Student Perspectives on the Importance and Use of Technology in Learning

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NSSE: National Survey of Student Engagement

- A snapshot of student experiences inside and outside of the classroom at four-year colleges and universities
  - Focus on behaviors (and some perceptions)
- Survey items represent good practices related to desirable college outcomes, focusing on indirect process measures of student learning and development

Discussion Questions

- What's happening with technology on your campus?

- What sort of challenges are you facing?

- Have you done any of your own research on technology use on your campus?

- How do you think technology has benefitted your students' learning?

Literature

- Students enter with a variety of technology experiences known as the "Digital Divide" (Jones, 2002; Wilson, Wallin, & Reiser, 2003)
  - Gender
  - Racial
  - Socio-economic

Literature

- Technology is seen as a way to increase learning and collaboration on campus

- Nelson Laird and Kuh (2005) report "there appears to be a strong positive relationship between using technology for educational purposes and involvement in effective educational practices such as active and collaborative learning and student-faculty interaction" (p. 211)

What We Want to Know

- How students currently use technology

- Expectations and desires for technology use from various stakeholders

- How education is delivered through technology

Why It's Important

- Meeting the needs of students

- Faculty use of platforms

- Adapting the curriculum and methods

- Changing student profile

Research Questions

1. How often do students use technology to connect and communicate with various people on campus?

   a) How does this technology use relate to the quality of relationships students have with various people on campus?

2. How important is it to students to have access to more or better technology for themselves or their instructors?

   a) How do these perceptions of importance vary by different types of students and students in different institutional settings?

3. To what extent has students' technology use enabled them to understand, demonstrate their understanding, or study on their own or with others?

   a) How does such uses of technology relate to other important forms of educationally effective engagement?

Data

- 2012 administration of the National Survey of Student Engagement
  - 570 colleges and universities
- 2012 Technology extra item set
  - Intended to explore how technology relates to student-learning in college
  - 42 institutions
    - Doctoral (10%), Master's (69%), Bachelor's (21%)
    - Private (46%)
  - 7500 senior students

NSSE12 Technology Items

Component Items	Scale
How often have you used technology to connect and communicate with the following people? (Very often, Often, Sometimes, Never) a. Classmates b. Academic advisors c. Faculty d. Student services staff (campus activities, housing, career services, etc. e. Other administrative staff and offices	
How important are the following to you? (Very important, important, Somewhat important, Not at all important) a. That your instructors use new, cutting-edge technologies b. That more or better technology was available to learn, study, or complete coursework c. That you were better trained or skilled at using available technologies to learn, study, or complete coursework	**Technology Importance** α = .871
During the current school year, to what extent has your use of technology enabled you to do the following? (Very much, Quite a bit, Some, Very little) a. Understand course materials and ideas b. Demonstrate your understanding of course content c. Learn, study, or complete coursework on your own d. Learn, study, or complete coursework with other students	**Learning Technology** α = .856

Sample

		Seniors (%)
Female		66
Transfer student		55
Full-time enrollment		80
Living on campus		15
First generation		52
Age (24 or older)		46
Race or ethnicity	African American/Black	10
	Asian/Pacific Islander	3
	Caucasian/White	67
	Hispanic/Latino	9
	Other	5

Sample (continued)

		Seniors (%)
Primary major field	Arts & Humanities	14
	Biological Sciences	7
	Business	22
	Education	11
	Engineering	3
	Physical Science	3
	Professional	10
	Social Science	15
Grades	Mostly A's	52
	Mostly B's	43
	Mostly C's	6

Technology

Any or all of the following:

- Hardware (desktop computers, laptops, tablets, smart phones, etc.)

- Software (word processing, spreadsheets, presentations, graphics, statistics, etc.)

- Online tools (communications, social networking, etc.)

- Websites (for course management, library resources, etc.)

Analyses

1. Frequencies
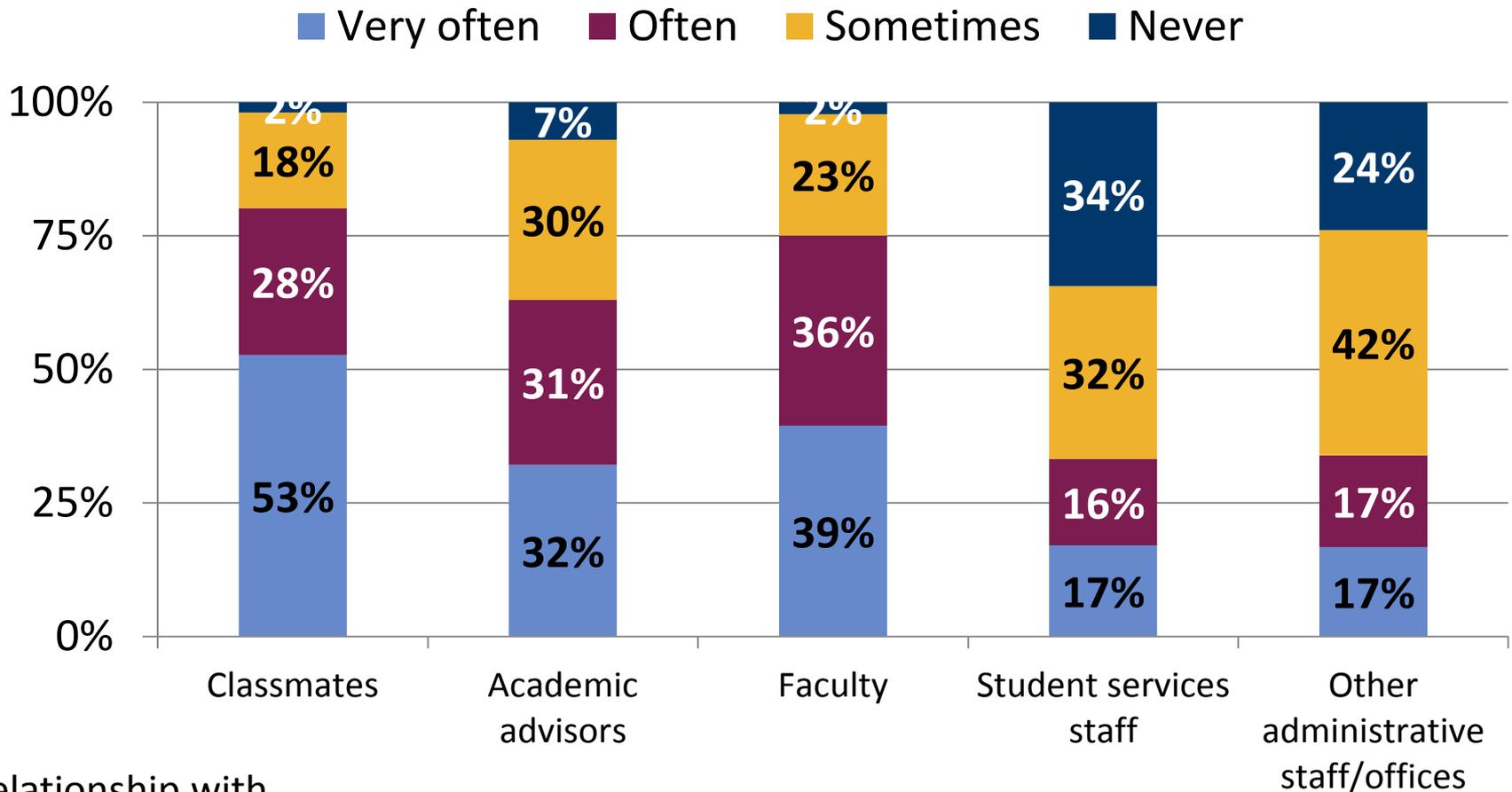   a) Pearson's r correlations
2. Frequencies
   a) t-tests, Cohen's d, ANOVAs with Tukey
3. Frequencies
   a) OLS regressions
      - All variables standardized
      - Controls include all student/institution characteristics listed previously

Results: How often students have used technology to communicate

Legend: Very often | Often | Sometimes | Never

	Classmates	Academic advisors	Faculty	Student services staff	Other administrative staff/offices
Very often	53%	32%	39%	17%	17%
Often	28%	31%	36%	16%	17%
Sometimes	18%	30%	23%	32%	42%
Never	2%	7%	2%	34%	24%

Relationship with the quality of interaction: $r = .29$ $r = .25$ $r = .23$

What do you think was most important to students?

- That instructors use new, cutting-edge technologies?

- That more or better technology was available to learn, study, or complete coursework?

- That they (the students) were better trained or skilled at using available technologies to learn, study, or complete coursework?
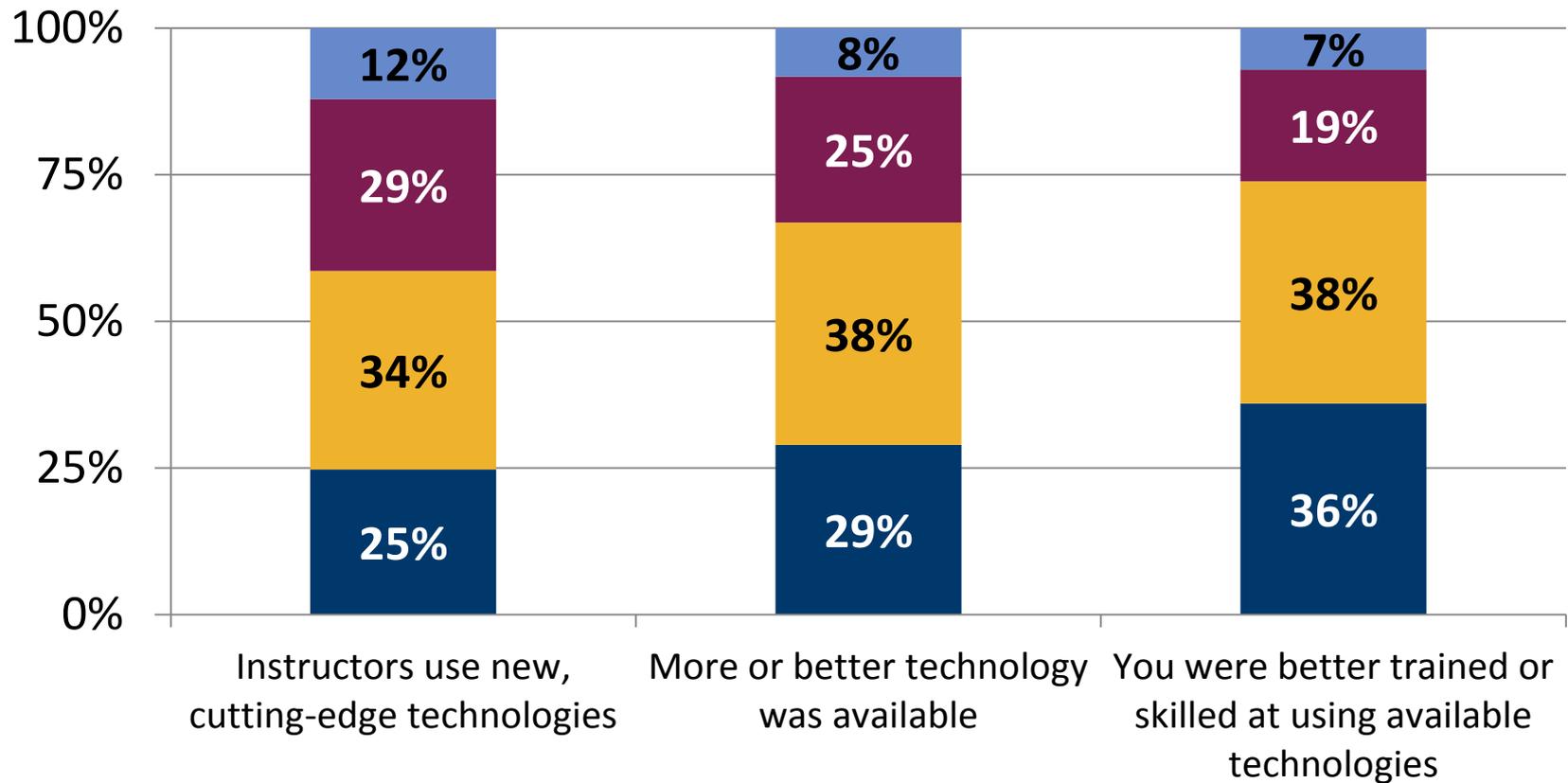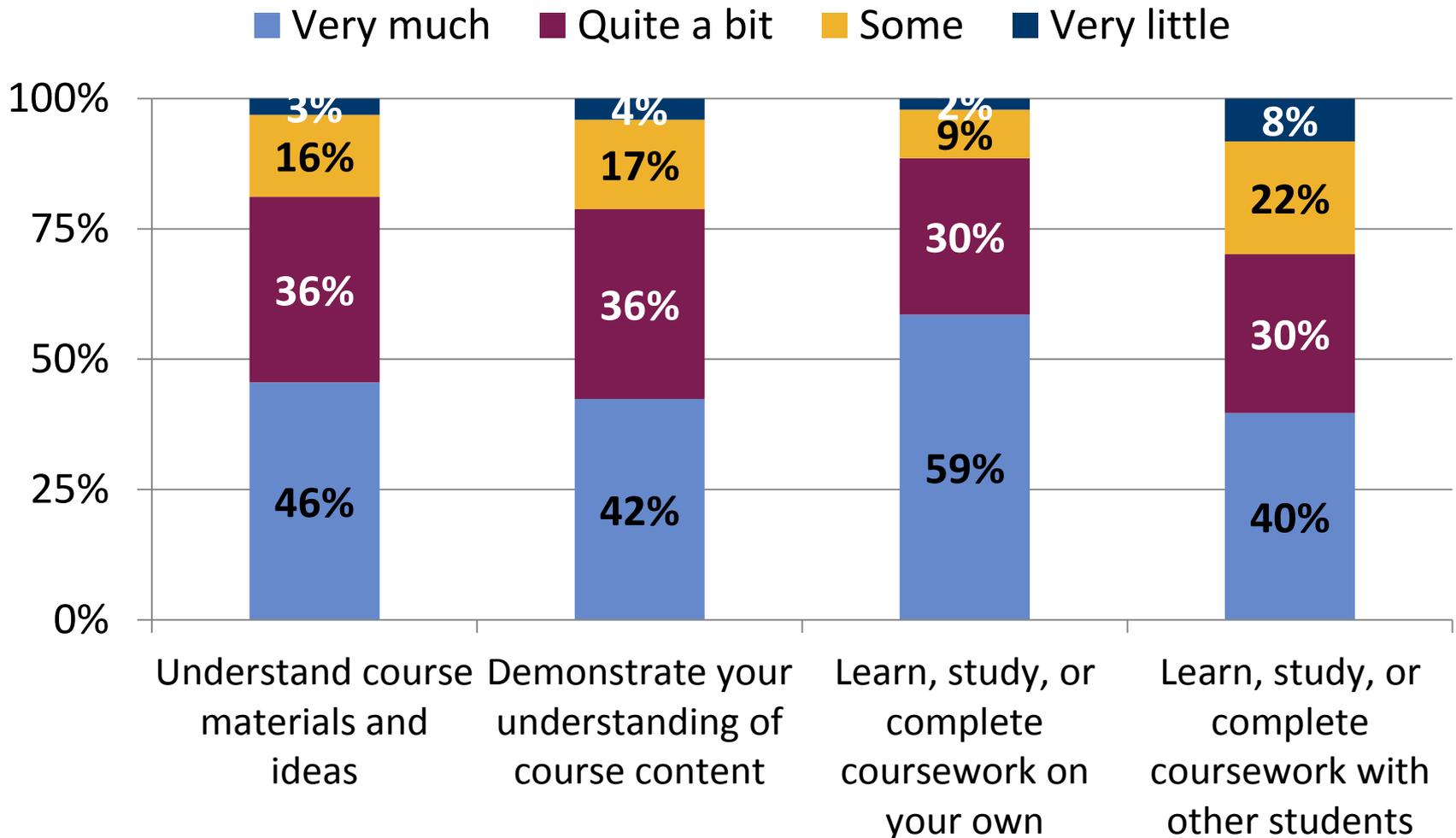
RQ2: Importance by Characteristics

- Small (d < .3), but significantly higher importance:
  - Transfer students
  - Part-time enrolled students
  - Students that live off campus
  - First-generation students
  - Older students
  - Students with lower grades (mostly C's compared to mostly A's)
  - Students at doctoral-granting institutions compared to students at Master's-granting institutions

RQ2: Importance by Characteristics

- No difference by gender or institutional control
- Noticeable differences by race ($d = .40$)
  - Minority students rated higher importance
- Large differences by major
  - Engineering, Professional, Business, and Education rate higher importance than Arts & Humanities, Biological Sciences, Physical Sciences, and Social Sciences
  - $d = .55$ between Engineering and Arts & Sciences

RQ3: To what extent did technology help students learn

Very much ■ Quite a bit ■ Some ■ Very little

	Understand course materials and ideas	Demonstrate your understanding of course content	Learn, study, or complete coursework on your own	Learn, study, or complete coursework with other students
Very little	3%	4%	2%	8%
Some	16%	17%	9%	22%
Quite a bit	36%	36%	30%	30%
Very much	46%	42%	59%	40%

RQ3: Relationships Between Learning Technology and Engagement

	Standardized β
Benchmarks of Effective Educational Practice	
Level of Academic Challenge	+ + +
Active and Collaborative Learning	+ +
Student-Faculty Interaction	+ +
Supportive Campus Environment	+ + +
Student Perceived Gains	
Practical Skills	+ + + +
Personal and Social Development	+ + +
General Education	+ + +
Deep Approaches to Learning	
Higher-Order Thinking	+ + +
Integrative Learning	+ +
Reflective Learning	+ +
Overall Satisfaction	+ +

+ +: $\beta < .3$
+ + + : $\beta < .4$
+ + + +: $\beta < .5$

Models control for gender, transfer, enrollment, living situation, first-gen, age, race/ethnicity, major, grades, institutional control, Carnegie classification

Discussion

- Technology is a significant part of students' experiences

- Technology use is positively associated with effective educational practices

Discussion: Who are they talking to?

- The vast majority of students are frequently using technology to interact with:
  - Faculty
  - Advisors
  - Peers
- Greater use of technology to communicate leads to greater quality of relationships
- Colleges need to explore what platform best enables communication with students

Discussion: What do they want?

- Students most often wanted to:
  - Improve their skills in using technology
  - Have greater access to more and better technology
    - These preferences were strongest for minority students
    - Illustrates the need for support services that help students learn to utilize technology
- Desire for more and better technology was more prominent for engineering students

Discussion: What does technology use relate to?

- Students overwhelmingly felt that technology helped them to
  - Understand course material
  - Demonstrate their understanding
  - Study on their own and with peers
- Use of technology to learn independently or collaboratively was related to
  - Self-reported gains
  - Supportive campus environment
  - Academic challenge
  - Student-faculty interaction
  - Active and collaborative learning
  - Deep approaches to learning
  - Student satisfaction

Discussion: What does all this mean?

- Investments in technology
  - Many students, especially students in the ethnic minority, prioritize developing skills in technology
  - Not effective to simply invest in new technology
    - Need to balance new technology with training and learning
- Technology use related to a number of positive outcomes when used to
  - Communicate with others
  - Facilitate independent and collaborative learning

Thank You!
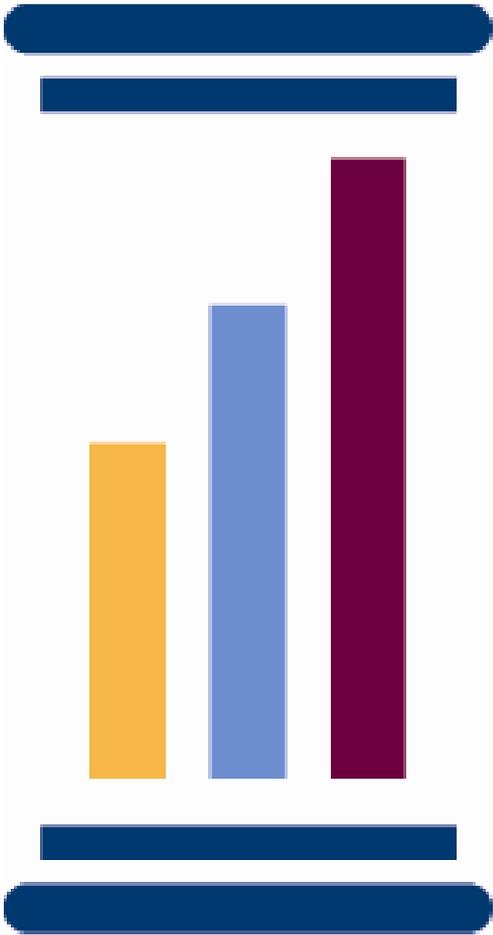
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Our paper and presentation can be found at

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