



# Minnesota eLearning Summit

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Minnesota eLearning Summit

2015

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Jul 29th, 3:00 PM - 4:00 PM

## Technology Satisfaction & the Overall University Experience

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# Technology Satisfaction & the Overall University Experience

2015 MN eLearning Summit

**Peg Sherven**

**July 29, 2015**



UNIVERSITY OF MINNESOTA  
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# Agenda

- Welcome
- Overview of research (20 min)
  - Importance of studying technology satisfaction
  - Research basis
    - Dataset: Student Experience in the Research University
    - Theoretical Framework: Astin's IEO model
  - Preliminary results
- Discussion / Q & A (15 min)
- Ideas for future research or collaboration
- Adjourn



# Significance

***“Institutions that harness technology in the service of their educational missions—and that cannily adapt their cultures to achieve optimal potential from technology—will stand the greatest chance of thriving in the decades to come.”*** (ECAR, 2014, p. 3).



# Why study student technology satisfaction?

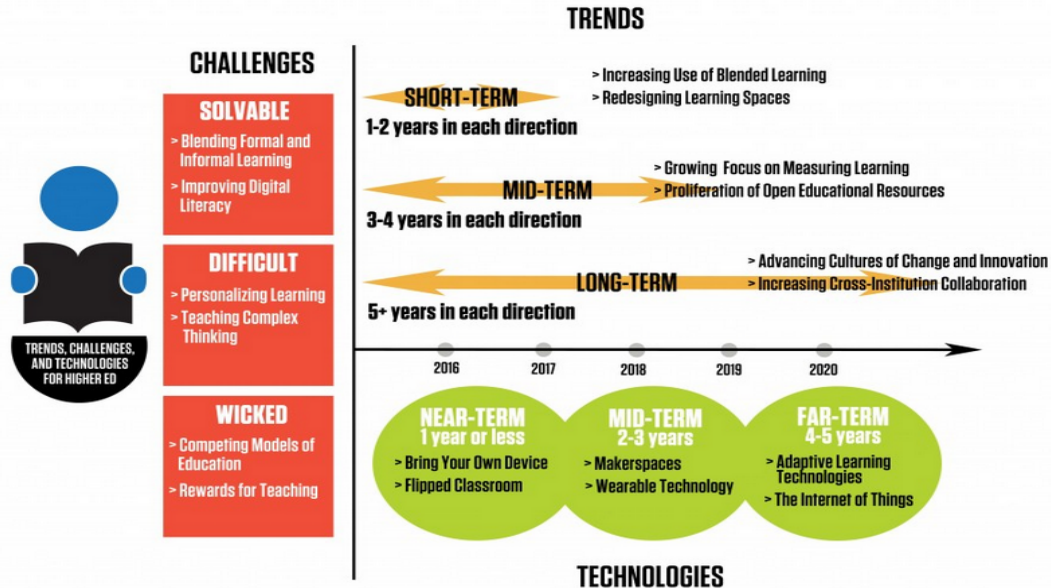
## **Trends:**

- Growth in Online Learning, esp blended or hybrid
  - > 7.1 M American students engaged in online learning
  - 1 in 10 enrolled in online courses
- Growth in BYOD, esp mobile devices
- Growth of Social Media:
  - Facebook: avg 936 million daily active users (US/Canada=17.2%)
  - Twitter: 500M tweets/day



# NMC Horizon Report - 2015 Higher Education Edition

## Topics from the NMC Horizon Report > 2015 Higher Education Edition



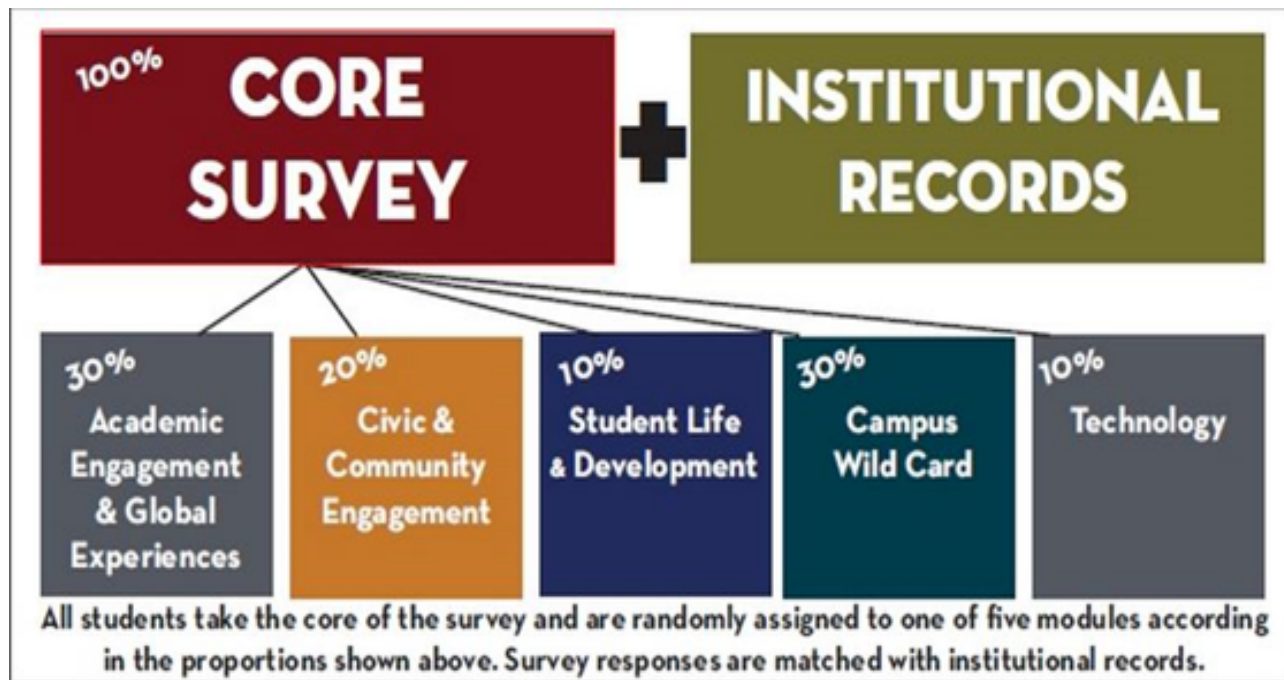
Infographic by the New Media Consortium ([www.nmc.org](http://www.nmc.org))

<http://www.nmc.org/news/nmc-horizon-report-2015-hied-edition/>



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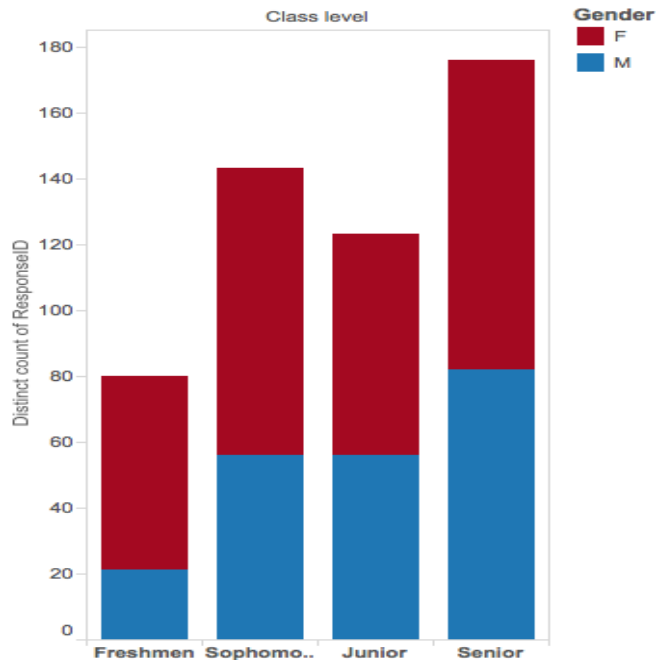
# Dataset: 2013 SERU Technology Module



N=28,773  
[seru.umn.edu](http://seru.umn.edu)

# SERU 2013 Tech Survey Responses by Class Level

Responses by Class Level



Distinct count of ResponseID for each Class level.  
Color shows details about Gender.

Tech module N=522

- 307 - Female
- 215 - Male

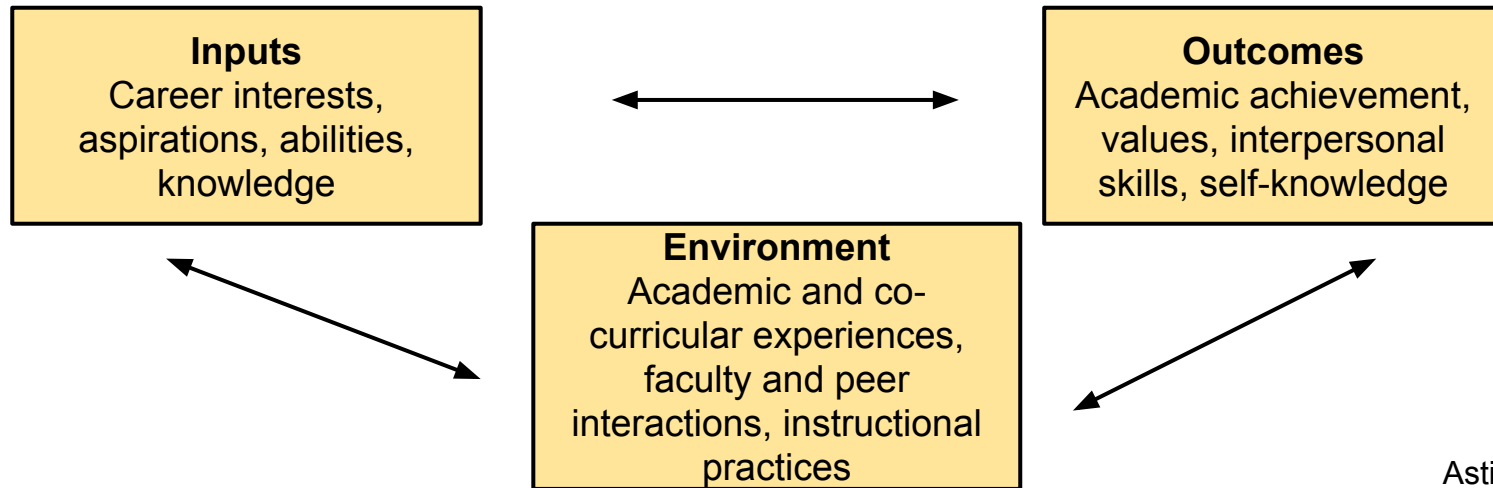
Tableau download  
info: [z.umn.edu/tab](http://z.umn.edu/tab)





# Methodology/Theoretical Framework

- Quantitative regression study using 2013 SERU Technology Module
- Theoretical framework: Astin's I-E-O theory



Astin (1970) 8



# Conceptual Framework

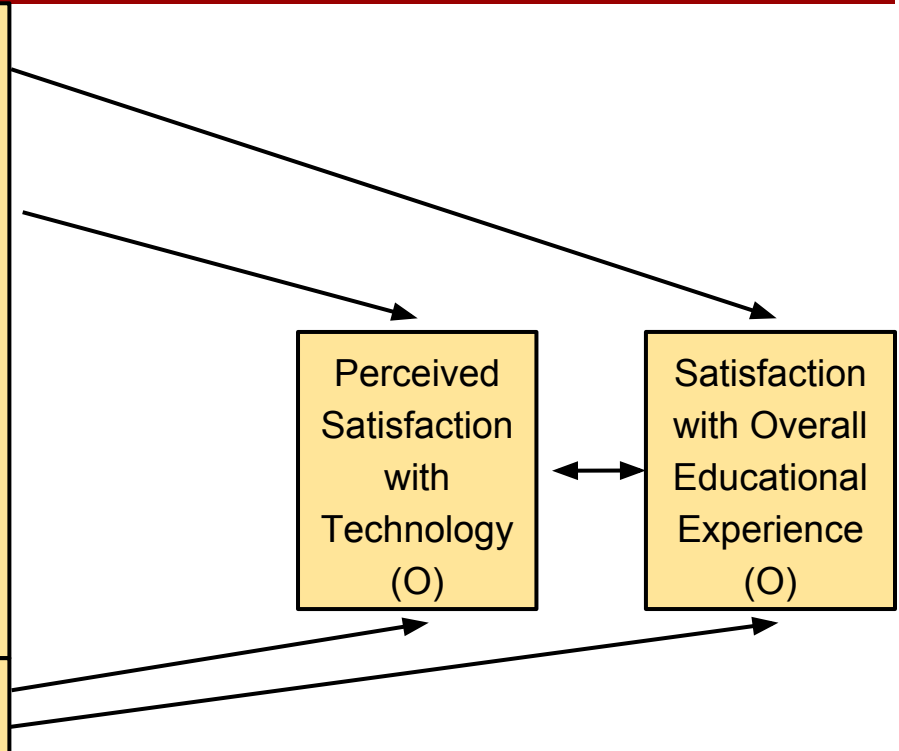
I = Input, E = Environment, O = Outcome

## Predictor Variables (11):

- Self efficacy for critical thinking & communication (I)
- Self efficacy for cultural tolerance & understanding (I)
- Academic Preparedness (I)
- Social networking (E)
- Student preference for course formats (I)
- Instructor tech ability (E)
- Instructor tech usage (E)
- Engagement with faculty (E)
- Tech obstacles (E)
- Student participation and attitude toward the learning management system (E)
- Major (E)

## Control Variables (5):

- Gender, Class level, GPA, ACT, SES (I)



## Research Question #1

To what extent do self efficacy for critical thinking & communication; self efficacy for cultural tolerance & understanding, academic preparedness; social networking; student preference for course formats; instructor technology ability; instructor technology usage; engagement with faculty; technology obstacles; student participation; attitude toward the learning management system; and major correlate with student technology satisfaction and, in turn, with overall student satisfaction?



## Research Question #2

Do major and the learning management system (LMS) role affect student technology satisfaction and moderate the effects of self efficacy for critical thinking & communication; self efficacy for cultural tolerance & understanding; academic preparedness; social networking; student preference for course formats; instructor technology ability; instructor technology usage; engagement with faculty; technology obstacles; and student participation on student technology satisfaction?



# Academic Preparedness:

*How frequently during this academic year have you done each of the following?*

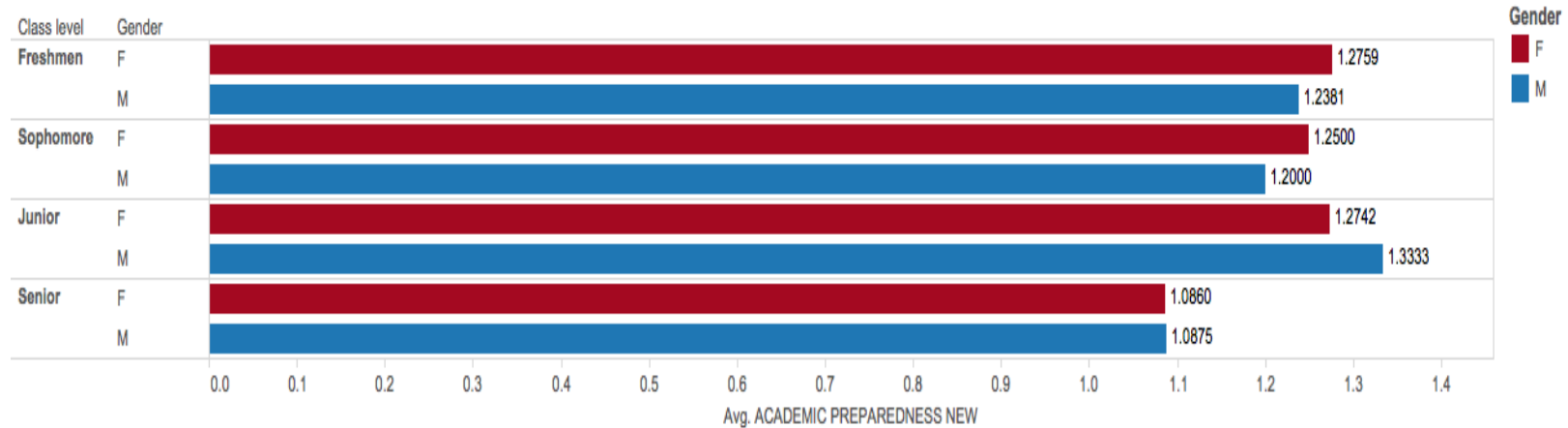
Gone to class without completing assigned reading	Gone to class unprepared	Extensively revised a paper before submitting it to be graded
Sought academic help from instructor or tutor when needed	Worked on class projects or studied as a group with classmates outside of class	Helped a classmate better understand the course material when studying together

*6 items, Never (1) to Very often (6)*



# Academic Preparedness by Class & Gender:

## Academic Preparedness x Class & Gender



Average of ACADEMIC PREPAREDNESS NEW for each Gender broken down by Class level. Color shows details about Gender.

0 = Seldom prepared, 1 = Moderately prepared; 2 - Almost always prepared



## Tech Obstacles:

*To what degree has each of the following factors been a problem for your use of educational technology in your courses?*

Instructors not using educational technologies at all.	Instructors not using educational technologies well.
Amount of time needed to learn educational technologies.	Amount of time needed to use educational technologies.

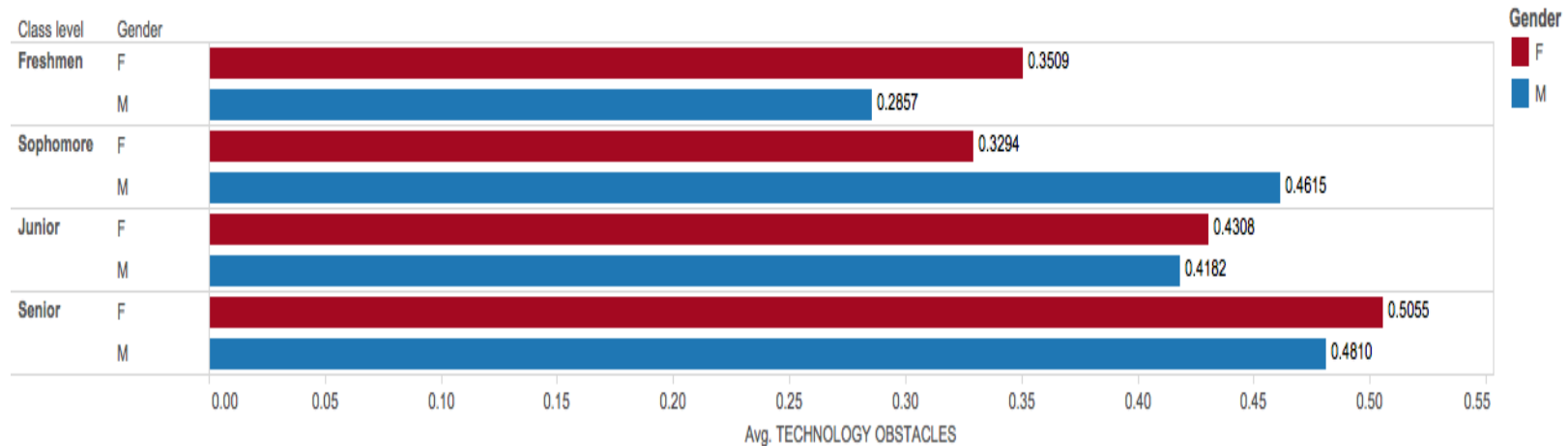
*4 items, Not a problem (1) to Large problem (4)*

14



# Average Tech Obstacles by Class & Gender

## Tech Obstacles x Class & Gender



Average of TECHNOLOGY OBSTACLES for each Gender broken down by Class level. Color shows details about Gender.

0 = Low obstacles, 1 = High obstacles





# Self Efficacy: Critical Thinking & Communication

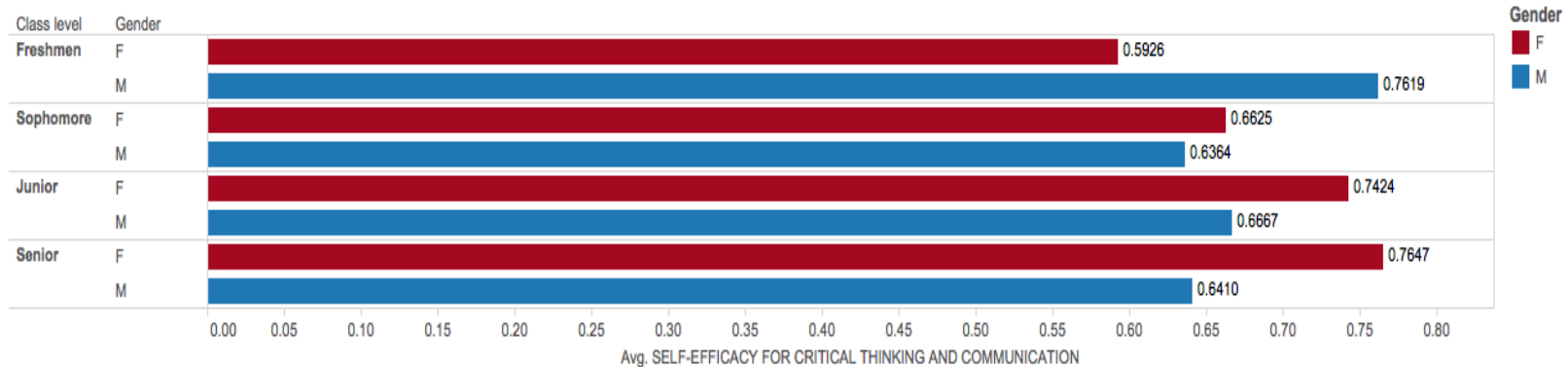
*Please rate your level of proficiency in the following areas when you started at this institution and now.*

Computer skills	Internet skills	Other research skills
Leadership skills	Library research skills	Interpersonal (social skills)
Analytical & critical thinking skills	Ability to prepare and make a presentation	Ability to read & comprehend academic material
Ability to be clear & effective when writing	Understanding of a specific field of study	Ability to understand int'l perspectives
	Ability to speak clearly & effectively in English	<i>13 items, Very poor (1) to Excellent (6)</i>



# Self Efficacy: Critical Thinking & Communication by Class & Gender

Critical Thinking & Communication by Class & Gender



Average of SELF-EFFICACY FOR CRITICAL THINKING AND COMMUNICATION for each Gender broken down by Class level. Color shows details about Gender.

0 = Low Self efficacy, 1 = high self efficacy



# Instructor Tech Ability

*Thinking about your college experience within the past year, how many of your instructors:*

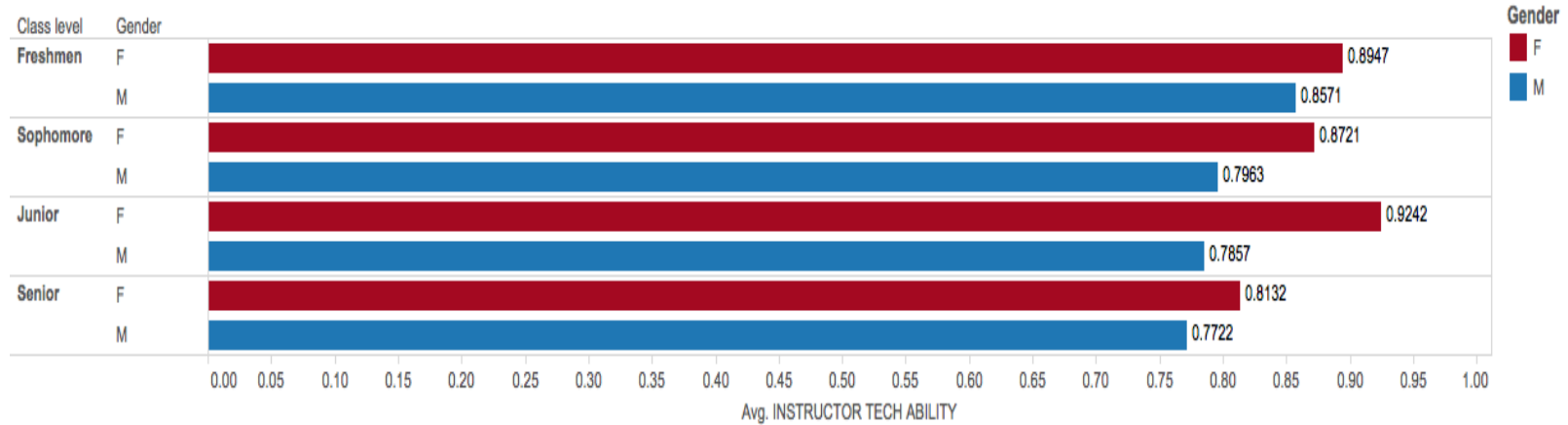
Effectively use technology to impact your academic success?	Use “the right kind(s)” of technology?
Have adequate technical skills for carrying out course instruction?	Have used technology to aid your understanding of course materials and ideas?

*4 items, None (1) to All (4)*



# Instructor Tech Ability by Class & Gender

Instr Tech Ability x Class & Gender



Average of INSTRUCTOR TECH ABILITY for each Gender broken down by Class level. Color shows details about Gender.

0 = Low tech ability, 1 = High tech ability



# Dependent Variable #1

## Perceived Student Satisfaction with Technology Benefits

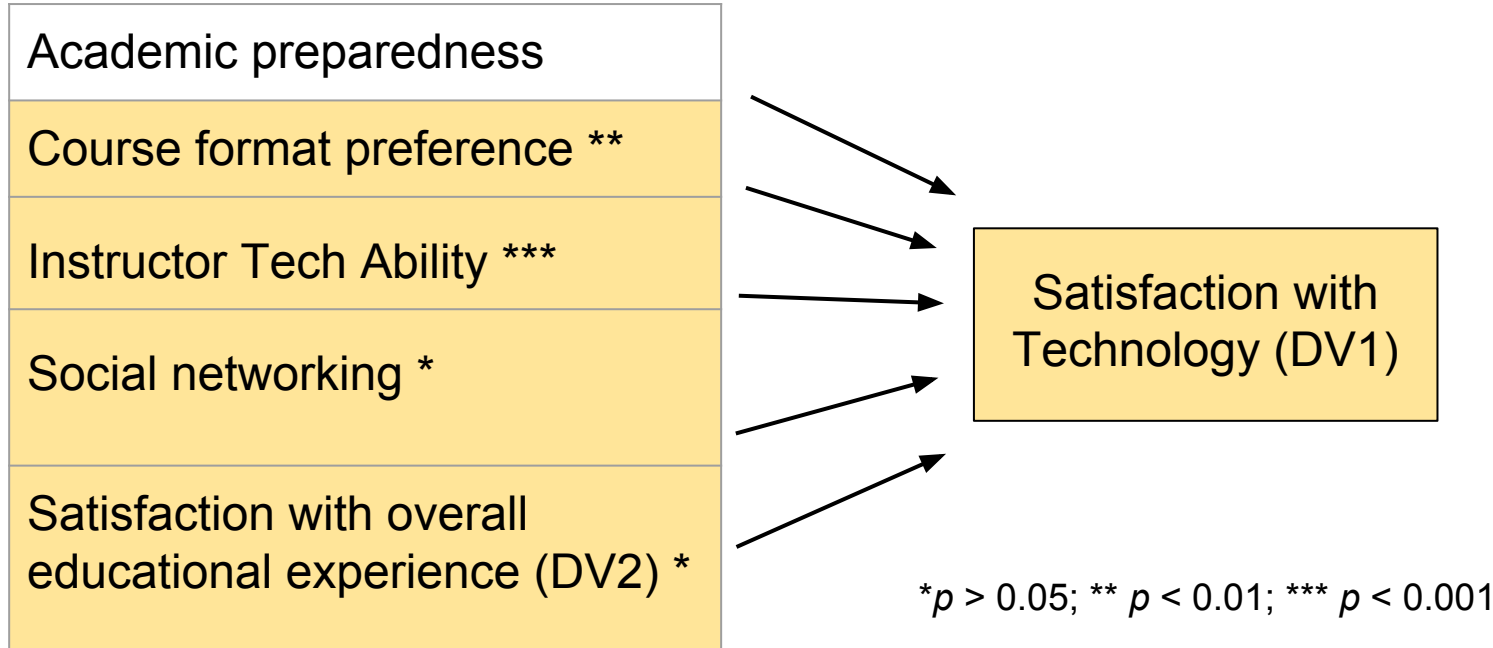
*To what extent do you agree or disagree with the following statement?*

I get more actively involved in courses that use technology.	Technology makes me feel more connected to what's going on at the college/university.
Technology better prepares me for future educational plans.	Technology makes me feel connected to other students.
Technology makes me feel connected to professors.	Technology elevates the level of teaching.
Technology helps me achieve my academic outcomes.	<i>7 items, SD (1) to SA (5)</i>



# Preliminary Results: Model 1

## 5 predictor variables



# Dependent Variable #2

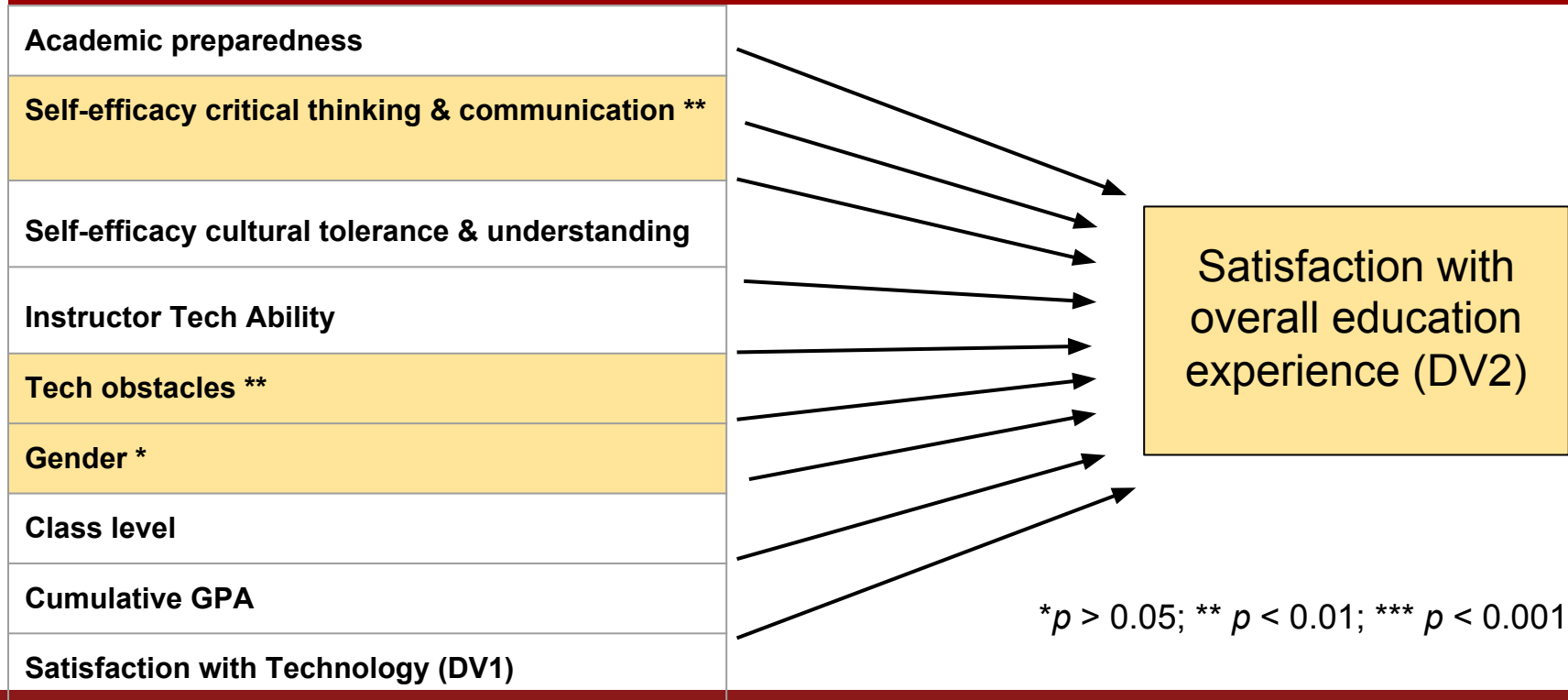
## Student Satisfaction with Overall Education Experience

<p><i>Please rate your level of satisfaction with the following aspects of your University education.</i></p> <p><i>4 items, Very Dissatisfied (1) to Satisfied (5)</i></p>	<ol style="list-style-type: none"> <li>1) Grade point average</li> <li>2) Overall social experience</li> <li>3) Overall acad experience</li> <li>4) Value of your education for the price you're paying</li> </ol>			
<p><i>How satisfied are you with each of the following aspects of your educational experience overall?</i></p> <p><i>15 items, Very Dissatisfied (1) to Satisfied (5)</i></p>		<p>Accessibility of library staff</p>	<p>Availability of library research materials</p>	
<p>Advising: by faculty, student peer advisers, school or college staff, dept staff (4 questions)</p>	<p>Quality of faculty instruction</p>	<p>Quality of teaching by graduate students</p>	<p>Opportunities for research experience</p>	<p>Ability to get into a major you want</p>
<p>Access to faculty outside of class</p>	<p>Access to small classes</p>	<p>Availability of courses for general ed</p>	<p>Availability of courses needed for graduation</p>	<p>Educational enrichment programs</p>



# Preliminary Results: Model 2

## 9 predictor variables





# Summary

## **Student Tech Satisfaction Key predictors (DV1):**

- 1) Instructor tech ability: greater odds for student tech satisfaction
- 2) Course format preference (for F2F): lesser odds for student tech sat
  - a) Two factors bordering on statistical significance: social networking and satisfaction with overall education experience (DV2)

## **Satisfaction with Overall Education Experience Key Predictors (DV2):**

- 1) High self-efficacy for critical thinking and communication: greater odds for overall ed experience
- 2) Tech obstacles: lesser odds for overall ed experience
- 3) Males: lesser odds for overall ed experience



# Lessons Learned/Reflection

- Additional data that would have been interesting/helpful:
  - Ethnicity & Transfer student information (ACT)
- Working with existing datasets
  - Some things are out of your control
- Missing Values - can significantly impact results
- Friends help you through it!



# Questions?

## Contact Information:

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612-625-0403



## References: Technology Satisfaction Research

**Lucas:** computer usage sales performance & MIS systems' level of success

**Fishbein & Ajzen:** Theory of reasoned action

**Compeau & Higgins:** Computer self-efficacy

**Bandura & Locke:** Technology self-efficacy

**Davis, Bagozzi & Warshaw:** Technology acceptance model

**Allen:** Online education's learner characteristics

**Finger, Chen, and Yeh:** 7 significant factors: learners' computer anxiety, instructor's attitude, course flexibility, course quality, perceived usefulness, perceived ease of use, and diversity in assessments

**Lin, Lin & Laffey:** perceived task value, social ability, and self-efficacy



# Path Analysis

## What is path analysis?

- Closely related variation of multiple regression analysis
- Used to test the fit of a correlation matrix with a *causal model*
  - Causal model (path diagram) - series of regressions which provide analysis of the influences on response variables and predictor variables, leading up to the final response variable

## Benefits

- Allows for study of direct & indirect effects simultaneously with multiple predictor & response variables
- Flexible & representative model (Suhr, 2013)
- Hypothesized model: more complex & realistic
- Explicitly specifies error or unexplained variance

