Journalism Educators in the Digital Age: Are We Prepared For Change?
This is but a snapshot of an evolving investigation and report
Version 1.0 – December 2008

You may be reading this by holding some paper with bits of ink sticking to the surface. Or you may be reading this on some electronic device that displays various pixels, some turned on, some turned off. As you move through the pages those pixels will change in many ways as various fonts and images are called to the surface by software-generated prestidigitation.

We hope that the report’s content also will change and become richer as students and scholars from around the world tap into the raw data, apply their own analytic methods and generate perspectives and conclusions that we can then integrate into these pages. We also hope this initial study will prompt others to investigate just what it is that journalism faculty teach and how they teach it, especially as that pedagogy pertains to the Digital Revolution.

Should anyone wish to delve into our data, go to http://www.iaijoursurvey.shorturl.com/

Should anyone have criticism, comments or contributions regarding this work, please send them to Tom Johnson at tom@jtjohnson.com

Acknowledgements

While Tom Johnson wrote, and is responsible for, the summary and conclusions in the opening pages of this report, like all journalists and journalism educators we are indebted to others for everything we do professionally. In the case of this study, we called on friends, colleagues and those we met for the first time via the Internet. Louise Yarnall, Ph.D., and a researcher at SRI International was, essentially, a co-author of the rest of this report. Major contributions came from Ammar A. Bakkar (Adjunct Professor of Mass Communication, American University of Sharjah, Sharjah, UAE); Yehiel (Hilik) Limor (School of Communication, Sapir College, D.N. Chof Ashkelon, Israel); Elias Machado (Universidade Federal da Bahia, Salvador, Bahia, Brasil); Maria Isabel Neuman-Sega (Centro de Investigación de la Comunicación y la Información, Universidad del Zulia, Maracaibo, Venezuela), Flemming Svith (Danish International Center for Analytical Reporting, Danish School of Journalism, Aarhus, Denmark).

Additionally, the following colleagues assisted with developing (and translating) the questionnaire and promoting the survey online: Steven Doig (Cronkite School of Journalism and Mass Communication, Arizona State University, Tempe, Arizona); Alan Rawlinson (University of Central Lancashire, UK); Stephen Quinn, Department of Journalism, Deakin University, Geelong, Australia); Steven Ross (Harvard University Extension, Cambridge, MA); and Adriana Cely A. (Universidad Complutense de Madrid y Universidad del Zulia, Maracaibo, Venezuela).

We have yet to meet some of these fine folks face-to-face, but we greatly appreciate all their assistance.
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Introduction

The phrase Digital Age (or Revolution) encompasses major changes that are directly affecting the communications environment, but also the social, political, economic and cultural lives of everyone in the world. Indeed, this revolution has re-defined what it means to be literate. That said, there has been no baseline study of how journalism educators are adopting to this new environment – the changing datasphere. Little research has been done to know if their efforts are resulting in change, growth, progress or just the maintenance of the status quo.

No longer, for example, can the ability to recognize Latinate letters and tease meaning and information out of those constructions be deemed sufficient. When those symbols are originally created and stored as digital bytes comprised of 1s and 0s, then literacy requires a new set of skills to manage the technology necessary to translates those bit strings into a display of traditional alphabets and corresponding grammars. Additional skills are required to draw meaning from those electronic symbols.

The platform for the revolution includes the general and massive digitization of content of all forms,1 the Internet (and its subset, the World Wide Web), and the ubiquity of communications devices such as cell phone and personal computers. To these are added dramatic increases in speed of communications, easy connectivity and rapidly declining prices of hardware and software. The second-level effects of this revolution include unprecedented access to data, especially data pertaining to government at all levels, non-governmental organizations and public corporations. This access is sometimes described as “new levels of transparency.” Concomitant with this easy availability of data has been the development of affordable software to retrieve and analyze that data and then communicate the results of that analysis.

While the initial price of hardware, software and data is often quite low, acquiring the skills necessary to use the new analytic and communications tools is relatively high in terms of the time required. Yet such learning is absolutely vital if the journalism profession is going to meet its responsibilities to the commonweal by providing insightful analysis and explanation of complex issues. Only in this way can citizens make rational decisions pertaining to their political destiny and economic, social, educational and cultural lives. The rapid changes in the digital information environment, then, are at the root of this prototype investigation.

The individuals associated with the Institute for Analytic Journalism and this study have been working to survive in the Digital Age for at least 25 years. All of us have been, and are, professional journalists and journalism educators, and it is from this double-helix perspective that we have explored the acquisition and use of digital data, tools for analyzing that data and ways to communicate the results of that analysis. We have all worked in major media organizations and taught at leading institutions of journalism education. We have taken leadership roles in professional and academic organizations. But while conducting workshops and seminars for professionals, we continue to be students. We have studied the dynamic digital environment extensively, especially as it pertains to journalism in the United States and on all continents.

During these decades and journeys, we were often puzzled that there was little if any research on what, precisely, journalism educators knew and taught about how to work in the digital information environment, especially as it pertained to the analysis of socio-economic, cultural and political phenomena. Yes, there

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1 "Print, film, magnetic, and optical storage media produced about 5 exabytes of new information in 2002. Ninety-two percent of the new information was stored on magnetic media, mostly in hard disks....We estimate that the amount of new information stored on paper, film, magnetic, and optical media has about doubled in the last three years." Lyman, Peter and Hal R. Varian, "How Much Information", 2003. Retrieved from http://www.sims.berkeley.edu/how-much-info-2003 on 29 September 2006
were studies of who used internet searching tools and what be-
came known as computer-assisted reporting (CAR)\(^2\) in news-
rooms, but it seemed to us that most journalism educators (and
especially at the undergraduate level) took the presence of the
digital information environment as something only applicable
when teaching ways to deliver the news product. Hence a bit of
an upsurge of academic papers on what has come to be called the
“convergence” of digital print, audio and video tools. The parallel
teaching of something broadly called “online journalism” focused on
subjects such as how to design and layout print pages with
Pagemaker, Quark or InDesign, create web pages with HTML cod-
ing and present stories using tools like Macromedia’s Flash and
podcasting.

Journalism educators, it seems to us, have a long and admirable
track record of teaching people how to write. The record is far less
stellar, however, when it comes to teaching students analytic skills
(especially quantitative analytic skills) so they will first have some-
thing of import and insight to say before they begin writing.\(^4\) The
result of this emphasis on writing is that most stories are largely a
collection of anecdotes and quotes reflecting the qualitative aspects
of an event or phenomena, glued together with transition sentences
or paragraphs. This is not to suggest journalism educators should be
teaching “keyboarding skills.” We do wonder, though, why in a time
when the business, scientific, NGO, government, military, health and
agriculture sectors of modern society are moving so rapidly to de-
velop and integrate digital tools in their daily activities, what is going
on in journalism education?

We also have noted that the standards of quality used to meas-
ure journalism education often have been vague, at best, and
rarely innovative.\(^5\) In fact, even the concept and articulation of
rubrics,\(^6\) long practiced by non-journalism educators,\(^7\) is rarely
discussed by our colleagues in journalism education.

Consequently, we set out to see if it is possible to use digital
and online tools to gather some data that would at least suggest
trends illustrating what journalism educators know about surviv-
ing in this new information environment in the United States
and other nations.

Because this study was conceived as a proof-of-concept effort
(and because we were limited by money, time and staff), the
results reported here need far more research and testing. How-
ever, we do believe the response data described in this report
do suggest tendencies related to what journalism educators
know about surviving in the digital environment and, more im-
portantly, suggest directions for long-term investigation.

This study was initially funded by the Institute for Analytic Jour-
nalism. A grant to finance the data analysis and publication of

\(^2\) See, especially, the research of Prof. Bruce Garrison of the University of Miami
(http://com.miami.edu/car/index.htm - retrieved 18 September 2007) and
Lawrence Erlbaum Associates. Also, the 10-plus years of surveys conducted by
Dan Middleberg, Middleberg + Associates, and Steve Ross, formerly of Columbia
University, on how journalists use digital tools in the newsroom provide insights.

\(^3\) A good bibliography reflecting this approach can be found at Prof. Mindy
McAdams site, http://mindymcadams.com/resume/publications.htm (retrieved 18
September 2007).

\(^4\) We believe that the act of writing is, foremost, just another analytic tool and
process that, ideally, requires the journalist to think seriously about what he
knows and how he knows it and only then, how he or she is going to say it.

\(^5\) It was only in the late 1990s that the Accrediting Council on Education in Journal-
ism and Mass Communications (ACEJMC) suggested that journalism education
should include some quantitative analytic skills. The “standard” eventually intro-
duced was that students should be able to “apply basic numerical and statistical
concepts.” That phrasing was among changes adopted “in September 2003, and
they went into effect in September 2004. They [were] applied in accreditation
reviews starting in the 2005 - 2006 academic year.” (See http://
tinyurl.com/2hsnyu retrieved 28 September 2006)

No definition (i.e. rubric) of what constitutes “basic numerical and statistical
concepts” can be found. This is because, “In its ‘Principles of Accreditation,’ the
Council does set forth certain professional values and competencies that it ex-
pects the graduates of accredited programs to have learned. Nevertheless, the
Council does not prescribe specific quantitative and qualitative measures or stan-
dardized tests of student learning.” [Italics ours.] Guide to Assessment of Stu-
dent Learning in Journalism and Mass Communications” (2001) http://
tinyurl.com/2azw9u (retrieved 28 September 2006).

\(^6\) See http://its.monmouth.edu/FacultyResourceCenter/rubrics.htm#Definition
(retrieved 28 September 2006)

\(^7\) See “Web English Teacher” at http://www.webenglishteacher.com/rubrics.html
(retrieved 20 September 2006)
this report has been provided by the John S. and James L. Knight Foundation as part of the Carnegie-Knight Initiative on the Future of Journalism Education, which is administered by the Joan Shorenstein Center on the Press, Politics and Public Policy at Harvard University.

The response data, and related presentations, will be available online until at least 30 June 2008. We encourage others to download and analyze the data. We welcome all comments, notifications of error and reinterpretation.

The data can be found at:

http://www.iajjoursurvey.shorturl.com
Executive Summary

- The online survey was posted from September 15 until December 15, 2005. Using the “snowball” recruitment technique, it attracted a total of 228 responses in Arabic\(^1\) (n=4); English (n=121); Hebrew (n=16); Portuguese (n=34) and Spanish (n=57).

- Because the respondents were all contacted via e-mail, and many of those via listservs [sic], the investigators believe these respondents represent a greater-than-average familiarity with and use of digital tools. They probably represent a much better informed, i.e “digitally hip,” cohort, especially when compared to their colleagues in journalism education.

- The respondents report their teaching environment has adequate technological and financial support and resources to function at a sophisticated level in the digital environment. But most often, this means applying digital technologies to simply writing, doing page design or photo processing. Digital tools are less often used to communicate with students and a wider public and, especially, those tools are not used to analyze socio-economic, cultural and quantitative phenomena.

- Given the greater-than-average digital skills of the respondents, it is not surprising that they all use e-mail. What is surprising is how quickly their use of other analytic tools falls away, even for basic communications functions. For example, only 43 percent of the respondents’ departments have faculty post their syllabi on some digital site.

- There is a marked tendency toward requiring traditional written and verbal skills from aspiring journalism students, but a strong tendency away from requiring any quantitative or digital skills from student applicants.

- While instructors give their students a fairly high score in terms of their “knowledge of computer applications,” there is a fall-off in terms of what those students can actually accomplish with those skills, especially where quantitative analysis is called for.

- Non-U.S journalism students are expected to know and apply more quantitative analytic skills than their U.S. counterparts.

We wanted to know how – and how often – instructors teach students to engage in deeper reporting that involves quantitative skills using digital tools? The answer was “relatively little.” Only one-third of the journalism departments require any quantitative analytic course work from their students, and only one in five of the departments publish any required quantitative analytic standards that their students are expected to meet.

The reluctance to teach such deeper skills often was justified by instructors. Many said few journalism students wanted to engage in any quantitative analysis or showed strong proficiency to do so. Curiously, instructors did give their students fairly high ratings on their “knowledge of computer applications.” Of course, quantitative analytic methods existed long before computers were a ubiquitous commodity and essential tools for all information workers like journalists. Still, we find it puzzling: how can the students have more than a superficial knowledge of computers if they are not also using them as analytic tools? Do our colleagues think that because their students regularly use Facebook or Instant Messaging, this constitutes “knowledge of computer applications”?

There were a few examples, however, of pioneers who are integrating quantitative analysis – mostly statistics and a couple

\(^1\) The low number of Arabic responses was in spite of a vigorous promotion effort by the co-investigator in Dubai. His interpretation of the lack of results: “It is sad that after all this work and translation, only a few people found themselves attracted to answer the survey questions. A major part of the problem is that a lot of media professors in our region do not use computers easily (such an indication for your survey, eh?).” It has also been suggested that while faculty in the Mideast use computers for e-mail, there is not yet sufficient content in Arabic so that the Internet is not seen as a library or an analytic toolbox. Since the number of results in the Arabic version was so small, no analysis was done on that data sub-set.
who are teaching Geographic Information Systems – into reporting and involving their students in innovative uses of digital tools to do so. But we found little evidence of journalism educators teaching digital skills such as OCR (optical character recognition, a technique to translate ink-on-paper documents to some digital format) or using even elementary Web 2.0-type workgroup tools, some of which have been around for a decade.

We wanted to know if journalism and communications educators are personally using digital and information management tools in their own research, professional journalistic work and teaching. Again, with the exception of e-mail, most were not using even now-basic digital tools such as spreadsheets or slightly sophisticated web-site bookmarking applications.

The subtitle of this report asks: “Are We Prepared for Change?” The authors think not. Our interpretation of the data of this admittedly preliminary survey indicates that journalism educators are very involved – and probably quite good – at teaching students how to write, take photographs and prepare both for delivery via traditional media forms. But teaching someone only how to write with appropriate grammar, spelling, punctuation and a cleaver turn of phrase does not mean the students and young journalists have anything to say of import or value. This is because they are typically not expected to also use multiple analytic methods in tandem with the traditional journalistic tools of gathering quotes and anecdotes and organizing them in some tight, coherent manner. Thus, a majority of journalism graduates are quite likely missing at least half of the story, especially if quantitative analysis is necessary to fully understand the topic(s) at hand.

Sweeping conclusions? Journalism and communications departments are not aggressively using digital technologies to communicate with their aspiring or current students about basic matters: graduation requirements, course syllabi, department calendars. They are not doing a good job of requiring, teaching or integrating quantitative analytic skills with qualitative analytic skills. In short, journalism educators are not themselves fully engaged in addressing the changes in content and methods inherent in the Digital Revolution.
Objectives

The objectives for this study reflect the core principles of the IAJ:

- To work in and with an international and multi-lingual perspective
- To make the content of our efforts as transparent as possible so that others might build upon – or critique – the work.

Within this framework, we sought to learn if and how it might be possible to conduct an online survey by: (1) recruiting an international team of colleagues to help create and translate the questionnaire and then “market” the existence of the survey instrument to all of their logical interest groups and colleagues; (2) recruiting self-selecting respondents from a variety of nations using multiple languages.

We wanted to explore the use of online collaborative tools to create the survey instrument. That is, would it be possible for a team of individuals, literally dispersed around the world, to create, comment on and edit the same document(s) in a manner that would result in a richer end result? We sought to learn how difficult it is to translate culturally and linguistically bound terms-of-art in journalism and education and how difficult it is to translate an online survey instrument in one language into others while retaining the look-and-feel (i.e. “user interface”) of the questionnaire.¹

We wanted to learn how much it would cost (in dollars, not time, although we did learn something about that) to conduct such a survey, and arrive at a 2005-06 dollar-estimate of the creation and preservation of data. We wanted to know if journalism and communications educators are using digital and information management tools both in their own research and/or professional work and in their teaching? And what could we learn about the precision and articulation of standards for journalism education that would prepare students to survive in the digital information environment.

The ultimate objectives, however, related to gathering data about what journalism educators know about using digital tools to find, retrieve and analyze data pertinent to producing stories. What do they know about using digital tools to communicate with their students and colleagues, and what they are teaching in terms of using digital tools to analyze data – especially quantitative data – and communicate the results.

While all of the investigators have experience in creating surveys, and some have experience on conducting on-line surveys, none of us had experience in creating a survey using collaborative, online software or conducting a survey in multiple languages. Therefore, we recognized from the onset that this would be a proto-type effort, a proof of concept project conducted as an exercise in learning and that any results would be tentative, awaiting a better-financed effort requiring a larger staff and the investment of more time, especially for follow-up interviews.

¹ For example, it typically requires 15-20 percent more words and characters to express a question in Spanish than English. There are also idiomatic differences. What is called “journalism education” in North America is often termed “Social Communication” (Comunicación Social) in Latin America, but not always because sometimes the terms “periodismo” (the practice of periodical/magazine journalism) or “journalismo” are used.
The Methodology

We developed the study collaboratively with our U.S. and international colleagues by using an online groupware application and an online survey application. The online groupware application was SocialText (www.socialtext.com) and the online survey application was FormSite (www.formsite.com). (For more information on these tools, please see Appendix 1).

The online survey was posted from September 15 until December 15, 2005. It attracted a total of 228 responses in Arabic (n=4); English (n=121); Hebrew (n=16); Portuguese (n=34) and Spanish (n=57).

<table>
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<th>Table 4: Language of Analyzed Responses, partial or complete (N=227)</th>
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<td>Portuguese</td>
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<tr>
<td>Spanish</td>
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<td>TOTAL</td>
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We used “snowball sampling” to reach out to prospective respondents. There are an estimated 450 to 475 colleges and universities offering courses in journalism in the United States, but only 109 of those are accredited by the Accrediting Council on Education in Journalism and Mass Communications (ACEJMC). Using the AEJMC list of accredited journalism schools, we sent e-mails to deans or instructors known for their work with computer-assisted journalism at 52 American journalism schools, including 8 of the top-rated professional programs in the nation. We received between 1 and 3 responses from instructors at each journalism school (response rate = 60%). We also received responses from instructors at additional schools who received our e-mail from original recruits who had forwarded our e-mail to them (i.e., the “snowball” of this “snowball sampling” method). Because the respondents were self-selected and all were contacted via e-mail and listservs, the respondents represent journalism educators with a greater-than-average familiarity with digital tools and analytic reporting. This suggests our respondents are possibly more sympathetic to our emphasis on quantitative skills in reporting than most journalism instructors.

Survey Instrument.

We asked 49 questions organized into three broad categories: institutional, instructional, and personal questions about quantitative skills and digital tools.

There were 12 multiple choice questions about the characteristics of the journalism institution. We asked about the school’s type (level of instruction), size, special application/admission requirements, student academic characteristics, technological infrastructure and the existence of published standards for quantitative/digital skills.

There were 14 multiple choice and short-answer questions about the characteristics of journalism instruction that focused on quantitative and digital skills. These included the use of digital technology and tools to teach story research and manage courses; availability and type of courses for learning about quantitative skills and digital tools for journalism inside or outside department; graduation requirements and tests; detailed questions about skills and tools taught; views on ways to teach such skills.

There were 23 multiple choice questions about the reporting instructor’s personal characteristics. These covered gender, age, personal technology habits, current work status as a professional journalist, length of time as journalist/journalism instructor, university rank, part-time/full-time status, university training, work experience and training in quantitative/analytic journalism, institution name, city and nation. (For the full survey, see Appendix 3)

Sample Description

Not surprisingly, slightly more than half of the responses were to the English version of the survey, but those responses came from educators in 15 different nations. U.S. faculty members contributed 69 of the 104 completed responses. The second largest subset (9 or 8.4%) came from Denmark, an unexpectedly large group no doubt because of the positive influence of our Danish co-
investigator, Flemming Svith. (There were respondents from Iceland and Greenland as part of the Danish cohort. Yes, there certainly is a university in Nuuk, Greeland. See www.ilisimatusafik.gl)

Readers will note that the table above does not include any responses to the Arabic version of the survey. In spite of the good translation and promotional efforts by Ammar A. Bakkar, our colleague in the United Arab Emirates, we received only four responses, and one of those was from our co-investigator and none of the rest were completed. Consequently, we concluded that there was insufficient data from the Arabic-speaking educators, and we removed that data from our analysis.

The gender and age of the respondents reflected some interesting distributions, with a tendency toward male faculty in three of the language groups. The Spanish faculty data indicate a majority of female instructors who also tended to be younger than the total response group. This would seem to suggest a global shift toward an increasing proportion of women in journalism and the journalism classroom. The younger average age of the responders in both the Spanish and Portuguese groups probably reflects the relative newness of journalism departments (sometimes called "social communication") in Latin America, Spain and Portugal.

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<th>% of Lang</th>
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<td>3.5</td>
<td>0.9</td>
</tr>
<tr>
<td></td>
<td>Puerto Rico</td>
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<td>1.8</td>
<td>0.4</td>
</tr>
<tr>
<td></td>
<td>Venezuela</td>
<td>18</td>
<td>31.6</td>
<td>7.9</td>
</tr>
</tbody>
</table>
| Grand Total | | | | | 228

<table>
<thead>
<tr>
<th>Language</th>
<th>Count</th>
</tr>
</thead>
<tbody>
<tr>
<td>English</td>
<td>121</td>
</tr>
<tr>
<td>Hebrew</td>
<td>16</td>
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<tr>
<td>Portuguese</td>
<td>34</td>
</tr>
<tr>
<td>Spanish</td>
<td>57</td>
</tr>
<tr>
<td>Grand Total</td>
<td>228</td>
</tr>
</tbody>
</table>

All Languages by Gender and Age

<table>
<thead>
<tr>
<th>Gender</th>
<th>English</th>
<th>Hebrew</th>
<th>Port.</th>
<th>Spanish</th>
</tr>
</thead>
<tbody>
<tr>
<td>Male</td>
<td>60</td>
<td>10</td>
<td>14</td>
<td>18</td>
</tr>
<tr>
<td>Female</td>
<td>51</td>
<td>4</td>
<td>13</td>
<td>25</td>
</tr>
<tr>
<td>Avg. Age</td>
<td>Male</td>
<td>51</td>
<td>54</td>
<td>41</td>
</tr>
<tr>
<td></td>
<td>Female</td>
<td>47</td>
<td>40</td>
<td>39</td>
</tr>
</tbody>
</table>

Journalism instructors responding to the survey worked primarily in undergraduate institutions granting bachelor's degrees. The U.S. instructor sample (n = 81) included 76 percent from undergraduate institutions, 22 percent from graduate institutions, and 2
Journalism instructors responding to the survey worked primarily in undergraduate institutions granting bachelor’s degrees. The U.S. instructor sample (n = 81) included 76 percent from undergraduate institutions, 22 percent from graduate institutions, and 2 percent from junior colleges. The non-US sample (n = 147) was similar but less skewed to graduate programs and more skewed to professional vocational programs. About 78 percent taught in undergraduate institutions, 10 percent taught in graduate institutions, and about 12 percent of the non-US sample included instructors from junior colleges, mid-career training programs, vocational schools, and other types of journalism programs.

The size of the departments and programs, measured by the number of students majoring in journalism/social, were quite varied. We believe – though this is not a tested hypotheses in this study – that these differences in language groups reflect the relative ages of journalism instruction and not degrees of financial or institutional support.

Our sample is divided into U.S. and non-U.S. segments. We received responses from 56 U.S. and 79 non-U.S. journalism programs. The non-US programs included 21 English-speaking programs. (See Appendix 2 for participating U.S. states and countries)

Of all respondents, 64 percent were full-time instructors and 36 percent were part-time. In the English-speaking sample from both the U.S. and abroad, 86 percent were full-time instructors and 14 percent were part-time instructors. Of the non-English-speaking respondents, 50 percent were full-time instructors, 24 percent were part-time instructors, and 26 percent offered no response (see Figure 1 for ranks of respondents).
Analysis

We conducted both qualitative and quantitative analysis. There were two levels of quantitative analyses. The first level focused on providing basic descriptive information about frequency and distribution of instruction in quantitative and digital skills. The second level of quantitative analysis focused on testing for statistically significant relations that informed our initial hypotheses. We hypothesized that instruction in quantitative and digital skills would vary in the following ways: (1) North American schools would differ from non-U.S. schools, (2) Large schools would differ from small schools, (3) Different types of journalism programs would differ (undergraduate 4-year/3-year, graduate, junior college/mid-career), and (4) instructors with different backgrounds and experiences would differ.

We used chi-square and ANOVA analyses to see whether the various dependent measures of quantitative and digital skills instruction were significantly predicted by each of these factors. In some cases, a given dependent measure was predicted by more than one of these factors. Because the factors were correlated with one another, this meant that some of the significant relationships we initially observed were produced not because the factor in question was actually responsible for the observed effect, but rather because that factor was “signaling” for another factor that was actually responsible for the observed difference. In order to determine which factors were likely producing the observed effects, stepwise regression analyses were conducted in all cases in which a given dependent measure was predicted by more than one factor.

In each case, the predictor in question was entered into a regression equation last – after all other significant factors had already been entered – to see whether that predictor was accounting for any unique portion of variance. When a given predictor still accounted for a significant amount of variance when entered last, this indicated that that predictor was likely having an “actual” effect, as opposed to just being a “signal” for another factor. We report only those statistically significant results that are backed up by stepwise regression analyses indicating that they reflect “actual” effects.

Findings

• Few quantitative courses are offered in journalism departments. Usually such courses are offered outside the journalism department.

Only a third of the journalism programs require quantitative analytic training. If such skills are acquired, it will be up to the students to take the initiative to do so.

The relative dearth of quantitative courses is a factor. Most journalism and mass communications departments surveyed in this study did not offer any unique quantitative courses. Instructors cited two possible reasons: journalism students are considered “math phobic” and faculty are perceived as lacking expertise or interest. Faculty members say students lack basic skills in such simple things as calculating percentages. “Many students resist taking courses in statistics,” one instructor reported. “We do not emphasize it enough. Faculty do not know the subject well enough to teach it and make it a priority. I blame it on faculty with other interests,” wrote another.

As Figure TK illustrates, the majority of instructors (39 percent) noted that students may learn quantitative skills by taking elec-
tive courses in other departments: “Journalism majors are predominantly word-oriented. They shy away from quantitative topics. We encourage them to improve those aspects of their subject mastery through courses elsewhere in the liberal arts college,” one professor wrote.

Perhaps journalism departments in large four-year universities do not offer quantitative courses partly for reasons of efficiency. Another reason may be competing priorities. One instructor suggested that journalism departments may see a heightened demand for remedial writing instruction: “There is no longer a requirement for a quantitative methods course - a huge shortcoming. It was sacrificed for more writing classes since incoming students seem to have less exposure to grammar and writing mechanics than in years past.”

• Instructors acknowledge it is difficult for journalism students to be exposed to statistical concepts, but they report students have more access to using digital tools for designing data tables and charts.

In reviewing their departmental course offerings, 72 percent of instructors reported it took “moderate to high” effort for students to learn about statistical concepts; 8 percent reported students had “no opportunity” to learn such concepts in their programs. Students may have a somewhat easier time of learning how to interpret and design data tables and charts (infographics).

Fifty-four percent of instructors reported students needed only “moderate” effort to learn how to design data tables and charts in their programs, although 6 percent reported students had “no opportunity” to learn such skills. (We are puzzled, however, about how students could “design” such infographics without understanding the context and statistical implications of the data.) Seventy-four percent reported students could learn about data interpretation with “moderate to minimal” effort using their program resources; but, again, 6 percent reported students had no opportunity to learn these skills.

• When journalism departments do offer quantitative courses, it is usually only a one-time experience. There seems to be little effort to build such skills into the regular research, reporting and analysis process.

Despite the opportunity for students to take courses outside the department, some instructors who prefer a stronger focus on analysis in reporting say the “outside elective” system does not serve journalism purposes particularly well. In a comment echoed by others, one instructor noted: “We have no real requirements in analytic skills – just the typical 6 or 9 credits of math. Most students test out of the requirement, but they do not know how to use a spreadsheet and they have no statistical skills or knowledge.”

Journalism students usually learn quantitative skills primarily in quick-hit classes, rather than through an integrated curricular approach. Instructors teach students quantitative skills largely through what one instructor called “one-day stands” or one-time specialized courses. For example, some schools farm out statistics training to other departments while narrowly focusing their own in-department quantitative courses on visual data and chart design. Some faculty reported targeting quantitative courses for graduate students and selected undergraduates: “Undergrads have limited access to these skills,” wrote one instructor. “Taught to undergrads who take a sales marketing course,” explained another. Seven instructors reported such skills are taught mostly at the “graduate level.”

Instructors do not take a consistent approach to teaching quanti-
tative skills. To describe the general tact, one instructor characterized it as: “The usual mess really. Different people do different things in different ways when the topic comes up.” Another said that quantitative skills “are taught weakly as units within classes, but not in a coordinated way. We used to have an arrangement with the math department but the class gradually lost relevance.”

Still others hand off the task to “guest lectures or by visiting the national bureau of statistics and ask them to instruct our students.” One instructor wrote: “Only one person does anything quantitative, so students get a little very basic instruction in one course only.” Others described departments in transition, where “the issue of quantitative vs. qualitative research skills is a huge debate in my school” and some faculty are pushing to update computer-assisted reporting classes and “focusing on math and statistical skills as they relate to journalism.” Or, as another instructor reported: “These skills are I believe taught by a couple of professors who are considered ‘tough’ and not particularly popular with students.”

• A few programs are showing the way to offering multiple course offerings and innovative ways to integrate quantitative content into journalism courses.

A minority of instructors said that students may learn quantitative skills by taking department courses that are either required (37 percent) or elective (35 percent). Only 26 percent of instructors reported that students may develop quantitative skills through “multiple academic units” or courses within their department.

At the high end, some instructors described a menu of required quantitative courses: “All students must take courses in spreadsheet use, including basic math in quantitative analytic methods and theory, and in digital data collection.” Some respondents described making effort to provide more quantitative instruction in their departments. “Students are introduced in the first writing classes to the concept of using numbers and spreadsheets to write a ‘numbers’ story. Depending on the faculty, the students may encounter more ‘quants’ training in communication theory courses.”

“I deliver a one-hour lecture and conduct a two-hour seminar and two-hour workshop on spreadsheet analysis as part of the MA in Online Journalism,” reported one instructor. “I do lectures for 100 students in statistics. We have classes of 25 students for spreadsheets lessons and doing stories based on number calculations.”

Others taught graphic representation: “I teach a graphic comm course so the students learn how to take scientific info and present them creatively in layouts.” “Some [skills], such as numeracy, are both integrated into a required editing course and are part of a required research methods course. New students must now also take a visual communications principles course that incorporates design. All these elements come together in the working newsroom senior semester (print) where they must report, edit, and design graphics.”

These instructors had clear ideas about how to teach quantitative and digital skills to journalists: “Hands on. But mix between lectures, classroom teaching, and workshop” and “Hands on training in combination with lectures.” They listed a number of approaches to engaging reporters in using data to inform their work.

### Instructional approaches to engaging journalism students with data analysis

<table>
<thead>
<tr>
<th>Instructional Approach</th>
<th>Example</th>
</tr>
</thead>
<tbody>
<tr>
<td>Analyzing public data using spreadsheets and databases</td>
<td>Analyzing neighborhood crime reports</td>
</tr>
<tr>
<td>Teaching interpretation of statistical information</td>
<td>Analyzing data from U.S. Census and National Opinion Research Center</td>
</tr>
<tr>
<td>Teaching basic mathematics</td>
<td>Computing percentage change</td>
</tr>
<tr>
<td>Writing stories from statistical sources</td>
<td>Reviewing business reports</td>
</tr>
<tr>
<td>Creating surveys and analyzing data using statistical software</td>
<td>Polls</td>
</tr>
</tbody>
</table>

Methodology and Sample Description ● Page 13
• **Journalism programs generally do not have any expected standards for admission or publish expectations of competence, not only for quantitative or computer skills, of published standards of any kind. And even those that do generally do not embrace digital transparency by making those documents for the department or courses available on the Internet or World-Wide Web.**

We had assumed that in the Digital Age, journalism programs might have articulated some expected entrance-level skills from their students in terms of computer competence. After all, journalism programs two decades past often had typing tests for their students (and the British and Australian programs expected their students to arrive knowing shorthand.) Knowing how to use a computer efficiently is far from an innate set of skills. Yet, as the table illustrates, barely a third of the responders in English indicated their instructional home had such requirements.

We asked: “Does your journalism program have any published standards of computer skills students are expected to meet?”

Another question asked if respondents’ students were presented with published standards of quantitative analytic skills. In this case, the U.S. cohort of instructors fell far below their non-U.S. colleagues. Additionally, 31 percent reported their program required students to pass an examination demonstrating quantitative analytic and/or digital skills for graduation.

• **Digital tools are used mainly for production, not quantitative study or analysis in journalism schools.**

We compared the percentage of instructors reporting that their programs offered quantitative courses, such as those including some use of spreadsheets and databases, compared to the journalistic courses focused on digital news production. As can be seen in the table, journalism students have notably stronger opportunities to develop their digital production skills than they do their quantitative skills in most journalism programs.

That said, more — and deeper — research is needed to understand how our respondents may have interpreted the phrase “...interpretation of quantitative data” despite our attempt to clarify the question with an online form “help” link that said “Interpretation of Quantitative Information (e.g., extracting information and context from charts, tables, reports, budgets, survey results, etc.)” Anecdotal experience and evidence in the literature would seem to contradict the finding that 69 percent of the English-speaking respondents are teaching “Interpretation of Quantitative Data.”

<table>
<thead>
<tr>
<th>Does your journalism program have any published standards of computer skills students are expected to meet?</th>
<th>Total</th>
<th>Non-U.S.</th>
<th>U.S.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Language</td>
<td>Total</td>
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<td>Yes</td>
</tr>
<tr>
<td>Eng</td>
<td>121</td>
<td>80</td>
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</tr>
<tr>
<td>Hebrew</td>
<td>16</td>
<td>11</td>
<td>5</td>
</tr>
<tr>
<td>Portuguese</td>
<td>34</td>
<td>32</td>
<td>2</td>
</tr>
<tr>
<td>Spanish</td>
<td>57</td>
<td>44</td>
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</tr>
<tr>
<td>Grand Total</td>
<td>228</td>
<td>167</td>
<td>61</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Instructors reporting published standards of quantitative analytic skills.</th>
<th>Total</th>
<th>Non-U.S.</th>
<th>U.S.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Responses</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>No</td>
<td>166</td>
<td>106</td>
<td>60</td>
</tr>
<tr>
<td>Yes</td>
<td>46</td>
<td>36</td>
<td>10</td>
</tr>
<tr>
<td>% Yes</td>
<td>22%</td>
<td>25%</td>
<td>14%</td>
</tr>
</tbody>
</table>

* Some respondents did not report their country of origin
Please check off all the competencies that your colleague(s) teach in your academic units journalism course(s).

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Publication Software</td>
<td>74%</td>
<td>6%</td>
<td>71%</td>
<td>63%</td>
<td>66%</td>
</tr>
<tr>
<td>Graphic Image Editing</td>
<td>61%</td>
<td>0%</td>
<td>74%</td>
<td>60%</td>
<td>58%</td>
</tr>
<tr>
<td>Interpret of Quant. Data</td>
<td>69%</td>
<td>38%</td>
<td>29%</td>
<td>60%</td>
<td>59%</td>
</tr>
<tr>
<td>Stat Concepts</td>
<td>55%</td>
<td>38%</td>
<td>29%</td>
<td>56%</td>
<td>50%</td>
</tr>
<tr>
<td>Basic Stats</td>
<td>60%</td>
<td>44%</td>
<td>3%</td>
<td>56%</td>
<td>50%</td>
</tr>
<tr>
<td>Interpret of VizStats</td>
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<td>15%</td>
<td>35%</td>
<td>33%</td>
</tr>
<tr>
<td>Special. Stat Programs</td>
<td>30%</td>
<td>31%</td>
<td>0%</td>
<td>46%</td>
<td>29%</td>
</tr>
<tr>
<td>Interpret of GIS</td>
<td>12%</td>
<td>0%</td>
<td>0%</td>
<td>7%</td>
<td>8%</td>
</tr>
<tr>
<td>GIS creation</td>
<td>6%</td>
<td>0%</td>
<td>0%</td>
<td>5%</td>
<td>4%</td>
</tr>
</tbody>
</table>

- Most instructors reported they rarely used digital tools for quantitative analysis in their own courses.

Another factor making it harder for students to learn quantitative skills is the relatively low level of instructor use of quantitative software. Only 17 percent of the instructors reported using some form of quantitative software, such as spreadsheets, databases, or geographic information systems (GIS) in their courses daily. By contrast, 42 percent reported using such technology only “occasionally to rarely;”14 percent reported “never” using such software.

While this survey did not generate any statistical evidence about why journalism instructors apparently employ a limited set of analytic tools, perhaps future researchers can find a connection between those limitation and the failure of journalism faculty to invest in their own on-going education.

That was especially true of the Portuguese faculty, but we were taken aback by the report from U.S. colleagues. Our question on this topic was purposely broad: “Have you participated in any workshops or other professional development programs for journalists in the past 12 months?”

<table>
<thead>
<tr>
<th>Training/ #</th>
<th>English</th>
<th>Hebrew</th>
<th>Portug.</th>
<th>Spanish</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yes</td>
<td>27 (69.2%)</td>
<td>36 (51.4%)</td>
<td>0 (0.0%)</td>
<td>8 (30.8%)</td>
</tr>
<tr>
<td>No</td>
<td>12 (30.8%)</td>
<td>34 (48.6%)</td>
<td>14 (100%)</td>
<td>18 (69.2%)</td>
</tr>
<tr>
<td>Total Responses</td>
<td>39 (100%)</td>
<td>70 (100%)</td>
<td>14 (100%)</td>
<td>26 (100%)</td>
</tr>
<tr>
<td>No Responses</td>
<td>17</td>
<td>2</td>
<td>8</td>
<td>14</td>
</tr>
</tbody>
</table>

Except for the Spanish-language educators, who are more actively invested in their own continuing education, the responses to the Hebrew and Portuguese versions of the survey were even less positive, something somewhat discouraging and even threatening to journalism in a rapidly changing information environment.
This question, we thought, would cover anything from attending the AEJMC national convention to a brown-bag seminar conducted by a departmental colleague. Nearly 70 percent of the non-U.S. English language respondents indicated they had attended such educational activities. Yet barely one-half of U.S. journalism instructors said they had participated in such events to enhance their knowledge. We find the relative difference between the U.S. educators and their non-U.S. colleagues who responded to the English version of the survey striking.

### Have you participated in any workshops or other professional development programs for journalists in the past 12 months?

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- **Most instructors reported they rarely used digital tools for quantitative analysis in their own courses.**

Another factor making it harder for students to learn quantitative skills is the relatively low level of instructor use of quantitative software. Only 17 percent of the instructors reported using some form of quantitative software, such as spreadsheets, databases, or geographic information systems (GIS) in their courses daily. By contrast, 42 percent reported using such technology only “occasionally to rarely;”14 per cent reported “never” using such software.

While this survey did not generate any statistical evidence about why journalism instructors apparently employ a limited set of analytic tools, perhaps future researchers can find a connection between those limitation and the failure of journalism faculty to invest in their own on-going education.

That was especially true of the Portuguese faculty, but we were taken aback by the report from U.S. colleagues. Our question on this topic was purposely broad: “Have you participated in any workshops or other professional development programs for journalists in the past 12 months?”
Role of Journalism
Departments and Schools

We were also interested in whether individual schools, departments or journalism programs, as reflected by the responses, could be categorized in a way that reflected how well their “character” seemed appropriate to the changing information environment. That is, were there indications that a few programs, overall, were adopting to the Digital Age and encouraging students to learn and apply both quantitative and qualitative analytic tools?

Not surprisingly, programs offered a range of instructional options, and we found we could group them into one of three types: Innovative, Mixed Adopter and Lagging programs. To characterize the instructional programs, we focused on some key indicators. First, we reviewed how many of the nine digital data analytic competencies they taught, which included three publication and data summarizing competencies (publication software, graphics editing, and data interpretation) and six advanced data analytic competencies—statistical concepts, basic statistical computation, the interpretation of visual statistics, training in how to use statistical programs, the interpretation of Geographic Information System (GIS) mapping data, and the creation of GIS maps. Analysis showed that most of our reporting journalism programs offer instruction in publication and summarization competencies (see Figure 5), and a minority offer advanced analytic competencies (see Figure 6).

The Innovative Programs

Journalism programs in the innovative group gave future journalists balanced and coherent opportunities to learn the nine competencies of analytic reporting and digital production. The programs' instructors described clear instructional sequences and integrated digital-tool uses to prepare students for data analytic journalism. This group included the 22 percent of respondents who reported teaching students in four or more of the six advanced analytic competencies (Figure 6).

We include in this group the 25 percent who reported using graphics imaging software or publications production software daily, and the 20 percent who reported using either database or spreadsheet software daily. These instructors described teaching data analytic skills in a sequenced fashion that involved the strategic use of digital tools: "All students must take courses in spreadsheet use, including basic math in quantitative analytic methods and theory, and in digital data collection." "Students are introduced in the first writing classes to the concept of using numbers and spreadsheets to write a 'numbers' story."

These instructors also often integrated the data analytic work with digital graphic representation tools: "I teach a graphic comm course so the students learn how to take scientific info and present creatively in layouts." "Some [skills], such as numeracy, are both integrated into a required editing course and are part of a required research methods course. New students must now also take a visual communications principles course that incorporates design..."

These faculty members also preferred to teach quantitative and digital skills in a laboratory style: "Hands on. But mix between lectures, classroom teaching, and workshop," "Hands on training..."
in combination with lectures." Such faculty listed a number of approaches to engage reporters in using data to inform their work.

The Mixed Adopter Programs

Journalism programs in the mixed adopter group provided some opportunity to learn data analytic skills and digital tools, but there was no clear requirement; it was often up to the student to find these opportunities. This mixed group comprised the 44 percent (the plurality) of respondents – those who reported that their programs taught students 1 to 3 of the six advanced analytic competencies. This portion includes the 7 percent of instructors who reported that their programs offered students either statistical or production courses, but not both, and the instructors who described teaching data analytic skills mainly through lecture and seminar classes in statistics.

These instructors favored having students learn data analytic skills by taking elective courses in other departments: "Journalism majors are predominantly word-oriented. They shy away from quantitative topics. We encourage them to improve those aspects of their subject mastery through courses elsewhere in the liberal arts college," one professor wrote. Some instructors reported that directing students to statistics training in other departments permitted their department to focus on using digital tools for production-oriented uses, such chart design.

These respondents described their programs' data analytic instruction as often being piecemeal, with students learning data analytic skills largely through what one instructor called "one-day stands" or one-time, specialized courses. One instructor wrote: "Only one person does anything quantitative, so students get a little very basic instruction in one course only."

Another characterized it as: "The usual mess really. Different people do different things in different ways when the topic comes up." A third said that quantitative skills "are taught weakly as units within classes, but not in a coordinated way. We used to have an arrangement with the math department, but the class gradually lost relevance." Some departments handle such training through "guest lectures or by visiting the national bureau of statistics." Several faculty reported that data analytic courses are offered mainly to graduate students: "Undergrads have limited access to these skills," wrote one instructor. The skills are "taught to undergrads who take a sales marketing course," explained another.

The Lagging Programs

Journalism programs in the lagging group failed to provide any opportunity for future reporters to learn advanced data analytic skills, and they used digital tools only for production. This group represents 34 percent of instructors who reported no instruction in the six advanced analytic competencies, and they often described political infighting over whether to include data analytic courses and/or strong student resistance to such courses.
Such instructors described their programs as having, for instance, “no real requirements in analytic skills — just the typical 6 or 9 credits of math. Most students test out of the requirement, but they do not know how to use a spreadsheet and they have no statistical skills or knowledge.”

Others described departments in transition, for which “the issue of quantitative vs. qualitative research skills is a huge debate.” Even as some faculty push to update computer-assisted reporting classes “focusing on math and statistical skills as they relate to journalism.”

Some described efforts to eliminate such courses to focus on remedial writing instruction: “There is no longer a requirement for a quantitative methods course — a huge shortcoming. It was sacrificed for more writing classes since incoming students seem to have less exposure to grammar and writing mechanics than in years past.” But some respondents openly questioned whether such skills were necessary for reporting at all.

Instructors in these lagging programs offered courses mainly in digital production, such as graphic image editing and publications software. Several survey respondents justified the lack of analytic focus by describing journalism students as “math phobic” and faculty as lacking expertise in quantitative analysis and associated digital tools.

Faculty members reported many students lack basic skills calculating percentages. “Many students resist taking courses in statistics,” one instructor reported. “We do not emphasize it enough. Faculty do not know the subject well enough to teach it and make it a priority. I blame it on faculty with other interests,” wrote another. One instructor reported: “These skills are I believe taught by a couple of professors who are considered ‘tough’ and not particularly popular with students.”

Are there significant differences in the levels of data analytic and digital training that journalists in the U.S. and other countries receive?

There was evidence that non-U.S. schools more frequently incorporated data analytic instruction in their departmental offerings than U.S. schools. For example, we found that 57 percent of U.S. respondents reported that their programs directed students to take such courses outside their departments, but only 27 percent of non-U.S. respondents did so ($\chi^2 (1, 217) = 19.35, p < .001$). We also found significantly more non-U.S. instructors than U.S. instructors reported that their journalism students must take proficiency tests in data analytic and/or digital skills to graduate ($\chi^2 (1, 198) = 6.82, p < .001$). Both of these results are supported by stepwise regression analysis; in both cases, the U.S./non-U.S. distinction was a significant predictor ($p < .05$) when entered last into the regression equation.

What are the characteristics of U.S. journalism school programs that offer the highest level of data analysis and digital training?

In the U.S., program size seems to matter in only one respect: those with fewer than 150 enrolled students were significantly more likely to publish standards for quantitative analytic skills ($\chi^2 (1, 72) = 7.13, p < .05$). We also found that more selective programs that required an additional general application from students for admission also significantly taught more basic statistics ($\chi^2 (1, 72) = 9.35, p < .05$); about 51 percent of U.S. respondents reported that their journalism program had separate admission standards. Here, as before, we have reported only those chi-square results that are supported by stepwise regression analyses. One relationship that was just shy of statistical significance suggests that U.S. instructors with more analytic professional background taught such skills more frequently ($\chi^2 (1, 70) = 3.67, p = .055$).

What does it mean?

Our study describes the different options available to journalism students for learning high-level data analytic skills. Innovative programs offer hands-on, coherent curricula that develop data analytic skills over time and through multiple departmental courses. Mixed adopter programs make data analytic learning opportunities available, but it is largely up to the student to seek them out, and most often, the student will be learning outside of the department and required to figure out how to apply such skills to journalistic work. Lagging programs offer few data ana-
lytic learning options and are marked by internal disagreement over whether to emphasize such skills and therefore risk alienating “math-phobic” journalism students.

Our study indicated that U.S. journalism programs offer fewer departmental opportunities and testing requirements for data analytic education than do non-U.S. programs. This finding offers some support for the view that there is cultural resistance in U.S. journalism schools toward formalizing requirements for data analytic training. We saw ample qualitative evidence about this resistive mind-set: concern about “mission drift” away from basic writing skills, fear of alienating prospective students, and worry about finding properly trained faculty. From these results, it seems fair to say that U.S. accredited journalism schools face difficult and risky choices when contemplating how — and how much — to offer data analytic education to students.

Our study, however, also showed that there are programs that have worked through such difficulties so more of their students may be trained in the data analytic skills that consistently distinguish the most compelling journalistic work. The accredited U.S. journalism programs most likely to emphasize data analytic instruction are smaller, more selective, and include faculty members with more experience and expertise in data analysis. Future research might examine the path these innovative programs pursued so others may follow.¹

Directions for Further Research

We believe this prototype online survey indicates that the basic methodology is sound and that, with modification, it can be taken to a higher level of sophistication, detail, and statistical validity, all of which will produce greater insights into the strengths and weaknesses of global journalism education in the Digital Age. Therefore, we suggest the following aspects of future research:

Phase I – Expanded team of research partners.

This original effort was carried out with minimal financial and staff support. Further efforts should seek cooperation from a broad group of international organizations of journalism and social communications educators, e.g. the ICA, the Association for Education in Journalism and Mass Communications, FELACA and the European Journalism Training Association (EJTA) and their counterparts in the Mideast, Africa, Korea, India, Australia and Southeast Asia. Ideally, these partners would be willing to contribute the e-mail addresses of their members and help in the marketing/promotion effort to recruit respondents.

Representatives from each organization should participate in creating the survey instrument. (It would be possible to have a generic set of questions and additional questions that would reflect regional- or language-specific interests.)

A sub-committee should evaluate many different online survey sites to (a) determine what new features have been added since 2005; (b) determine a site’s ability to control and post the response data for the public, mindful that there will be issues of confidentiality to be addressed; (c) the cost-benefit aspects of a particular site; and (d) if it is possible to back-up the questionnaire and response data, and archive the questionnaire and response data indefinitely but at what cost.

Phase II – Testing of survey instrument in all languages

As indicated above, this testing should walk through the entire process, including downloading and analyzing the response data in all languages.

Lessons learned from this prototype survey

- The survey has 50 questions, some of which only call for demographic data. We initially thought that this would be too long to expect respondents to complete it in one sitting. Consequently, we took advantage of FormSite’s coding tools to allow respondents to log in, complete part of the survey, depart and then return at a later time to complete the survey. This 50-question length turned out not to be a problem, however, and we would have saved a lot of time cleaning the data of partially completed responses if we had simply created the pages to present the total survey. That said, a 50-item questionnaire is probably pushing the limit for online surveys.

- When designing the survey, be sure to work through the complete process including downloading and bringing into a spreadsheet and run the data all the way through the analysis, including creating all potential graphics.

- Don’t use HTML code to change the look, i.e. font, color, type size, of the survey. That code can get embedded in the response data and requires a lot of time to clean.

- Be sure that the questions and responses are identical in ALL the surveys regardless of the language differences. Without this, it is impossible to download and merge the responses cleanly.

- Note that prior to the release of Excel 2007, all spreadsheets are limited to 256 columns. That means that downloading the response data in many online surveys cannot exceed that number of columns. There are a number of possible solutions: (1) reduce the number of questions and their response sub-sets; (2) if your survey tool lets you download more than 256 columns of data in a generic format (i.e. comma-delimited fields) create multiple spreadsheets in a single workbook and, where desired, link from various pages to the others; (3) export the data to a database application or to a statistical package like SPSS or SAS.

Phase III – Recruit international, online respondents

Ideally, this concentrated 30-day phase would rely on a global marketing effort, perhaps even utilizing traditional techniques of advertising in appropriate trade magazines, journals, newsletters, etc. The message could try to build anticipation and focus the journalism education community’s attention on a specific day or week when the survey will be available.

Phase IV – Begin statistical analysis of online responses

This would begin the traditional statistical analysis, but with attention paid to the stratification of responders, especially as they reflect – or fail to reflect – the profiles of the affiliate organizations, university and department type and size in an effort to achieve greater statistical validity.

Phase V – In-depth phone interviews with sample of partial responders

This phase would help ensure appropriate sample size, plus give us an opportunity to harvest data at a greater and more specific depth. For example, we have experienced cases where a dean or department chair says, “Oh, yes, we teach computer-assisted reporting,” but the that person does not really have a good grasp of what that subject entails.

Phase VI – On-campus visits

We would draw a stratified sample of 12 to 20 journalism departments (mostly from the U.S., but given the investigators’ propensity for travel, this could easily be extended to non-U.S. departments) and conduct in-depth interviews with all of the permanent and adjunct faculty members. These interviews would reveal even more detail about how, what and why these educators teach – or do not teach – as they do. Also, we could discover greater details about the personal digital habits of this sample: How much time do they spend on downloading and testing new software, exploring new data sites, examining new methodologies for learning, etc.
• If the same survey is going to be submitted in multiple languages, use some prefix with each question's number to differentiate when capturing the images of the charts, i.e. "EQ1"=Question #1 in English, "P4"=Question #4 in Portuguese, etc.

• Multiple languages mean different cultures. But also, one language doesn't mean same culture. In international studies it will be very useful to direct respondents to a version of the survey that will group them by country or nation until Formsite allows adding up cross forms. For example, some respondents in Argentina might chose either the English or Spanish survey; currently it requires a bit of time to integrate both those responses into a "national" or "regional" file.

• Do not use a text "comment" function as a possible response as in EQ41 and EQ42. Doing so generates bogus response data. If comments are desired, always try to separate them from the specific question. That is, number them in such a way that they can be related to a question, but not tightly tied to the statistical results.

• When asking about nations, use a standard drop-down menu of all the world's nations. That way, when someone selections his/her country, all the spelling is the same, which makes for easier sorting and analysis.

• We do not believe that the offer of an iPod or MP3 player was necessary to draw respondents.
Appendix 1: Survey Tools

We developed the study collectively with our U.S. and international colleagues by using an online groupware applications, primarily one called SocialText (www.socialtext.com). SocialText is among a new class of digital tools sometimes classified as Web 2.0 (or "cloud computing") applications. These applications represent the circa 2005+ trend to move digital tools off the individual desktop and on to online web sites, especially with broadband connections. This is a process akin to the decentralized applications and data of the early Internet years in the 1960s, but with far richer user interfaces, ease of use and access to data. At the moment, these Web 2.0 tools are often free or available at low cost. SocialText was free for non-profit organization and permitted up to five unique users to the group's documents. We devoted approximately 100 hours spread over six weeks to developing and testing the user interface of the questionnaire.

The online questionnaire was created and hosted on the FormSite (www.formsite.com) servers. FormSite is just one of many online survey sites that can range in price from free to hundreds of dollars per month. The cost is usually determined by the size of the questionnaire(s), the number of responses and, in some cases, the form and richness of data delivery and analytic tools available. All of these survey applications are capable of handling any language based on Roman character sets. And many, like FormSite, are capable of using multi-byte (Unicode) character sets required for the Arabic translation. (We were not able to find co-investigators to translate the survey into Korean, Chinese or Japanese, so we do not know if those character languages would work on the FormSite platform.)

All of these sites usually require at least a minimal knowledge of HTML coding to appreciate what is going on behind the monitor screen, but they compete in terms of the range of question formats offered (fill-in an open-ended text box, select one or multiple choices from check-off boxes or drop-down menus, etc.) and the data downloading and online tools available. Formsite, for example, provides the ability to display visual statistics of question responses [Fig. 1, etc. go about here] in a variety of forms: bar graphs; pie charts and "text graphs."

As this is being written in the fall of 2008, there is an increasing velocity of development of Web 2.0 tools. At the moment, a couple of sites have been created as jumpstations to an interesting cornucopia of utilities. See www.allthingsweb2.com/ or www.philb.com/iwantto.htm

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Fig. 1: FormSite Bar Graph

EQ1: What is the level of the institution at which you primarily teach journalism or communications?

- Junior college: 6 responses
- 3-year degree university: 16 responses
- Grad school: 14 responses
- Non-university or vocational school: 4 responses
- Mid-career training program: 1 response

Fig. 2: FormSite Pie Chart

4-year degree u. (47)
3-year degree u. (13)
Grad school (5)
Non-university (5)
Mid-career training (4)
Alternative (3)

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FormSite also has an online crosstab analysis display tool for responses to questions so long as they are both in the same questionnaire.

One problem we had with the FormSite data was that it was not easy to download more than 256 columns of data. We eventually found a work-around to this problem in a user’s tips column at PC Magazine, but the problem was still one of our creation. We had done a fair amount of modification to the code the survey to change the look-and-feel of the online questionnaire. And we ran numerous test drives of users completing the survey. But we failed to walk the process completely to the end, that is downloading and fully analyzing the test data. Lesson learned. We also learned that translating the questionnaire from Spanish meant adding an additional response field to one of the questions. Doing so created a problem when we downloaded the data from all the languages and wanted to do some cross-lingual analysis.

The major shortcoming of the FormSite application is that its online analytic tools did not reflect the number of “no responses” to individual questions. Consequently, the analyst had to download the results of the survey as either an Excel file or a comma-delimited ASCII file and do a good bit of analysis by hand. (The graphics in previous sections are designed from our analysis of the data, which took into account the “no response” issue.) Such analysis at the desktop level is always a good idea; the more intimate one can become with the data, the more likely unanticipated but interesting insights are derived.

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Appendix 2:
Quantitative methods are no longer rare in European journalism curricula

By Flemming Svith¹

This article suggests that the handling of digital data and analyzing it has become part of the journalism curriculum in many parts of the world. This is based on the author’s experience during the last 10 years in Scandinavia while training mid-career journalists and students at the leading 4-year, degree-granting journalism program in Denmark and on this English-language survey with responses from 27 different journalism schools in 14 different countries (not including the United States).

Obviously, journalists have not always been able to manage digital data or conduct analysis using software programs as spreadsheets, databases, geographic information systems and statistics. Prior to the early 1980s, there were no computers or electronic data in the newsroom. While analysis has always been a part of journalism, in most cases it was not a very conscious or systematic process. When some pioneers started using quantitative methods for understanding greater amounts of data appropriate telling the journalistic story, there were neither personal computers nor easily available electronic data. Phil Meyer, for example, used mainframes and punched cards in the late 1960s. The possibility of handling greater amounts of data in mainstream journalism came with the personal computer and the Internet as a courier of electronic data.

What happened when the computers, software and data became available differs from country to country? In Denmark, there were still editors in 1999 who forbid their news staff to use the Internet, arguing that to do so was a waste of time. Several of the nation’s newspapers, including the biggest daily Jyllands-Posten, shifted from mainframe terminals to personal computers in 1999, not because it gave better opportunities to collect and analyze information, but because of the perceived threat from the so-called “Millennium Bug” as the year 2000 approached.

Not only in Denmark were journalists lagging behind. The old craft was only slowly moving toward the information age. "I recognized the need for a tutorial guide in this field when I started working with computer-assisted reporting in 1986, but while I and others struggled to teach ourselves, I assumed one would eventually come about. Almost a decade later, many beginners are still asking where they can get such a book, showing me that the need has not only remained but has escalated." ²

When the personal computers first arrived and the digital data was just waiting to be picked up, journalists did not know what to do. They had for years learned qualitative methods as interviewing and reading documents, but quantitative methods had not been part of the journalism curriculum in most countries. I suppose that journalism students only were taught how to handle quantitative data in no more than one or two European countries.

But in some countries that started to change around the beginning of the new millennium.

In Denmark, the catalyst for that change was DICAR - Danish International Center for Analytic Reporting (http://www.dicar.org/). The Center, started in the mid-’90s, focused on training mid-career journalists in computer-assisted reporting. DICAR’s initial work was inspired by the U.S.-based National Institute for Computer-Assisted Reporting and its director, Brant Houston, since 1997, has conducted multiple training sessions in Denmark. The Danish School of Journalism (http://afdelinger.djh.dk/international/) began to teach quantitative methods in 2001, beginning with a two-week course in spreadsheet exercises using material produced by DICAR.

The Norwegian Institute of Journalism (www.ij.no), which is a knowledge and resource centre for media practitioners, held courses in digital numeric data handling starting in 2001 as well. Its

¹ Flemming Svith is the Former Training Director of the Danish International Center for Analytical Reporting. He coordinated the promotion of the survey among his friends and colleagues at various journalism schools in Europe, and analyzed some of the data from non-U.S. English-language respondents. He may be reached at flemming@svith.net

² Brant Houston, Computer-Assisted reporting, 1996: xii.
classes concentrated on using spreadsheets (Excel), database software (Access) and geographic information systems software (GIS).

In Germany, the first conference on computer-assisted reporting was held in Hamburg in October 2003. Some of the participants have organized additional conferences and training. Sweden, as well as the Netherlands, was doing some training on digital data analysis with using spreadsheets starting in the early 1990s.

The responses to this survey, conducted in the late fall in 2005, supports the impression that quantitative analytic methods have been introduced or even integrated into the curriculum of journalism in the recent years. The survey does not tell when the quantitative methods were introduced as part of the curriculum, but it gives a picture of the situation in 2005.

According to the responses from 36 teachers in journalism working at 27 different schools, only one school is not preparing the students to do university-level work with quantitative analytic skills.

That said, a majority of the schools are preparing the students only adequately or just below, when their ability is rated on a seven-point scale by the respondents. It should be noted that only at a few schools are the students viewed as anything merely approaching “extremely well-prepared.”

The schools are in 14 different countries, and there is no pattern regarding the level of quantitative analytic skills due to country of origin.

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<tr>
<th>Table 1: Quantitative analytic skills: Please rate your student’s ability to do university-level work</th>
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<tr>
<td>Scale</td>
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<td>---------------------------------</td>
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<td>1 Not at all prepared</td>
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<td>2 Adequately prepared</td>
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<td>3 Adequately prepared</td>
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<td>6 Adequately prepared</td>
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<td>7 Extremely well-prepared</td>
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<td>Avg.</td>
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<th>Table 2: Quantitative analytic skills combined with nation of respondent</th>
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<td>Nation/Scale</td>
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<td>United Kingdom</td>
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<td>Total</td>
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The countries with the least prepared students are also the countries with the best prepared, so ability seems to be not a matter of nation, but rather a matter of school. It also could be a matter of the teacher who answered the questionnaire. What knowledge did the respondent have about quantitative electronic methods and how were the words “your students” interpreted? And there is a question about the respondents teaching these methods themselves or if they are - or could be - done by a colleague.

The respondents from 24 of the 27 schools at least have appropriate confidence in teaching how to apply quantitative and digital skills to journalistic practice. The pattern of a slightly higher confidence level matches higher student skills, but three teachers rate themselves as having a high degree of confidence in their quantita-
tive and digital skills (scale: 7) and the students’ preparation as nearly not existing (scale: 2). This suggests that the respondents have knowledge about the quantitative and qualitative methods, but they are answering on behalf of the school.

The data support the view that in most countries represented in the non-U.S. group of English responses, quantitative methods are taught to the students at some basic level, but the level depends more on practices of the specific school rather than practices typical of a nation.

**Not a hot topic**

Quantitative methods are, on the other hand, not the main issue for any of the journalism schools. While half of the schools require a written skills test before the student is enrolled, only one school had a test in quantitative skills.

During the student journalist’s education, nine schools have tests in quantitative analytical or digital communications skills, but the skills are not tested separately, only as an integral part of journalistic projects. As one respondent expressed it: "Courses that either require or instruct in these skills are a part of our program. Thus they must master them to graduate."

The respondents were divided on the need and value of certification of journalism students’ digital and analytic skills as part of the requirements for graduation. The majority do not want to make specific tests for the skills, but regard them as just one tool for journalism. One point of view on a specific test was: "[I] oppose [certification examinations] because it is part of their degree anyway. It is as much part of their degree as writing. They are assessed and have to pass in the same way they do any other part of the course."

Another point of view: "I would support [certification exams] because as a journalist I have had to use these skills and appreciate their value. I also believe that these are valuable transferable skills and worth recognition and certification as such."

At the majority of the non-U.S., English-response schools, the quantitative skills courses are electives for the students, and often the skills are taught outside the journalism academic unit. It suggests that the integration of these skills with journalism could be a problem; only four schools have courses specifically about using digital analytic tools and applications in the journalism program.

**An integrated topic**

Journalism is a practical profession or a craft, and that is reflected in the way respondents indicated quantitative analytic methods should be treated in the education of journalists. This subject matter should not be placed as small islands separated from the journalistic mainland in the curriculum.

The opinion across continents, countries and schools is that integration of the skills is the most adequate way to teach the students, and that it should be hands-on training. "In my experience students learn best by DOING. These skills should be taught with practical, real-life outcomes in mind, e.g. publishing a newspaper or website and thereby completing course assessments and requirements."

There is some discrepancy between the expressed ideal of integration and the real world of teaching these skills. Only six schools of the 27 have journalism programs that offer any courses specifically about using digital analytic tools and applications. It could indicate that teaching quantitative, analytic and digital skills is fairly new at the schools, and that this curriculum still needs work to achieve integration and interaction with traditional journalism.

**Numbers versus text**

A few respondents reflect the long struggle between the two main traditions in science: the hermeneutics and the positivist. A struggle is reflected in some opinions as a warning against to much focus on quantitative methods on behalf of the qualitative methods.

"I believe they should be taught alongside a range of other analytical skills...qualitative skills, if you like. Separating them out is
a mistake and can neglect the importance of context in analysing information using quantitative approaches alone.”

“So that students can see their utility in their chosen career and not as though quantitative skills are some mystical key to the universe. Psychology has almost destroyed itself by valorizing numbers over understanding emotions”

The move toward using quantitative methods was motivated by the changed interaction between journalist and sources, as augmented with the computer and the Internet. Even if quantitative methods have been shown to be appropriate as a complementary approach to journalism, many journalists have resisted the commitment due to problems learning new methods. Journalists may not differ from academic researcher in their way of work.

"Few researchers would want to argue (or admit) that their conceptualizations and designs are driven by certain methods that are preferred as such.” “The complementarity of qualitative and quantitative methodologies in media and communication research.”

The resistance to quantitative methods is also based on the assumption that number-based stories do not give a valid picture of the truth. But despite the tradition and the habits of journalists, the quantitative methods have found their way into the education of journalism and into the newsroom.

Numbers and calculations, which are closely connected to the journalist’s role of gathering facts, may be seen as a tradition, which is more Anglo-American than European. “European journalism is more inclined to comment and evaluation, to interpretation and judgement and pays more attention to ‘literary’ writing than to the simple and terse telling of the facts.”

The quantitative methods of journalism may be seen as another impact of the Anglo-America practices of fact-centred reporting, which in turn has replaced the European journalism of expression.

Newsworthy numbers

Yet another reason for these changes in approach could be traced to the acquiring of quantitative methods. Number-based research by journalists is valued as having higher newsworthiness than text based research. As one scholar wrote in 2005: “In this way, [our] study also offers a quantitative test of what in-depth interviewing had suggested, namely, that journalists perceive greater news value in quantitative research, particularly when focusing on the issue of sample size. Moreover, this [the author’s] study suggests that journalists are susceptible to the same psychological biases as others, being more persuaded by numerical data.”

In others words, according to the U.S. journalists who Schmierbach based his research on, quantitative methods give more newsworthy results than qualitative methods in the judgement of journalists. The same pattern is seen in Europe, at least in Denmark, which I am most familiar with. Not a day passes without headlines with the lead based on “xx percentages.” The numbers newsworthy could easily be a result of a journalist’s shortcomings, instead of the actual content of different scientific research. The teachers at the schools of journalism find it nearly as difficult to teach students to interpret quantitative information as to give them skills to handle the numbers.

The methods of digital and quantitative analysis began more than 30 years ago in United States. The history of journalism has shown the great impact of what are perceived as Anglo-American journalism techniques, with emphasis on facts and – especially in the last 5-10 years - the special methods incorporated in the notion Analytic Journalism (Computer-Assisted Reporting). The impact continues. As one respondent to the survey commented regarding the way quantitative analytic skills should be taught put it: "In a more systematic ways than is currently the case in Australia. We lag behind the U.S. and need to catch up.”

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3 Jensen, Klaus Bruhn (2000)(ed.), A handbook of Media and Communication Research: 256
Appendix 3:

"The teaching of social communication and journalism in Latin America in the digital age: Tools and skills to navigate in uncertainty" ¹

Maria Isabel Neúman Sega²

Abstract:

The mass media and the professional practice of journalism are experiencing a crisis of credibility and legitimacy in a context of globalization and uncertainty. Multiple and complex factors are influencing all aspects of the media. The intensity of global information flow and audience access to new avenues to receive information — with potential for interactivity and participation — are driving a rethinking of the traditional roles of the media and journalists.

Faced with these broad, unprecedented and complex situations in handling large volumes of information circulating through converging technologies of communication and information, what new competencies and skills should professional journalism be developing? How can we maintain the accuracy of the information when the sources are multiplying, their identity is indefinite and reality appears mediated? Can journalists cope with the complex political and ethical situations evolving without developing new strategies informational?

This paper presents the first results from the Latin American region of an international study that a group of professors of journalism in several countries developed to establish how educational institutions dedicated to training journalists are taking on this challenge. What new knowledge, analytic tools and information management systems are offered to students to continue journalists’ duty to fully inform the communities we serve? How are these educational institutions facing the realities of a digitized world from the perspective of traditional learning systems?

A pilot study, this survey was answered by 93 teachers from 46 schools of Social Communication in 12 countries in Latin America. The survey suggests that the institutional response to the Digital Revolution has been very conservative and that strategies and teaching tools evolve very slowly. Teachers surveyed (89 percent who have worked as professional journalists and 44 percent have a teaching career of more than 10 years) described the infrastructure of information technology in their schools as acceptable, even though they consider the financial support from their institutions to be lacking. They argue that their students are adequately prepared with computer skills to handle computer applications necessary to perform work at the university level, but those same students fall short in their quantitative analytic skills. More than 70 percent of those same teachers use quantitative methods only “occasionally.”

Introduction:

Mass media and the performance of professional journalism are going through a crisis of credibility and legitimacy around the world. Multiple and complex factors are influencing the media and creating an uncertain context for their existence and future. One of the challenges is the intensity of world-wide information flow and the public’s access to new channels to receive information with the possibility of interactivity and participation.

Confronted with this scene, what new competencies and skills must media professionals develop? What should be the role(s) of educational institutions dedicated to training journalists? How do we maintain the veracity of the information when sources – both clearly known and others less so – multiply daily, and the reality appears mediated? Could the journalists face the complex political and ethical situations presented without developing new information gathering and analytic strategies?

¹ Originally presented at the XII Latin American Meeting of Schools of Social Communication. Bogota, September 2006. This presentation is part of the project "Quantitative and Digital Skills of Journalism and Communications International Educators", funded by the John S. and James L. Knight as part of the Carnegie-Knight initiative for the future of education in Journalism. Translated by the author and J. T. Johnson and edited by J. T. Johnson. The original Spanish version of this paper can be found at http://tiny.cc/zw6EN.

² Professor and Director, Research Center of Communication and Information (ICCI), Universidad del Zulia, Maracaibo, Venezuela.
Although the mass media evolve in a complex, world-wide context affected by multiple factors, the task of the journalist stands on two fundamental pillars: the ethics of the profession and the skills and competencies of journalists handling the tools of the craft. This paper analyses the performance of the schools of social communication and journalism in Latin America in terms of their development of skills taught to beginning journalists, skills that are useful in the face of the great volume and complexity of the information that journalists must process in order to fulfill a duty that implies a high social commitment.

The practice of journalism is intimately involved with the practice of democracy and the well-being of the society. The ethical component in the exercise of this profession is a determining factor, but that practice also demands that the journalist, first, look for and to discerning the truth. At the moment, that search and that discernment demand tools more complex than those that have been used until now by the traditional media.

**Volume, flow and transparency of information**

The quantity and speed of production of information and knowledge at the present time is without precedent. Data published by the United Nations illustrate this (UNESCO, 1978). In 1750, for the first time in the history of the humanity, the amount of produced knowledge was duplicated. At the beginning of 1900, implicit with the Industrial Revolution, it is doubled again. Fifty years later, at the end of World War II, it doubles yet again, and again in 1989 and it was estimated that from 2007 on it will duplicate every 10 years. That was not to be. Peter Lyman and Hal R. Vary of the University of Berkeley, California, in their study “How Much Information? 2003” stated that between 1999 and 2002 the production of information and knowledge already had duplicated again (Lyman and Varian, 2003). They also point out that the digital information ultimately is stored in four formats: paper, video, magnetic and optical media and transferred by four electronic channels: telephone, radio, television and Internet.

The volume of information to be processed by journalists no longer can be managed and analyzed with manual methods; rarely can it be postponed until the next “traditional” deadline. Contemporary news has constant right-now deadlines as the media attempts to keep up with the rhythm of the events and to update them, not only on a daily basis, but as the information becomes available. Consequently, journalists cannot efficiently, accurately and ethically carry out the job of informing their communities with the traditional tools of pencil, paper and a typewriter or film camera?

Also, there is an unbalanced flow of world-wide information, especially since the ’80s. The MacBride Report (UNESCO 1978, 1980) explains the disproportionate amount of information that the different world regions contribute to the overall content pool for the global media and their news agendas. This requires the journalist to make extra effort to at least consider global news pertinent to their local needs in addition to the torrent of local and regional information.

The new tools and access to the information are also available to citizens through the telecommunication networks. This new transparency in the public sphere has the potential to work against the traditional monopolistic institutions that control the media. E-government and thousands of web sites created by individuals, institutions and private corporations publish their information in Internet. In doing so, they constitute an informative alternative for the public. Also, the phenomenon of personal publications through “blogs” is revolutionizing the social information networks. How should the journalist behave in this scenario of new information alternatives?

**The institutions that form journalists in Latin America**

In April of 2005 there were 1,026 academic units teaching journalism and/or social communication in the 23 countries of the region, according to the Latin American Federation of Faculties of Social Communication, (FELAFACS). Of these faculties, schools or programs, 33.9 percent were in Mexico; 31.2 percent in Brazil and the other third distributed in the 21 remaining countries. (FELAFACS, 2005)

That number reflects rapid growth. In 1970, according to Professor Jorge Fernandez, of the University of Navarra, there were only 73 academic units in Latin America teaching journalism and social communications. (Fernandez, 1970).
In order to understand the trajectory of education in journalism and/or social communication in Latin America, it is necessary to take into account a turning point in the evolution of the journalism schools. A UNESCO report in 1957 led to the creation (in 1960) of the International Center of Superior Studies in Journalism for Latin America (CIESPAL). CIESPAL, in turn, pressed for programs and schools of “Social Communication” to elevate the scientific level of the education in journalism.

The motivations, directions and different forms of that intervention are part of the evolution of the Latin American schools of journalism. Although CIESPAL was the catalyst for a movement that elevated the scientific level of education in communications and the professionalization of journalism education, the system of social communication education has evolved at a speed and in a direction that surpassed the concepts established in the last century.

Documents of the time indicate that the objective of UNESCO and CIESPAL was to provide journalists or communicators with the “ethical and scientific capacity to be an intelligent and honest witness of reality.” (Fernández, J. 1970:118) With this objective, a curricular proposal and a strategy of implementation in the region was designed. The curricular proposal called for the introduction of subjects that explained social communication as a social phenomenon with scientific categories. For this reason, subjects like the Sociology of Communication, Theory of Communication, Psychology of Communication, Methodology for Media Research and Public Opinion - from the theoretical-methodological axis - appeared in the curricula.

An extensive program of training was organized in which many professors of the Latin American schools participated. These courses were taught by outstanding professors of foreign universities such as Raymond B. Nixon, David K. Berlo, Jacques Kayser, Joffre Dumazedier, Gerhard Maletzke, among others. Their books were translated into Spanish, and by 1968 there was a library of 53 texts to be used at the training centers.

At the end of the ’70s, roughly 60 percent of the schools of journalism in Latin America were, in different degrees, in accord with the CIESPAL proposals: changing the name of “Journalism” to “Social Communication,” introducing subjects related to theories of communication, and initiating research on media and public opinion. The schools also had increased in number: from 37 schools in 1960 to 73 in 1970.

The ‘80s brought a new phenomenon to the Schools of Social Communication: the profession of “Social Communicator” became very attractive for the younger generation. The impact and penetration of media and its status and social credibility made the journalist a witness of the first order for social development. As Martín Barbero states: “Nowadays communication is the space from where society is thought about and understood.” (1990)

Applicants seeking to enter the schools of social communication in Latin America increased to the astonishment of the educational institutions, which were accustomed to training students in law, medicine or engineering. This demand is illustrated by the number of new schools that rose to 1,026 by 2005.

The demand, however, does not correspond with the availability of jobs in the professional workplace. Although the number of information companies has increased through the years, in almost all the Latin American nations more journalists are graduated from the schools of social communication than the traditional mass media can absorb.

However, the attraction for the young students has not diminished, which should stimulate researchers to study the phenomenon in order to determine what the graduates are doing when they are not employed in the mass media, press offices and advertising. What are the benefits to the students who have a degree in a profession without job openings?

The international study of analytical and digital skills of international journalism and communication educators.
A. Motivations and methodology

This paper is part of the research project: “Quantitative and Digital Skills of International Journalism and Communications Educators” (2005) developed by communication investigators from different countries under the direction of the Institute of Analytic Journalism, Santa Fe, New Mexico. The initial motivation of the study was prompted by a suspicion that there is an absence of analytical skills
among the journalists of the United States, a condition reported by several studies (Curtin & Maier, 1999; Maier, 2001; Merritt, 2005; Meyer, 2004; Paulos, 1995). That hypothesized shortcoming suggests a problematic element, in light of the imminent demands for new skills and abilities on the part of journalists.

Analytic and quantitative skills are understood here as the set of capacities and abilities that a journalist must develop to research and retrieve, process and interpret the complexity and volume of quantitative and qualitative data from which a journalist must produce a news story. These skills should not be understood as solely the handling of statistics and data-processing software, but rather all of the evolving digital tools that could allow journalists to understand asynchronous and geographically dispersed realities and to put them under analysis.

The questionnaire seeks to answer the following questions:

- Do the teachers in schools of journalism and/or social communication believe their students need to develop analytical and quantitative skills?
- What level of digital and analytic skills do the teachers themselves possess?
- Which of these skills do they teach their students and at what level?
- Do the teachers use these analytical tools in their work as professional journalists and in the classroom?

Below are the first results of the pilot test in the Latin American region. The online survey was answered by 93 teachers from 46 schools of Social Communication in 12 Latin American countries. The questionnaire was located on the corporate server Formsite.com, which specializes in providing the tools to create and administer online surveys. This survey was available from September 15 to December 15, 2005. Respondents were recruited through personal e-mail messages three times with a lapse of 15 days between each request. The call was made by researchers from the Latin American Federation of Schools of Social Communication, (FELAFACS), the Research Center for Communication and Information (ICCI) at the University of Zulia, Maracaibo, Venezuela, and the Brazilian Society of Journalism Re-

<table>
<thead>
<tr>
<th>Country</th>
<th># of responses</th>
</tr>
</thead>
<tbody>
<tr>
<td>Brazil</td>
<td>35</td>
</tr>
<tr>
<td>Venezuela</td>
<td>22</td>
</tr>
<tr>
<td>Argentina</td>
<td>11</td>
</tr>
<tr>
<td>Perú</td>
<td>6</td>
</tr>
<tr>
<td>Mexico</td>
<td>3</td>
</tr>
<tr>
<td>Colombia</td>
<td>2</td>
</tr>
<tr>
<td>Puerto Rico</td>
<td>1</td>
</tr>
<tr>
<td>Paraguay</td>
<td>1</td>
</tr>
<tr>
<td>Panamá</td>
<td>1</td>
</tr>
<tr>
<td>Martinica</td>
<td>1</td>
</tr>
<tr>
<td>Honduras</td>
<td>1</td>
</tr>
<tr>
<td>Ecuador</td>
<td>1</td>
</tr>
<tr>
<td>Did not indicate</td>
<td>8</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>93</strong></td>
</tr>
</tbody>
</table>
**Most significant findings in Latin America**

Following are some of the most significant findings related to trends in the responses from Latin America. More than 80 percent of the teachers surveyed worked in academic institutions with programs that offer degrees in 4 to 5 years and do not exceed 150 students who graduated in the previous term.

*Note: The question in the English survey asked how many students were enrolled. The Spanish version asked how many students graduated in the last term. This different terminology somewhat reflects the large size of many Latin American universities.*
Nearly 60 percent of respondents believe their students are not adequately prepared to perform work at the university level in terms of their quantitative analytical skills. On a scale of 1 to 7, that 60 percent reflects levels 3, 2 and 1 (inadequately prepared). On the other hand, those same professors believe that 58 percent their students are adequately prepared to work with computers.

Sixty percent of teachers assessed the overall quality of its technology infrastructure as an acceptable academic unit and higher than acceptable. However, 61 percent claim that financial backing is less than acceptable in their unit’s drive to improve academic digital instruction.
The respondents were also asked how many years they had worked as professional journalists and how long they worked — either full or part-time — as professors of journalism or social communications.

In these questions, it is noteworthy that more than 30 percent of respondents did not reply. The 70 percent who responded were mostly located in four- or 5-year institutions and skewed toward older (14 percent had been teaching for 15 years or more). Fifty-seven percent had experience as a professional journalist, but 10 percent had never worked in that field.

We also asked how frequently the respondent uses—or has used—skills and quantitative methods or analytical tools in his current career as a journalist? We also wanted to know how frequently respondents use or have used similar skills and quantitative methods in their work as professor of journalism?
Again, about 30 percent of the professors did not answer the question on the use of digital tools and skills by the teachers themselves, both in their role as professional journalists as teachers. Those who say they "never" used these tools tended to be those with more professional experience. One could deduce that there is a polarization between those who use digital tools versus those who do not use them. The respondents who reported "low use" or "no use" — plus those who did not respond to the question — represent more than 60 percent of respondents to both questions.

Conclusions

If the assumption is correct that digital tools and analytic and quantitative skills are essential to tackle a new stage in journalism, Latin American students are not being prepared for the future of communications. The trend is in sight: this poll found that teachers in schools of social communication and journalism in Latin America have not felt the pressure of the Digital Revolution. Perhaps this is because the shift to a digital world is not yet very tangible and visible in our Latin American media. Likewise, it seems that institutions responsible for educating social communicators have responded in very conservative manner; their strategies and teaching tools evolve very slowly.

The risk posed by this situation is that social communicators are not fulfilling their social mission of informing, in a timely and truthful manner, the public they serve. The dynamics of globalized media are relegating the journalist to a mechanical, superficial function and giving way to a form of professional activity based on anecdotes and superficiality. Eventually, the public will look for new ways to learn and draw their own conclusions.

References


Appendix 4: Survey Questionnaire

IMPORTANT
If you wish to fill in the survey a few items at a time, or during different sessions, protect your work by first creating an account for yourself by clicking on the link below. It is free. Just click on that link below, and then on the link "Go to http://www.formsite.com".

On the right side of the second page, select "New Account," making sure to remember your login name and password.

New Users / Returning Users CLICK HERE

When you return, you can scroll down to the last-answered question and continue.

Basic Data About Your Program

1) What is the level of the institution at which you primarily teach journalism or communications?
   - Junior college
   - 3-year-degree university
   - 4-year-degree university
   - Grad school
   - Non-university or vocational school
   - Mid-career training program
   - Other

2) Approximately how many students were majoring in journalism or communications during the most recent academic term?
   - 0-25
   - 26-75
   - 76-150
   - 151-250
   - 251-500
   - 500+

3) Does your journalism or communications program require its own application process for students, something in addition to university admission?
   - Yes
   - No

4a) Please select the skills or experience your program requires of enrolled students: (Check all that apply)
   - Professional experience
   - Written skills
   - Verbal skills
   - Quantitative computation and reasoning
   - Digital technology proficiency
4b) If you answered "Yes" to any of the items above, please briefly describe how students demonstrate meeting those requirements:

5) Please rate the overall quality of the technological infrastructure in your academic unit (e.g., e-mail, networked computers, software access, scanners, Internet connection, academic unit Web page).

<table>
<thead>
<tr>
<th>Outstanding</th>
<th>Acceptable</th>
<th>None</th>
</tr>
</thead>
<tbody>
<tr>
<td>☐</td>
<td>6</td>
<td>5</td>
</tr>
<tr>
<td></td>
<td>4</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>2</td>
<td>1</td>
</tr>
</tbody>
</table>

6) Please rate the level of financial support in your academic unit for improving digital instruction.

<table>
<thead>
<tr>
<th>Outstanding</th>
<th>Acceptable</th>
<th>None</th>
</tr>
</thead>
<tbody>
<tr>
<td>☐</td>
<td>6</td>
<td>5</td>
</tr>
<tr>
<td></td>
<td>4</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>2</td>
<td>1</td>
</tr>
</tbody>
</table>

7) Does your academic unit require that faculty members make their syllabi and course calendars available online each semester?

☐ Yes  ☐ No

8) Please briefly describe any outstanding achievements or shortcomings in your program related to (a) quantitative analytic skills and/or the (b) digital information environment.

9) Please rate your students' ability to do university-level work....

<table>
<thead>
<tr>
<th>Extremely well-prepared</th>
<th>Adequately prepared</th>
<th>Not at all prepared</th>
</tr>
</thead>
<tbody>
<tr>
<td>7</td>
<td>6</td>
<td>5</td>
</tr>
<tr>
<td>4</td>
<td>3</td>
<td>2</td>
</tr>
<tr>
<td>1</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

10) Based on your teaching, and your familiarity with courses taught by other instructors in your program, how easy or difficult it is for your students to learn the following:

<table>
<thead>
<tr>
<th></th>
<th>Quite easily</th>
<th>Possible with moderate effort</th>
<th>No opportunity to learn these</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>7</td>
<td>6</td>
<td>5</td>
</tr>
<tr>
<td>Familiarity with Statistical Concepts</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>Design of Data Tables and Charts</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>Interpretation of Quantitative Information</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
</tbody>
</table>
Comments about how these skills are taught:

11) Does your journalism program have any published standards of quantitative analytic skills students are expected to meet?
   □ Yes □ No

12) Does your journalism program have any published standards of computer skills students are expected to meet?
   □ Yes □ No

What Is Taught and How....

13) Please check all the techniques you currently use in your teaching and then rate how frequently you employ such techniques:

<table>
<thead>
<tr>
<th>Technique</th>
<th>Every class</th>
<th>Weekly</th>
<th>Monthly</th>
<th>Occasionally</th>
<th>Never</th>
</tr>
</thead>
<tbody>
<tr>
<td>Students taught how to do research for story assignments on the Internet</td>
<td>□</td>
<td>□</td>
<td>□</td>
<td>□</td>
<td>□</td>
</tr>
<tr>
<td>Student work submitted as digital file(s)</td>
<td>□</td>
<td>□</td>
<td>□</td>
<td>□</td>
<td>□</td>
</tr>
<tr>
<td>Teacher feedback provided as digital file(s)</td>
<td>□</td>
<td>□</td>
<td>□</td>
<td>□</td>
<td>□</td>
</tr>
<tr>
<td>Student story research stored as digital files</td>
<td>□</td>
<td>□</td>
<td>□</td>
<td>□</td>
<td>□</td>
</tr>
<tr>
<td>Students supply source citations in their stories</td>
<td>□</td>
<td>□</td>
<td>□</td>
<td>□</td>
<td>□</td>
</tr>
<tr>
<td>Lectures use Power-point, video, overhead projectors</td>
<td>□</td>
<td>□</td>
<td>□</td>
<td>□</td>
<td>□</td>
</tr>
<tr>
<td>Instructor connected to the Internet</td>
<td>□</td>
<td>□</td>
<td>□</td>
<td>□</td>
<td>□</td>
</tr>
<tr>
<td>Course website has syllabus, links to readings</td>
<td>□</td>
<td>□</td>
<td>□</td>
<td>□</td>
<td>□</td>
</tr>
</tbody>
</table>

14) Please check all the online resources you access or interact with and how often you typically use them:

<table>
<thead>
<tr>
<th>Resource</th>
<th>Daily 7</th>
<th>6</th>
<th>5</th>
<th>Occasionally 4</th>
<th>3</th>
<th>2</th>
<th>Never 1</th>
</tr>
</thead>
<tbody>
<tr>
<td>Online course mgmt programs</td>
<td>□</td>
<td>□</td>
<td>□</td>
<td>□</td>
<td>□</td>
<td>□</td>
<td>□</td>
</tr>
<tr>
<td>Blogs</td>
<td>□</td>
<td>□</td>
<td>□</td>
<td>□</td>
<td>□</td>
<td>□</td>
<td>□</td>
</tr>
<tr>
<td>Newsgroups</td>
<td>□</td>
<td>□</td>
<td>□</td>
<td>□</td>
<td>□</td>
<td>□</td>
<td>□</td>
</tr>
<tr>
<td>Listservs</td>
<td>□</td>
<td>□</td>
<td>□</td>
<td>□</td>
<td>□</td>
<td>□</td>
<td>□</td>
</tr>
<tr>
<td>Web-based reporting resources</td>
<td>□</td>
<td>□</td>
<td>□</td>
<td>□</td>
<td>□</td>
<td>□</td>
<td>□</td>
</tr>
<tr>
<td>Email for students and faculty</td>
<td>□</td>
<td>□</td>
<td>□</td>
<td>□</td>
<td>□</td>
<td>□</td>
<td>□</td>
</tr>
</tbody>
</table>
15) Please check all the digital resources you access or interact with and indicate how often you typically use them:

<table>
<thead>
<tr>
<th>Daily</th>
<th>7</th>
<th>6</th>
<th>5</th>
<th>Occasionally</th>
<th>4</th>
<th>3</th>
<th>2</th>
<th>Never</th>
<th>1</th>
</tr>
</thead>
<tbody>
<tr>
<td>A computer lab</td>
<td>□</td>
<td>□</td>
<td>□</td>
<td>□</td>
<td>□</td>
<td>□</td>
<td>□</td>
<td>□</td>
<td></td>
</tr>
<tr>
<td>PDA or handheld computers</td>
<td>□</td>
<td>□</td>
<td>□</td>
<td>□</td>
<td>□</td>
<td>□</td>
<td>□</td>
<td>□</td>
<td></td>
</tr>
<tr>
<td>Graphics or image-editing programs</td>
<td>□</td>
<td>□</td>
<td>□</td>
<td>□</td>
<td>□</td>
<td>□</td>
<td>□</td>
<td>□</td>
<td></td>
</tr>
<tr>
<td>Publications or page design software</td>
<td>□</td>
<td>□</td>
<td>□</td>
<td>□</td>
<td>□</td>
<td>□</td>
<td>□</td>
<td>□</td>
<td></td>
</tr>
<tr>
<td>Database and spreadsheet software</td>
<td>□</td>
<td>□</td>
<td>□</td>
<td>□</td>
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<td>□</td>
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</tr>
</tbody>
</table>

16) Please describe digital technologies, sites or applications you use regularly in your teaching.


17) Your students may learn about quantitative skills that support professional journalism work by:

- Taking elective courses outside our academic unit
- Taking elective courses inside our academic unit
- Taking required courses outside our academic unit
- Taking required courses inside our academic unit
- Using quantitative skills in multiple academic unit courses or programs
- Not sure
- Other. [Please describe in the box below]

18) Your students may learn computer skills that support professional journalism work by:

- Taking elective courses outside our academic unit
- Taking elective courses inside our academic unit
- Taking required courses outside our academic unit
- Taking required courses inside our academic unit
- Using computers in most of our academic unit courses
- Not sure
- Other. [Please explain in box below]

19) Are your students required to demonstrate -- by passing an examination before they graduate -- that they have quantitative, analytic and digital communications skills?

- No
- Yes. If yes, please describe the test in the box below.
20) Would you support or oppose efforts to certify journalism students' digital and analytic skills as a condition of graduation? Why?

21) How regularly do you integrate the use of digital analytic tools such as advanced word processing techniques, spreadsheets, databases, GIS or blogs/workgroup programs into the course(s) you teach?

<table>
<thead>
<tr>
<th>In all courses</th>
<th>In about half my courses</th>
<th>Never</th>
</tr>
</thead>
<tbody>
<tr>
<td>7</td>
<td>6</td>
<td>5</td>
</tr>
<tr>
<td>4</td>
<td>3</td>
<td>2</td>
</tr>
<tr>
<td>1</td>
<td>1</td>
<td></td>
</tr>
</tbody>
</table>

22) If you do include quantitative analytic skills in your teaching, please describe:

23) Please check off all the competencies that your colleague(s) teach in your academic unit's journalism course(s).

- ☐ 1. Basic statistical computation
- ☐ 2. Interpretation of quantitative data
- ☐ 3. Statistical concepts
- ☐ 4. Specialized statistical procedures & tool use
- ☐ 5. Interpretation and creation of visual statistics
- ☐ 6. GIS (Geographic Information Systems) data and report interpretation
- ☐ 7. GIS map creation tools
- ☐ 8. Graphic image editing techniques
- ☐ 9. Publications software tool use
- ☐ 10. Other (Please describe)

24) Does your journalism program offer any courses specifically about using digital analytic tools and applications? If "yes," please describe briefly.

- ☐ Yes If yes, please comment.
- ☐ No

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25) Based on your own teaching and your familiarity with courses taught by other instructors in your program, please rate how easy or difficult it is for your students to learn to use the following digital applications:

<table>
<thead>
<tr>
<th>Software</th>
<th>Quite easy</th>
<th>Possible with moderate effort</th>
<th>Not possible</th>
<th>I do not know</th>
</tr>
</thead>
<tbody>
<tr>
<td>Word processing software</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Research software</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>Spreadsheet software</td>
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<td></td>
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<td></td>
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<tr>
<td>Database software</td>
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<tr>
<td>GIS software</td>
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<td></td>
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</tr>
<tr>
<td>Specialized statistical software</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Publication, Photo, Graphics, and Production software</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

26) How should quantitative skills be taught to journalists? How should digital skills be taught?

Instructor's profile....

27) Please check the category that describes where you access digital technology. (Check all that apply)

- My home
- My "non-school" office
- My school office
- Other: Internet cafe, etc.

28) Please check all digital tools and activities that are part of your regular work:

- Search your hard drive
- Download programs from the Web
- Use Internet search engines other than Google or Yahoo
- Bookmark favorite Web sites

29) Rate your own confidence in teaching how to apply quantitative and digital skills to journalistic practice?

<table>
<thead>
<tr>
<th>Highly confident</th>
<th>Adequate</th>
<th>Do not teach these</th>
</tr>
</thead>
<tbody>
<tr>
<td>7</td>
<td>6</td>
<td>5</td>
</tr>
</tbody>
</table>

30) Please enter the year of your birth.
31) Your gender?
   Female    Male

32) How many years have you worked as a professional journalist?
   Never    0-1 year    2-3 years    4-7 years    8-10 years    10-15 years    More than 15 years

32b) Comments?

33) How many years have you worked as a journalism educator (full or part-time)?
   Never    0-1    2-3 years    4-7 years    8-10 years    10-15 years    More than 15 years

33b Comments?

34) What is your university rank? (Check all that are appropriate.)
   □ Dean    □ Academic unit chairperson or director    □ Professor    □ Assoc. Professor    □ Ass’t. Professor
   □ Lecturer/Instructor    □ Assoc. Lecturer    □ Adjunct    □ Other

35) Work status as a journalism educator?
   □ Full time    □ Part time

36) Do you currently work as a professional journalist, either full- or part-time?
   Yes    No If so, in which medium? Comment:

37) What is your highest earned educational degree?
   1. High school graduate    2. Two-year associate or vocational degree    3. Three-year university degree
   4. Baccalaureate (four-year) degree    5. Masters Degree or law degree    6. Doctorate    7. Other. (If "other," please elaborate)
38) If you studied in a university, what was your major or area of concentration as an undergraduate?

39) If you studied at the graduate level, what was your major or area of concentration?

40) How often did or do you use quantitative or analytic skills and methods in your past or current work as a professional journalist?


Comments?

41) How often did or do you use quantitative or analytic skills and methods in your work as a journalism educator?


Comments?

42) Have you participated in any workshops or other professional development programs for journalists in the past 12 months?

Yes  No  If yes, please describe:

43) From whom or how did you learn about this survey?

44) The name of your educational institution:

45) Your university city?

46) Nation?
47) Would you like to be notified of the results of this survey? If so, please enter your contact information here:

☐ Yes  ☐ No

48a) Your last name:  48b) Your first name:

49) Your e-mail address:  Please re-enter your e-mail address:

Would you like to be entered in the drawing for either an Ipod or the Creative Zen Micro MP3 player? If yes, indicate your choice:

Yes  No

We appreciate how much of your time this survey required. We hope you will agree -- once we have published the data and analysis -- that it was time well spent.

Should you have any questions, please contact J. T. Johnson at tom@analyticjournalism.org or Louise Yarnall at louise.yarnall@sri.com

Now, please click on the "NEXT" button below and your data will flow into the results pool.