided for course technologies (QM 8.2)	

New Course Development Milestones

Course development is a partnership between faculty and the Instructional Designer (ID). The five milestones help ensure that course development is on track and meets checklist standards prior to course launch.

Quality Assurance Manager reviews faculty expectations document and milestones with faculty prior to course development

1. **Complete Course Planning Map** including topics, objectives, course description, and grading breakdown
2. **Build Weeks 1 and 2*** in Blackboard that meet the Course Development Checklist
3. **Build Weeks 3 and 4*** in Blackboard that meet the Course Development Checklist
4. **Build Weeks 5-7*** in Blackboard that meet the Course Development Checklist
5. **Course Ready for Launch** - Instructor completes the Course Development Self Study <http://links.asu.edu/courseselfstudy>
Course is ready to launch and meets the Course Development Checklist at least two weeks prior to course start date

*or session (15 week, 6 week) equivalent

Best Practices for Online Teaching

We appreciate the tremendous impact you make on student learning. To ensure that you and your students have a successful experience, we have compiled the following best practices:

Syllabus & Welcome

- Make textbook information available to students at least two weeks prior to course start (e.g. email, Bookstore, uploaded syllabus)
- Update syllabus and includes the required ASU Online syllabus criteria
- Update course pages to reflect the current semester prior to the first day of the course (Welcome & Start Here, Course Schedule, Announcements, etc.)
- Provide an introduction to the purpose, navigation, and structure of the course (e.g. Course Tour)
- Post virtual office hours in the course (3-6 hours per week recommended)

Instructor Presence & Communication

- Create a visible presence by posting announcements, introducing self to students, facilitating discussions, etc.
- Respond with timeliness (within 24 hours is encouraged) to student correspondence (Hallway Conversations, emails, etc.)
- Understand the needs of non-traditional students

Grading & Feedback

- Provide a clear purpose for learning activities
- Communicate specific criteria for success (e.g. rubrics, grading checklist, etc.)
- Provide feedback on assignments that is constructive, meaningful, personalized and timely (grading within 48 hours encouraged)

Discussions & Groups

- Actively facilitate discussion forums
- Provide guidance on working effectively in groups
- Ensure individual accountability for group work

Student Retention

- Use Blackboard to track student progress
- Reach out to inactive and struggling students

Technical Skills

- Demonstrate proficiency in basic computer and keyboard skills
- Demonstrate proficiency in facilitating an online course using Blackboard
- Utilize help resources as needed (e.g. help.blackboard.com, Services tab in My ASU, etc.)

Course Quality Assurance at ASU Online

Once the course launches we continue to provide faculty support through course readiness checks, end of session reviews, course enhancement recommendations, and curriculum consultation and support <http://links.asu.edu/ASUOQuality>