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Technology Satisfaction & the Overall University Experience

Peg Sherven

University of Minnesota - Twin Cities, peg@umn.edu

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Technology Satisfaction & the Overall University Experience

2015 MN eLearning Summit
Peg Sherven
July 29, 2015
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
“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

University of Minnesota
Driven to Discover
Topics from the NMC Horizon Report > 2015 Higher Education Edition

TRENDS

- SHORT-TERM
  1-2 years in each direction
  - Increasing Use of Blended Learning
  - Redesigning Learning Spaces

- MID-TERM
  3-4 years in each direction
  - Growing Focus on Measuring Learning
  - Proliferation of Open Educational Resources

- LONG-TERM
  5+ years in each direction
  - Advancing Cultures of Change and Innovation
  - Increasing Cross-Institution Collaboration

TECHNOLOGIES

- NEAR-TERM
  1 year or less
  - Bring Your Own Device
  - Flipped Classroom

- MID-TERM
  2-3 years
  - Makerspaces
  - Wearable Technology

- FAR-TERM
  4-5 years
  - Adaptive Learning Technologies
  - The Internet of Things

Infographic by the New Media Consortium (www.nmc.org)
Dataset: 2013 SERU Technology Module

N=28,773
seru.umn.edu
Tech module N=522
- 307 - Female
- 215 - Male

Tableau download
info: z.umn.edu/tab
Methodology/Theoretical Framework

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

**Inputs**
Career interests, aspirations, abilities, knowledge

**Environment**
Academic and co-curricular experiences, faculty and peer interactions, instructional practices

**Outcomes**
Academic achievement, values, interpersonal skills, self-knowledge

Astin (1970)
**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)

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Perceived Satisfaction with Technology (O)

Satisfaction with Overall Educational Experience (O)
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?*

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

*6 items, Never (1) to Very often (6)*
Academic Preparedness by Class & 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?

<table>
<thead>
<tr>
<th>Instructors not using educational technologies at all.</th>
<th>Instructors not using educational technologies well.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Amount of time needed to learn educational technologies.</td>
<td>Amount of time needed to use educational technologies.</td>
</tr>
</tbody>
</table>

4 items, Not a problem (1) to Large problem (4)
Average of TECHNOLOGY OBSTACLES for each Gender broken down by Class level. Color shows details about Gender.

0 = Low obstacles, 1 = High obstacles
Please rate your level of proficiency in the following areas when you started at this institution and now.

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

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. | 7 items, SD (1) to SA (5) |
### Preliminary Results: Model 1

5 predictor variables

<table>
<thead>
<tr>
<th>Variable</th>
<th>Significance</th>
</tr>
</thead>
<tbody>
<tr>
<td>Academic preparedness</td>
<td></td>
</tr>
<tr>
<td>Course format preference</td>
<td>**</td>
</tr>
<tr>
<td>Instructor Tech Ability</td>
<td>***</td>
</tr>
<tr>
<td>Social networking</td>
<td>*</td>
</tr>
<tr>
<td>Satisfaction with overall educational experience (DV2)</td>
<td>*</td>
</tr>
</tbody>
</table>

Satisfaction with Technology (DV1)

*p > 0.05; ** p < 0.01; *** p < 0.001
## Dependent Variable #2
### Student Satisfaction with Overall Education Experience

**Please rate your level of satisfaction with the following aspects of your University education.**

| 1) | Grade point average |
| 2) | Overall social experience |
| 3) | Overall acad experience |
| 4) | Value of your education for the price you’re paying |

<table>
<thead>
<tr>
<th>How satisfied are you with each of the following aspects of your educational experience overall?</th>
</tr>
</thead>
<tbody>
<tr>
<td>15 items, Very Dissatisfied (1) to Satisfied (5)</td>
</tr>
<tr>
<td>Accessibility of library staff</td>
</tr>
<tr>
<td>Availability of library research materials</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Advising: by faculty, student peer advisers, school or college staff, dept staff (4 questions)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Quality of faculty instruction</td>
</tr>
<tr>
<td>Quality of teaching by graduate students</td>
</tr>
<tr>
<td>Opportunities for research experience</td>
</tr>
<tr>
<td>Ability to get into a major you want</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Access to faculty outside of class</th>
</tr>
</thead>
<tbody>
<tr>
<td>Access to small classes</td>
</tr>
<tr>
<td>Availability of courses for general ed</td>
</tr>
<tr>
<td>Availability of courses needed for graduation</td>
</tr>
<tr>
<td>Educational enrichment programs</td>
</tr>
</tbody>
</table>
Preliminary Results: Model 2
9 predictor variables

<table>
<thead>
<tr>
<th>Predictor Variables</th>
<th>Satisfaction with overall education experience (DV2)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Academic preparedness</td>
<td></td>
</tr>
<tr>
<td>Self-efficacy critical thinking &amp; communication **</td>
<td></td>
</tr>
<tr>
<td>Self-efficacy cultural tolerance &amp; understanding</td>
<td></td>
</tr>
<tr>
<td>Instructor Tech Ability</td>
<td></td>
</tr>
<tr>
<td>Tech obstacles **</td>
<td></td>
</tr>
<tr>
<td>Gender *</td>
<td></td>
</tr>
<tr>
<td>Class level</td>
<td></td>
</tr>
<tr>
<td>Cumulative GPA</td>
<td></td>
</tr>
<tr>
<td>Satisfaction with Technology (DV1)</td>
<td></td>
</tr>
</tbody>
</table>

*p > 0.05; ** p < 0.01; *** p < 0.001
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:
Peg Sherven
Peg@umn.edu
612-625-0403
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