

# 3

## Methodology and Respondent Characteristics

*I'm all for IT: I completed this entire survey via my iPhone.*

—An undergraduate student

The ECAR study of undergraduates and information technology (IT) is designed explicitly to help inform college and university leaders, technology staff, and faculty as they make critical decisions about their institutions' technology investments and implementations.<sup>1</sup> ECAR collects, analyzes, and makes available both qualitative and quantitative data that profile undergraduate use of technology in general, that is relevant to administrators in deploying the overall campus technology environment, and that is useful to instructors and instructional technology staff as they decide how to incorporate IT into the curriculum.

This 2008 research of undergraduates and IT marks ECAR's fifth annual study.<sup>2</sup> In 2004, the first ECAR study was launched with a baseline of 13 institutions; this year, 98 U.S. institutions participated, along with two international institutions—one from Ireland and one from Spain.<sup>3</sup> The data presented in this study reflect only the results from student respondents of the U.S. institutions.

Each year, questions about undergraduate use of IT in and out of classes and about student perceptions regarding IT's impact on their academic experience form the core of the survey. Starting in 2008, the survey adds value by also including a special focus area—a more in-depth set of questions

about a topic (which changes each year) that is currently important to higher education. For 2008, ECAR chose student use of social networking sites (SNSs) for the survey focus area, adding research-based information to the already widespread discussion about student adoption of SNSs and their impact on colleges and universities.

### Methodology

The 2008 study builds on and extends previous studies and consists of the following data collection and analytical initiatives.

### Literature Review

A literature review was conducted (extending the 2007 literature review), along with a review of other relevant surveys. The bibliography appears in Appendix E.

### Web-Based Survey

A web-based survey of college and university undergraduates supplied the quantitative data about student experiences with IT in higher education. The 2008 survey was based on the 2007 survey, with improvements made to some core questions and to the survey structure overall,<sup>4</sup> and a section was added to include questions about the focus area (student use of SNSs). The survey questionnaire appears in Appendix B.

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Institutions were asked to sample their freshman and senior students. Each university used a different sampling model, and a number of them chose to include their entire freshman and senior classes. In the absence of weighting of institutional responses, this means that the results can be generalized to the sampled students but not to the 98 institutions.<sup>5</sup>

### Student Focus Groups

ECAR collected qualitative data by means of student focus groups at University College Dublin; the University of North Carolina, Pembroke; Coppin State University; the University of Maryland, Baltimore County; and Presbyterian College. The interviews included as diverse a group of students as possible. A total of 75 students participated in the focus groups, and each focus group meeting lasted for an hour. The focus group interview questions appear in Appendix C.<sup>6</sup>

### Qualitative Analysis of Student Comments

A total of 5,877 respondents (21.5%) answered an open-ended question in the online survey. They expressed opinions on their use of and skill with IT, the state of their institution's IT support services, their perceptions of technology use in their courses, and their experiences with SNSs. These comments, focusing on selected topic areas, were analyzed using the content analysis tool SPSS Text Analysis for Surveys. This provided additional insight into the substance of the qualitative data.<sup>7</sup> These findings have been incorporated into the text of the study.

### Longitudinal Analysis

The data from the 2006, 2007, and 2008 surveys were compared where possible to identify any significant changes during the past three years. Where questions were consistent over the past three years, ECAR was able to use comparative data from the 44 institutions that

participated in all three studies. Where survey questions were consistent over only the past two years, ECAR was able to use comparative data from the 66 institutions that participated in both the 2007 and 2008 studies. However, it is important to note that this study does not attempt to follow the same students over time.

## Analysis and Reporting Conventions

The following conventions are observed in analyzing and reporting data results:

- ◆ Some tables and figures presented in this study include fewer than 27,317 respondents. They were adjusted for missing information.
- ◆ Percentages in some charts and tables may not add up to exactly 100%, due to rounding.
- ◆ The Likert scales used in the online surveys are footnoted in the tables and figures showing results for the survey questions.
- ◆ Associations between survey questions (variables) that are both statistically significant and meaningful are reported in the text and/or supporting figures and tables. Note that a statistically significant relationship between two variables doesn't necessarily indicate a causal relationship.

## Research Team

Judith Borreson Caruso and Gail Salaway are the principal investigators. Mark Nelson's contribution to the study is a content analysis of student comments to an open-ended survey question. Nicole B. Ellison of Michigan State University's Department of Telecommunications, Information Studies, and Media contributed the Introduction, Chapter 2.

### Judith Borreson Caruso

Judith Borreson Caruso is Director of Policy and Planning at the University of Wisconsin–Madison and has been an ECAR Research Fellow

since July 2002. She has been in higher education IT roles for almost 30 years in the areas of application development, data management, policy, and security. Caruso is active in several IT professional organizations, including EDUCAUSE. She has served on the EDUCAUSE Current Issues and *EDUCAUSE Quarterly* editorial committees. Currently, she serves on the executive committee of the University of Wisconsin System IT Management Council. While with ECAR, she participated in the enterprise resource planning (ERP), IT security, and student studies.

### **Nicole B. Ellison**

Nicole B. Ellison is an Assistant Professor in the Department of Telecommunications, Information Studies, and Media at Michigan State University. She studies the social implications of new information and communication technologies such as SNSs, online dating sites, and blogs. Recent projects include an investigation of the relationship between Facebook use and social capital among college students and a special issue of the *Journal of Computer-Mediated Communication* on SNSs, which she coedited with danah boyd. Previously, she has examined misrepresentation in online dating profiles, student perceptions of educational blogging, and technology use by telecommuters, the latter explored in her 2004 book *Telework and Social Change*. Ellison received her PhD from the Annenberg School for Communication at the University of Southern California in 1999.

### **Mark R. Nelson**

Mark R. Nelson earned his PhD in information science from the University at Albany, State University of New York, in 1998. He is the Digital Content Specialist at the National Association of College Stores (NACS). Recently, he was appointed Vice President for Strategy and Development for NACS Media Solutions. Formerly, Nelson was Assistant Professor in Management Information Systems and Information Technology at the Lally School of Management and Technology

at Rensselaer Polytechnic Institute. Nelson has served as an ECAR Fellow since summer 2003. In this capacity, he has contributed to major research studies including IT leadership, IT in medical school research, and the annual student studies. He has also authored several research bulletins. He is a specialist in qualitative research methods.

### **Gail Salaway**

Gail Salaway earned her PhD in management of information systems from the University of California, Los Angeles, in 1984. She is a former Director of Administrative Computing and Communications at UCLA, where she was responsible for campus-wide administrative information systems and telecommunications services, and management of academic and general computing initiatives. As an ECAR Fellow, she has been principal investigator of research studies on IT leadership, IT alignment, IT networking, and undergraduates and IT.

## **Participating Institutions**

Participation in the study was voluntary, and each institution obtained approvals from its institutional executives and its institutional review board (IRB).<sup>8</sup> Therefore, the institutions participating in the study do not represent a statistical representation of U.S. higher educational diversity as a whole (see Table 3-1). Specifically, they are overwhelmingly four-year institutions (90 out of 98 U.S. institutions participating). Responses are further biased toward doctoral institutions (46.5%), larger institutions (66.4% enroll more than 8,000 students), and public institutions (74.8%). Findings are therefore considered to be instructive or indicative rather than conclusive of student experiences at different types of institutions. Even considering these biases, the 98 U.S. institutions that participated in this study do reflect a mix of the different higher education institution types in the United States, in terms of Carnegie class, size of institution, private versus public status, sources of funding,

**Table 3-1. Profile of Participating Institutions**

	Number of Institutions (N = 98)	Number of Respondents (N = 27,254)	Percentage of Respondents
<b>Carnegie Class</b>			
DR	44	12,664	46.5%
MA	32	9,051	33.2%
BA	10	1,443	5.3%
AA	8	3,317	12.2%
MED	1	198	0.7%
ENGR	2	142	0.5%
Other	1	439	1.6%
<b>Student FTE Enrollment</b>			
1–2,000	13	1,371	5.0%
2,001–4,000	13	2,328	8.5%
4,001–8,000	23	5,468	20.1%
8,001–15,000	24	9,303	34.1%
15,001–25,000	18	6,883	25.3%
More than 25,000	7	1,901	7.0%
<b>Control</b>			
Private	34	6,865	25.2%
Public	64	20,389	74.8%

and levels of technology emphasis. In this 2008 study, there was more participation from AA institutions—eight institutions accounting for 12.2% of student respondents, compared with four AA institutions accounting for 6.6% of student respondents in the 2007 study.

## Respondent Characteristics

Invitations to participate in the survey were sent by e-mail to more than 250,000 students—seniors and freshmen at 90 U.S. four-year institutions and to general students at 8 community colleges (see Appendix D).<sup>9</sup> A profile of responding students appears in Table 3-2. Although four-year institutions invited only seniors and freshmen, some students responded “other” when asked “What is your class standing?” These students’ understanding of their own standing differed from that of the official institutional record.

Freshmen from four-year institutions make up 32.9% of the respondents, seniors from four-year institutions make up 42.8% of the respondents, and community college students make up 12.2%. Female students make up 63.2% of the respondents, despite the strategy of oversampling male students in the population. As in past years, student respondents are weighted toward so-called traditional students. The majority of respondents are under 25 years old (78.8%) and go to school full time (84.0%). Freshmen most often live on campus (79.0%), while seniors (78.4%) and community college students (97.1%) most often live off campus. The grade point averages for our respondents show 75.7% having a B or better grade point average.

The overall student response rate in the 2008 study was 11.9%.<sup>10</sup> A significant variation by institution was observed, and the response rate may be affected by a number of factors.

**Table 3-2. Profile of Student Respondents**

	Four-Year Institutions			Two-Year Institutions	Total
	Seniors (N = 11,629)	Freshmen (N = 8,924)	Other (N = 3,272)	All Students (N = 3,317)	All Students (N = 27,317)*
<b>Gender</b>					
Male	37.7%	37.5%	39.7%	29.1%	36.8%
Female	62.3%	62.5%	60.3%	70.9%	63.2%
<b>Age</b>					
18–19	0.4%	91.8%	12.5%	19.5%	34.3%
20–24	75.0%	4.4%	60.3%	29.6%	44.5%
25–29	10.1%	1.4%	8.6%	14.4%	7.6%
30–39	7.2%	1.1%	8.7%	17.8%	6.6%
40–49	4.9%	0.9%	6.5%	13.4%	4.8%
50 and older	2.4%	0.4%	3.3%	5.3%	2.2%
<b>Residence</b>					
On campus	21.6%	79.0%	33.7%	2.9%	39.7%
Off campus	78.4%	21.0%	66.3%	97.1%	60.3%
<b>Full/Part-Time Status</b>					
Full time	85.5%	96.5%	81.2%	48.0%	84.0%
Part time	14.5%	3.5%	18.8%	52.0%	16.0%
<b>GPA</b>					
A	19.3%	17.0%	23.4%	21.7%	19.3%
A-	22.2%	18.8%	20.6%	12.8%	19.7%
B+	21.7%	20.0%	21.5%	19.3%	20.9%
B	16.2%	16.3%	14.0%	15.0%	15.8%
B-	11.2%	11.4%	7.6%	11.1%	10.8%
C+	4.7%	4.4%	4.0%	4.1%	4.5%
C	3.1%	4.6%	3.8%	4.7%	3.9%
C- or lower	0.3%	1.6%	0.9%	0.6%	0.9%
Don't know	1.2%	5.8%	4.2%	10.6%	4.2%

\*There were 175 students who did not answer the question about their class standing.

First, there continues to be a proliferation of spam, and since many spam e-mails can contain computer viruses and other forms of malware, it is not unlikely that students are increasingly cautious about responding to the e-mail invitation. Second, students continue to receive numerous e-mails throughout the year asking them to take a survey and win a prize.

Respondents identified their majors (see Table 3-3). Note that the total number of

responses is larger than the overall number of respondents (N = 27,317) due to many respondents' reporting more than one major (14.8%). Because so many respondents are freshmen, it is not surprising to find that 7.0% are undecided. Also, more students selected "other" than any other major category. This is likely due to the proliferation of unique majors and combination majors that don't seem to fit the listed major categories.

**Table 3-3. Student Respondents' Majors**

Major	N	Percentage
Other	5,853	21.4%
Life/biological sciences, including agriculture and health sciences	4,966	18.2%
Business	4,363	16.0%
Social sciences	4,085	15.0%
Education, including physical education	2,745	10.0%
Engineering	2,524	9.2%
Humanities	2,210	8.1%
Fine arts	1,911	7.0%
Undecided	1,902	7.0%
Physical sciences, including math	1,324	4.8%

## Endnotes

1. ECAR is indebted to Robert Albrecht (ECAR), Carole Barone (then with EDUCAUSE), Darwin Handel (University of Minnesota), Diana Oblinger (then with ECAR), Robert Kvakik (then with ECAR), and others who participated in creating the ECAR study.
2. Previous years' ECAR studies on undergraduate use of IT are publicly available on the ECAR website, <http://www.educause.edu/ecar>.
3. There is a single English-language version of the survey that is designed to work internationally.
4. Some questions were deleted because they did not work well or were no longer needed; other questions were changed to make them clearer; new questions were added to address issues identified as important in 2007; some questions were reordered or their format changed to tables in order to streamline and simplify the survey; and questions were added about student use of social networking sites.
5. In addition to potential sampling errors, there are other potential sources of error that are not sample related, such as the wording of the survey questions (their meaning may not be clear) and, most notably, nonrepresentative responses (a large percentage of the students declined to take this survey). Because the response rates in this study were lower than hoped for at a number of schools, one cannot be certain of how representative the respondents are of their respective institutions or of this population in general. Therefore, caution should be exercised in assuming that the findings generalize beyond the sampled students.
6. Staff from participating institutions used a variety of methods to recruit students—posting advertisements in various campus locations, making announcements in large-enrollment classes, and e-mailing students. Food and beverages were provided as incentives to attend. Students who work in general-access undergraduate student computing laboratories or for student technology help desks were also included in the focus groups. Students were advised of IRB regulations that govern the research and their rights and of the responsibility of the investigators to protect their rights. Notes were taken. None of the comments made by students and cited in this study identify any individual student. In some instances, we corrected their English but made no change in meaning.
7. The qualitative analysis for this study used a simple, iterative codification analysis process. SPSS Text Analysis for Surveys (v2.0) software was used as follows: (1) terms and concepts were identified by frequency, (2) the terms were evaluated by "type," such as whether a term or combination of terms had a positive or negative tone, (3) terms and term pairings were reviewed for accuracy and greater contextual understanding than provided by the software, and (4) as needed, responses were force-coded into additional categories, reclassified as synonyms, and/or new study-specific terms were added to the software dictionary. In addition, all responses were reviewed manually for additional concepts, topics, or patterns that need to be codified within the data. This process required multiple reviews of the data, as is common in grounded theory and similar approaches to qualitative data analysis.
8. Each institution required approvals from institutional executives and the IRB to participate in the study. The approval processes, although navigated by an institutional contact, varied considerably in difficulty from institution to institution. Often, the information required for approval was different from one institution to the next. Although the investigators made every attempt to provide all information required at the start of the study solicitation, additional details were added throughout the approval process to provide what each institution required. The information collected is confidential. No data from the quantitative survey are presented that would make it possible to identify a particular respondent. The data files used for analysis have been purged of any information that would have similar consequences. The IRB applications, application dates, and approval dates are available from ECAR.
9. To encourage a larger response from the students, ECAR offered 38 \$50 gift certificates and 10 \$100 gift certificates to be awarded to students, using a lottery.
10. Several participating institutions did not provide enrollment and sample information, so these data were not included in the calculation for overall response rate.