

“You Don’t Have to Become a Data Scientist”: Practitioner Recommendations for Cultivating PR Student Data Competency

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The growing need for data competency among entry-level PR practitioners underscores why it is imperative that PR educators evaluate how they are teaching data and data analytics to students. Researchers interviewed 28 high-level public relations/communication professionals with significant data and analytics experience to examine how educators can best prepare students to curate, analyze, and discern actionable insight from data. Practitioners said students must understand PR fundamentals, basic research and statistics concepts, and the ability to succinctly and persuasively tell a story using data visualization. Participants also discussed the importance of soft skills, including a willingness to learn, adaptability, and critical thinking. Implications and teaching suggestions for educators are provided.

Keywords: data, analytics, competency, pedagogy, public relations

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The communication industry is transforming into a data-driven field (Fitzpatrick & Weissman, 2021; Weiner, 2021). People around the world consume and share information as they play, work, learn, engage, and advocate in digital spaces. Public relations practitioners must accordingly upscale their abilities and efforts to use technology to work in the digital world. As part of this digital revolution, Artificial Intelligence (AI) and Big Data are becoming integrated into contemporary public relations practice (Wiencierz & Röttger, 2019; Wiesenberget al., 2017). Sommerfeldt and Yang (2018) opined: “The question is no longer if, but how to best use digital communication technologies to build relationships with publics” (p. 60).

Despite the vast opportunities afforded by data and technology, many public relations practitioners are behind on the learning curve (Virmani & Gregory, 2021). According to the 2020-2021 North American Communication Monitor (Meng et al., 2021), 40% of PR practitioners lack data competency; 29% are under-skilled, while 11% are critically under-skilled.

Educators know the importance of embedding data and technology competency into public relations curriculum. Five of the 12 professional values and competencies promoted by the Accrediting Council on Education in Journalism and Mass Communication (ACEJMC) relate to digital analytics (Ewing et al., 2018). In the most recent Commission on Public Relations Education (CPRE) report (2018), educators and practitioners indicated “research and analytics” was the fourth-most desirable skill—out of 13—for entry-level PR practitioners.

The growing need for data confidence and proficiency among entry-level practitioners underscores why it is imperative that public relations educators evaluate how they are teaching data and data analytics to students. Researchers interviewed 28 high-level PR/communication practitioners with significant data and analytics experience to examine

how educators can best prepare students to curate, analyze, and discern actionable insight from data.

Review of Literature

How PR Practitioners are Using Data and Technology

According to a McKinsey report, companies' adoption of digital technologies "sped up by three to seven years in a span of months" in 2020 (Galvin et al., 2021, para. 3). In 2021, the pandemic accelerated companies' adoptions of digital technologies, and according to McKinsey, the future belongs to organizations that fully embrace digital technology, skills, and leadership (Galvin et al., 2021). Public relations practitioners are responding and leaning into this digital transformation as their usage of digital approaches and technologies increases (Wright & Hinson, 2017). Data infuses the entire PR process, and communication professionals can examine data from social platforms, email, websites, mobile apps, internal platforms, business data streams, and more to inform strategic and tactical decisions. Communicators can examine and analyze data for environmental scanning, issues management (Kent & Saffer, 2014; Triantafyllidou & Yannas, 2014), crisis communication, combatting disinformation and misinformation (Weiner, 2021), audience identification and segmentation (Stansberry, 2016), influencer and journalistic outreach (Galloway & Swiatek, 2018; Wiencierz & Röttger, 2019) and campaign evaluation (Weiner, 2021).

The Arthur W. Page Society (2020) developed a communication approach called "Comm Tech," which is designed to help chief communication officers (CCOs) apply data and analytics to create campaigns that are hyper-targeted and optimized to drive business outcomes. According to Page members Samson and O'Leary (2020), CCOs must help their communication teams evolve from a proactive to predictive function, transform how they understand and engage stakeholders, and improve their digital skills and agility among team

members so they can respond to complex problems and opportunities using real-time data.

A commonly referred-to term is Big Data, which is “advanced technology that allows large volumes of data to drive more fully integrated decision-making” (Weiner & Kochhar, 2016, p. 4). Big Data is often defined by four V’s: volume, velocity, variety, and value, and consists of many small structured and unstructured data streams, including PR data derived from news coverage, internal communication, and social media (Weiner & Kochhar, 2016). PR practitioners can collaborate with other organizational units to examine Big Data to make decisions regarding product or service demand, competition, and community trends (Weiner, 2021, p. 24). Communicators are also starting to use AI to enhance their capabilities (Virmani & Gregory, 2021). Defined as the “ability of machines to perform tasks that typically require human-like understanding” (Knowledge@Wharton, 2018, para. 1), AI is being used for tasks such as responding to consumer questions, monitoring social media, conducting journalistic and influencer outreach (Galloway & Swiatek, 2018), and engaging employees (O’Neil et al., 2021).

Pedagogical Approaches to Teaching Data and Analytics

Educators and practitioners alike agree upon the importance of including data and analytics in the public relations curriculum. When asked about the future of PR education, Duhé (2016) said educators should focus on three pillars: fast-forward thinking, interdisciplinary learning, and analytical reasoning. The latter relates to students’ ability to curate, analyze, and effectively describe disparate forms of data. In the 2018 CPRE report, educators and practitioners rated the skill of working with research and analytics a 4.16 (on a scale from 1-5) in importance, yet scored entry-level practitioners only a 3.11 in terms of having that skill (on a scale from 1-5). Relatedly, educators and practitioners rated critical thinking as a 4.45 in importance, and scored entry-level

practitioners a 3.07 in terms of having those skills. In addition to the importance of data skills emphasized by CPRE, five of the ACEJMC (2022) professional values and competencies relate to research, data, and technology. Recommended competencies include presenting information; thinking critically, creatively, and independently; conducting research and evaluation; applying basic numerical and statistical concepts; and applying tools and technologies.

In addition to the CPRE (2018) report, Krishna et al.'s (2020) survey of public relations practitioners and Brunner et al.'s (2018) analysis of PR job announcements both indicated the importance of research and measurement skills for entry-level practitioners. Based upon a content analysis of university websites and job advertisements, Auger and Cho (2016) concluded that PR curricula were overall aligned with the needs of practice, except for social media and technology. O'Neil and Pham (2020) analyzed 101 full-time communication and research job positions that were posted on Glassdoor in late 2019. The advertisements most commonly required the following knowledge and skills: SEO (search engine optimization), SEM (search engine marketing), OTT (over-the-top), traffic metrics, A/B testing, data analytics, data visualization, presentation, and teamwork.

Other recent pedagogical work has examined how public relations educators are teaching data and analytics, which students have indicated they desire (Meng et al., 2019; Waymer et al., 2018). Ewing et al. (2018) researched how PR faculty are teaching social media analytics by analyzing course syllabi and conducting a Twitter chat with 56 educators and practitioners. Participants (mostly educators) suggested students know how to measure social media results, understand the context of social media, engage in social media listening, and conduct digital storytelling. The researchers' analysis of syllabi revealed very few included learning outcomes related to analytics in general or required certifications with

an analytic underpinning. Fang et al. (2019) also examined digital media content in 4,800 courses offered in 99 advertising and public relations programs. Approximately one in four universities offer digital media courses, and there is a greater emphasis overall on skills than concepts in courses.

Lutrell et al. (2021) investigated how social media, digital media, and analytics courses have been incorporated into the public relations curriculum in programs accredited by either ACEJMC and/or Certificate for Education in Public Relations (CEPR). Only 32% of 94 programs require either an undergraduate or graduate course in social media, digital media, or analytics; 16% of programs offer these courses as electives. McCollough et al. (2021) examined 154 syllabi to see how programs are teaching new media. Their study indicated 21% of courses offered content related to analytics and interpretation; only a few mentioned “social listening, data insights, or return on investment” (p. 41). Importantly, these two studies indicate only one of three accredited programs—or one out of five when considering syllabi—are teaching data and analytics.

Feedback from Practitioners About Data Skills and Knowledge Needed

Research has also focused on feedback from practitioners on how to best prepare students for the public relations field. According to communication executives in the United States and China, PR education is not adequately preparing students for emerging media and technology (Xie et al., 2018). The executives named digital and social media as one of the six primary skills needed to succeed and said students should be trained to be “digital thinkers” (Xie et al., 2018, p. 10). “Critical thinking, continuous learning, emotional intelligence, and curiosity” (Xie et al., p. 301) were ranked as the most important soft skills for entry-level practitioners.

Communication practitioners have repeatedly said students do not need to be trained to be digital scientists (Neill & Schauster, 2015; Wiesenbergs et al., 2017). Yet, students must embrace numbers, math, business, and statistics (Neill & Schauster, 2015; Wiencierz & Röttger, 2019; Xie et al., 2018). Other suggestions include teaching students how to conduct data analysis, evaluate a campaign's impact (Freberg & Kim, 2017), engage in social media listening (Neill & Schauster, 2015), and manage a measurement budget (Xie et al., 2018).

Lee and Meng (2021) interviewed South Korean executives for their perceptions of data competency needed among communication practitioners. According to these practitioners, having the right mindset is more important than having the skills to work with data and tools. Lee and Meng (2021) posited that data competency can be fostered by building cognitive analytics, data management, technology literacy, sensemaking skills for data transformation, and crisis management digital skills.

Fourteen managers from public relations agencies described what analytics-related knowledge and skills are needed for entry-level practitioners (Adams & Lee, 2021). They said educators should focus less on the tools and more on content. The agency practitioners recommended critical thinking, general measurement approaches, communicating data insight, social media listening tools, influencer marketing, message resonance, and data storytelling.

In summary, this review of literature has indicated the growing need for data and analytics competency among entry-level PR practitioners. Educators are seeking to enhance how they teach data and analytics, but research suggests there is room for improvement. Scholars have noted the need for more feedback from industry professionals about teaching data competency (Ewing et al., 2018; Fang et al., 2019; Luttrell et al., 2021). This study builds upon Adams and Lee's (2021) research by expanding the sample from agency employees to communicators working

in a wide range of industries. Moreover, the focus of this project is on data, in general, and is not limited to analytics. The study seeks to answer the following questions:

RQ1: What knowledge and skills do students need related to data and public relations?

RQ2: What basic software/tools are organizations using to analyze data and digital analytics and which of these tools should students learn?

RQ3: What can educators do to improve student readiness in these areas?

Method

Researchers recruited 28 communication professionals with data and analytics experience using purposive and snowball sampling. Researchers recruited from their professional networks, many of whom are members of either the Institute for Public Relations Measurement Commission or the International Association for Measurement and Evaluation of Communication (AMEC) and have decades of experience in public relations, research, and analytics. As indicated by Table 1, most participants work for either corporations or agencies, but some work at nonprofit organizations and consultancies; industries represented included air transportation, communication/information, consumer packaged goods, education, entertainment/sports, finance/insurance, government, and healthcare. More than 50% had more than 20 years of experience.

Researchers conducted the interviews via Zoom between November 2021 and January 2022. Interviews, lasting approximately 60 minutes, were recorded and transcribed verbatim for analysis. Participant names were removed from transcripts to protect identities and were replaced with numbers (see Table 1). These numbers appear with responses in the results section. In some examples, a participant's role is mentioned to provide context.

Table 1*Interview Participant Information*

| Person | Current Job Title | Industry | Experience (in years) |
|---------------|--|---------------------------------------|------------------------------|
| 1 | Manager, Analytics & Insight | Air Transportation | 15 |
| 2 | Communications Manager, Measurement & Insight | Information/ Telecommunications | 16 |
| 3 | Managing Director, Analytics-Based Strategy | Global Health Innovation Agency | 25+ |
| 4 | Associate Manager, Digital Analytics | Public Relations Agency | 5 |
| 5 | Data Consultant | Data Consultancy | 20+ |
| 6 | Director of Communication Intelligence | Information/ Telecommunications | 25+ |
| 7 | EVP, Head of US Analytics | Public Relations Agency | 12 |
| 8 | Assistant Athletic Director for Digital Strategy and Analytics | Education | 8 |
| 9 | Digital Communication Agency | Digital Communication Agency | 10 |
| 10 | Founder & Chair; CEO; Chair | Data Science & Communication Agency | 20+ |
| 11 | Chief Visionary Officer and Founder | Digital Communication Agency | 25+ |
| 12 | Partner / Senior Vice President, social media | Advertising & Public Relations Agency | 19+ |
| 13 | VP, Social and Content Marketing Lead | Finance and Insurance | 15 |

| | | | |
|----|--|--|-----|
| 14 | Chief Growth Officer | Marketing AI Agency | 28 |
| 15 | Audience Development Director | Communications Agency | 20+ |
| 16 | Head, Media Analysis | Government | 13+ |
| 17 | Founder and CEO | Communications Agency | 25 |
| 18 | CEO | Communication Industry Association | 30 |
| 19 | Founder & Chief Strategy Officer | Communication Agency (Oil & Gas focused) | 30 |
| 20 | Director of Data Science | Sports & Entertainment Consultancy | 7 |
| 21 | CEO | Communications Consultancy | 30 |
| 22 | Founder | Public Relations Consultancy | 42 |
| 23 | Chief Marketing Officer | Arts & Entertainment | 15 |
| 24 | EVP and Chief Marketing & Communications Officer | Health Care | 30+ |
| 25 | Chief Marketing and Communications Officer | Finance and Insurance | 22 |
| 26 | Senior Vice President and Chief Communications Officer | Consumer Packaged Goods | 31 |
| 27 | Director | PR & Strategic Communications Agency | 10 |
| 28 | Founder and CEO | Communications Agency | 22 |

Researchers analyzed the interviews using the three processes of data reduction, data display, and conclusion drawing and verification (Miles & Huberman, 1994). Researchers analyzed transcripts line-by-line to generate categories and created broad categories based upon the conceptual framework and variables under investigation. Researchers worked together to identify the major patterns and themes suggested by the coding categories. Next, researchers reread the transcripts to code the material according to the emerging categories and to identify frequency of responses and representative quotes and stories.

Results

RQ1: Knowledge and Skills Students Need Related to Data and Digital Analytics

Several patterns emerged from the interviews related to the knowledge and skills public relations students need related to data. Before students can analyze data, participants said students must have an understanding of PR fundamentals and basic research and statistics concepts. From a hard skills perspective, students must explain data accurately and clearly through solid storytelling and data visualization. Finally, participants discussed the importance of soft skills, including a willingness to learn, adaptability, and critical thinking. Participants said they could teach employees about tools; however, it was challenging to teach soft skills.

Knowledge Needed: Understanding PR Fundamentals and Business Functions

In order to conduct effective data analysis for an organization, participants pointed to the foundational need for students to understand fundamentals first, especially how public relations connects to other business functions. According to one communication manager, it is important for students to grasp “the rationale behind public relations,” which means core PR classes “are really important for this [digital

analytics] role, getting that domain expertise in the communications and PR area” (2¹). Another participant agreed that knowledge of PR skills, such as writing, reporting, and pitching, is essential for data storytelling.

Having knowledge of the organization beyond the PR department is crucial. Students need to know enough to communicate with others outside their area. Interview participants encouraged students to learn business basics so they would be able to guide communication efforts that would help meet organization goals. One CEO explained, “if you can’t make it relevant to a business leader because you don’t know very much about business, you’ve got a problem” (17). He said students should learn “all of the contextual pieces” of the organization, from finance to human resources—not to become an expert in every area but to “learn enough” to understand the context—“You don’t have to become a data scientist, but you do have to understand what the fundamentals are so that when you sit down and actually do some of this work or even pose some of these questions, you will have a background” that allows you to proceed effectively (17). A vice president for social and content marketing emphasized the importance of understanding the bigger picture; PR is “one driver, but how do we fit in with the rest of the channels and that consumer experience?” (13). A communication consultancy CEO also recommended students learn every aspect of the organization they work for:

For students to be successful and to deliver value to their organization in the future, I think it’s very important to think broadly to understand how does value happen in an organization. Go out with the sales reps on the road and work in different parts of the organization and learn how people view the customer, the processes internally, the data that results from both of those, and of

1 To maintain anonymity, direct quotations from sources are cited by participant number. See Table 1.

course, the management structure and layers and ways of getting things done. (21)

Connecting to organizational strategy/objectives. Many of the participants' responses focused on goals, objectives, and what to measure, which means students need to understand the purposes behind data analysis. One participant said students need to know "how communications data can work in a business—why it's important, why it's something that we need to be doing" (1). Several participants pointed to the problem of opening an analytics tool without understanding the "why" first. One participant offered the example of someone going into Google Analytics and looking at site visitors and referral sources but not first considering "Why do we care about that?" (14). One CEO said students need to understand that "it's the questions that come first and then the analytics, and then the analytics tell you whether or not you're measuring the stuff you need to be measuring" (17). An EVP of analytics agreed, "We really try to first make sure everybody starts with business goals, communications objectives, and audience alignment, and that's something that is still very confusing to a lot of clients, and even a lot of our junior staff still has a hard time" (7). She encouraged:

[M]aking sure a goal is a quantifiable goal, so it has a who, what, by when, by how much, whatever—in my opinion, if they get used to doing that, it almost becomes obvious, "Well, do I know enough about my audience to know that this is the right goal? Do I know enough about the culture or the landscape to know if this is something I can do?" If I do, great. Then what are my benchmarks, so I know if I've achieved that goal? And it forces that quantified goal to become a way to make sure analytics is part of planning, a part of optimizing, and a part of then the measurement at the end.

Strategy. If faculty have used the ROSTIR (Research, Objectives, Strategy, Tactics, Implementation, Reporting) model in introductory classes, students have learned the importance of objectives being in place before strategies are developed and that students should define their strategy before considering tactics (Luttrell & Capizzo, 2022); students need to grasp how these steps are connected to digital analytics, as well. A CMO said:

Remind students that strategy is timeless.... It's a very natural tendency on the part of students and practitioners to get caught up in the tactics. But say, "Okay, how are we tying this back to the brand here? . . . How is this tied to the overall approach? How is this supporting this larger goal?" (23)

One participant pointed to how vital it is for students to understand strategy before ever using an analytics tool. "A lot of the analytics tools are dependent on you understanding what a strategy is and understanding how you can take your goals and turn them into key performance indicators, your KPIs, and then how you can build reports from that" (14). Students must comprehend strategy to be able to select the appropriate analytics.

What to Measure. An analytics manager with 15 years of experience said students need to learn to measure outcomes rather than just outputs. She explained outcomes are "really hard to measure," but it is ideal if students understand the importance of business outcomes (1). Her advice connects to both the second and third iterations of the Barcelona Principles. According to Barcelona Principle No. 2, "Measurement and evaluation should identify outputs, outcomes, and potential impact" (AMEC, 2020). Barcelona Principle No. 3 says, "Outcomes and impact should be identified for stakeholders, society, and the organization" (AMEC, 2020).

Knowledge Needed: Research and Statistics

A communication manager with more than 16 years of experience said, in addition to a “domain expertise about media,” public relations students need an interest “in numbers and understanding of just the basic analytics principles and what it means to explore data” (2). To work in PR now necessitates “an understanding of statistics of some sort” (22). A participant who heads the analytics team for a large agency said, “this is no longer nice to have. You don’t have to be a data person, but you do need to have a base understanding of how to read a chart” (7). Another agency executive pointed to the need for students to know how to write a survey, and an agency founder said all communicators need to complete at least one statistics class that allows students to practice with “a wider range of datasets” (19).

A director of data science said students should not run away from statistics. “Statistics is not math; it literally is not math. You don’t have to do any calculations in statistics. You have to understand how to apply something and when to press the right buttons; there’s no math” (20). A founder of a communication analytics-focused company with more than 25 years of experience agreed students need to move beyond fear of statistics if they want to work in professional communication:

A lot of people go into PR or comms or even marketing because at some level they say, ‘Wow, I really did not like math in college or high school, and this looks like something that is math-free.’ That would be a huge mistake to believe that today. Nothing is math-free, numbers-free, technology-free. If you had a real problem with STEM, science, technology, math in school, you definitely should not go into marketing and communications in the future. (17)

Participants suggested students learn about database systems, spreadsheets, Boolean syntax, data literacy, and dashboards. In fact, one source said, “Get really good Boolean operating codes, then that’s your

bread and butter” (16). In addition to Boolean syntax, another source suggested learning the programming language SQL: “A foundational skill for analytics is SQL and being able to query, investigate, and understand large datasets” (26). While one source said seeing R and Python on a resume would catch her attention, other participants argued there’s no need for students to learn R and Python because companies can hire a data scientist; instead, PR employees need to be able to work with data scientists and to discern the insight that has relevance for business outcomes and PR programming. A participant with 30 years of experience said, “They don’t need to be data scientists. They need to have an understanding of it... ask questions. . . . be good probers of the data” (18). Students must recognize “what’s an important number and what’s not” (22) and to “be curious about where things came from” (24). More than any particular tool or ability, participants said students need to be comfortable with data: “how to structure it, how to blend it, how to analyze it, and how to communicate about it” (19).

Hard Skills Needed: Data Visualization and Storytelling

Participants repeatedly said public relations students do not need the same expertise as a data scientist. They need to be able to take complex information and convert it “into simple-to-understand information” (20). Participants spoke of “data-driven storytelling” (6) and simply “being able to explain” (7), which includes presentation skills to “tell your story” (2). One source indicated data visualization is a growth area within their organization, and one they will “be hiring big on next year” (7).

Data visualization tools were frequently mentioned by participants, including Tableau and Alteryx; however, one participant warned that tools that create an automatic visual for users might be dangerous: “I’m not a huge fan of data analysis using visualization tools purely because I think it is ripe for the potential of misrepresenting the data” (19). She recommended teaching students basic visualization within communication

classes, including the importance of labeling information correctly and providing data sources. Other participants mentioned the frequent need to create their own graphs and other visualization pieces at work, despite the existence of automated tools, so a basic knowledge of good design is helpful.

Soft Skill Needed: Willingness to Learn

While demonstrating curiosity and a commitment to life-long learning is essential in public relations, participants pointed out “genuine curiosity” (8) is critical when it comes to mining and analyzing data and determining insights for communication strategy. Ten of the 28 participants emphasized the importance of curiosity. For example, a corporate communication professional said, “A digital analytics practitioner must have curiosity and strong communication skills” because that interest “will keep them asking why, keep them digging, which will uncover a deeper understanding in their analyses” (26). Another participant said “I try to hire people who are curious” and those with “an aptitude for understanding the bigger story and the strategy” (6).

The participants advised educators to help students and young professionals understand the value of recognizing there’s always going to be more to learn, showing a willingness to learn, and being comfortable with asking questions. A communication executive at a not-for-profit healthcare organization said, “Be willing to say, ‘I’m not an expert at it, but I want to increase my level of understanding,’ because that’s just what it’s going to take for them to be successful” (24).

An executive at a communication consultancy (27) said people with “inquisitive minds” and “a point of view” are more successful working with data and digital analytics. Another executive working for a company specializing in artificial intelligence (14) discussed the value of “being open to trying something” and “digging into the numbers” to discern patterns and insights. According to a participant who directs

analytics at a large agency, “Being a person who always wants to know more, wants to understand more, wants to learn more” will lead to both personal and professional success (7).

Soft Skill Needed: Embracing Change and Unexpectedness

Participants discussed how evolving digital platforms and tools create challenges with data access and analysis, which can be frustrating and time consuming. Students need to learn to deal with these challenges and be open to using different approaches to capture and analyze data. In the words of one seasoned practitioner: “Just encourage [students] to get creative and to try things and to not get upset when things get broken” (23). A corporate communication executive explained: “The number-one quality we look for in candidates is adaptability” because “analytics is a science and, as such, it is always on a journey of discovery” (26).

Soft Skills Needed: Creative and Critical Thinking Skills

Overwhelmingly, the research findings demonstrated the value of creative and critical thinking skills to effectively work with data and digital analytics. Participants described digital analytics as an art and science and how public relations students and professionals need to be both creative and analytical when accessing and reviewing data. A corporate communication manager (2) emphasized the importance of “being comfortable with ambiguity” and “pushing back” to dig deeper into the data to determine relevant insights. Another participant (21) explained: “There’s a creative leap in interpreting data and its application” and students must not accept “what the data may appear to say at face value.”

To help students develop critical thinking skills, several participants discussed the value of educators encouraging students to ask thoughtful questions. For example, educators can present a problem, share some data, and direct students to probe in a way that leads to insights connected to business and communication goals. This approach for teaching insight creation is practiced in the workplace. An executive

for a global agency (7) explained they conduct training sessions to teach employees how to connect the data back to the communication problem and how to use data to lead to actionable insights.

RQ2: Software and Tools Used to Analyze Data

When asked about software and tools used for data analysis, participants described almost 80 software tools and programs, including those they use either in house or in collaboration with external partners. Eight tools were mentioned by five or more participants: Google Analytics, Tableau, Excel, Adobe Analytics, Talkwalker, Brandwatch, Salesforce, and Sprinklr (see Table 2). Google Analytics was mentioned the most. Related to recent tool trends, one participant indicated “the tool conversation, the PR AdTech, MarTech, data tech stack conversation is one where we’re spending an awful lot of time” (3).

Participants explained the excitement and challenge of this explosion of tools. While practitioners may now choose from a wide range of tools, no single program is capable of accomplishing the myriad tasks needed, which means data must be coordinated from multiple sources, and practitioners frequently combine tools or create their own tools to meet their needs.

When asked which of these tools they recommend for students to learn, 53 different tools/programs were named and of these, only three were mentioned by five or more participants: Google Analytics, Excel, and Tableau (see Table 3). Participants repeatedly emphasized that educators should not worry about teaching the latest data analytics tool because tools change, and employers can teach the tools. Instead, participants suggested educators help students become more comfortable with the meaning of numbers and research in general.

Although many of the interview participants encouraged professors to be “platform agnostic” — focusing on concepts more than specific platforms, two tools were repeatedly mentioned as critical: Google

Analytics and Excel. Google Analytics was often referred to as “table stakes” or “low-hanging fruit” (1), “a must” (23), “a good place to start” (15), and that the platform training “gives you a framework for not only thinking about digital analytics, but a framework for thinking about how users move around the web and interact with digital channels” (9) and “if you understand the terms per Google, you’ll understand about 80% of everything else that you might look at . . . because that’s the terminology that just about every other platform uses, so I would say that’s the starting point” (11). Similarly, sources said “start with Excel” (19). “Microsoft Excel is a good way to understand and learn how to organize data, how to use formulas to manipulate data within Excel. You can create charts and graphs and pie charts and all of those different types of things, so I would definitely look for competency at a bare minimum of Excel” (15). Specifically, sources recommended students learn how to run pivot tables, make charts, and pull graphs out of Excel to put into PowerPoint. In addition to placing emphasis on Google Analytics and Excel, a few sources suggested exposing students to as many tools as possible because “you don’t necessarily know what that company or agency is using” (19).

RQ3: How Educators Can Improve Student Readiness

Participants shared suggestions to help educators prepare students for data and analytics competency. To conquer students’ fear of analytics, some practitioners recommended educators embed data and analytics in multiple courses, with one participant (19) explaining: “You have to socialize them to it and maybe spoon feed in little baby steps, but all along from the beginning.”

Some participants said educators should dig into the context. For example, if students are analyzing social media conversations on Brandwatch, they should also analyze media coverage and competitor information to understand the nuances of micro changes in those conversations. Respondents recommended that PR educators partner with

other academic units on campus, such as business or data science, or with industry professionals or agencies, to team-teach data competency to students.

Participants suggested educators use real clients and datasets to deepen learning, something also recommended in the interviews conducted by Adams and Lee (2021). One manager at a global agency (4) said educators should incorporate open-ended assignments that encourage students to ask questions, inspire motivation, and figure out solutions on their own. Respondents also provided a number of assignment suggestions, including:

- Use AMEC research award entries to write case studies. Students could interview the professionals who submitted an entry to discern best practices and write the study (18).
- Have students assume the role of a junior executive in a communication agency, and in a 48-hour timeframe, create a client report with insights and infographics (5).
- Encourage students to participate and learn in online conversations about PR data and analytics on platforms such as Reddit, Slack, and LinkedIn (28).
- Have students develop weekly reports to examine different sources of data to consider societal factors that may be driving change (18).
- Give students a large data file on the first day of class. Teach them how to clean the data and how to gain insights in steps across the semester (20).
- Require students to attend a dissertation defense presentation from another department to gain practice taking complex ideas and data from outside their field and communicating key takeaways in a way that is understandable to a lay person. They could summarize the highlights in an executive summary or pitch the

newsworthy findings in a news release (20).

- Develop a data integrity assignment that requires students to write and explain their data source, including any possible biases and/or limitations (18).
- Analyze social conversations on Brandwatch and connect the analysis to what's happening in the news and from a Google search. Connect the analysis to both theory and conceptual frameworks when looking for insight and making recommendations (5).
- Examine where social media fits within the consumer journey for a business and how it impacts outcomes relative to other channels (13).
- Use a client or university website to understand how to improve campaigns and readership using data from Google Analytics (24).

One participant encouraged educators not to feel pressured to teach students everything about data analytics: “I think there’s a naive belief that a university can train everything. It can’t, it absolutely can’t and it shouldn’t” (20). He also shared an encouraging message for graduating seniors:

the company is going to invest money and time into training you, but they have a base level of knowledge that they want you to have. And I think there’s this little fear that I should know how to do everything when I walk in the door, and that’s crap, you’re never going to know everything when you walk in the door. We’re going to teach you the things that we think you don’t know, and you should ask questions along the way. (20)

The resulting focus should be for students to learn as much as they can in and out of school, to be ready to continue to learn during the rest of their career as tools change, and ask questions as confusion arises.

Table 2

Software and Tools Most Frequently Used to Analyze Data and Data Analytics

| Program/Tool | Frequency | Participant Quote about its Use |
|---------------------|------------------|---|
| Google Analytics | 16 | "measuring engagement, share of voice, reach, landing, just all of that" |
| Tableau | 14 | data visualization; "Google Analytics overwhelmingly is where we get a lot of our data, but we're using Tableau to present it." |
| Excel | 12 | "99.9% of your job in analytics is using Excel" to manipulate data, figure out what's important and to generate reports for clients |
| Adobe Analytics | 7 | "very similar to Google Analytics, but that's a paid tool" |
| Talkwalker | 6 | social listening tool; "we have Talkwalker, which we're huge, huge, huge fans of" |
| Brandwatch | 5 | "I really like Brandwatch from a listening perspective" |
| Sprinklr | 5 | "We also use Sprinklr for our social media monitoring, as well as our social media listening, as well as social media publishing." |
| Salesforce | 5 | "Salesforce is a CMS system. And so that allows us to analyze things like our electronic newsletters, the open rates, the read rates, as well as social media data." |
| Cision | 4 | "We use Cision, which is our media monitoring tool. That's the tool that we distribute most of our news content through. And what I mean by that is reaching out to reporters and distributing our press releases. It's our media monitoring and our distribution." |
| Meltwater | 4 | "On the social front, we're able to look at things like engagement rate through some platforms that we use, including Meltwater" |

Table 3*Software and Tools that Students Should Learn*

| Program/Tool | Frequency | Participant Quote about its Use |
|---------------------|------------------|--|
| Google Analytics | 15 | “Google Analytics and any of those social media analytics I think that are more of the low hanging fruit. That’s the table stakes, in my opinion” (and related to certification: “Google web analytics certified. Cool. That’s a marker. When we see a student who’s taken the effort, even outside of the program to go and do that, great.”) |
| Excel | 9 | “you need to be a fricking Excel power user. There’s no getting around that”; “a base Excel knowledge, I think is critical” |
| Tableau | 5 | “Ultimately, you’re looking for any trends or patterns that you can see. So really being able to visualize the data in some way, I think Tableau is great for that” |
| Brandwatch | 4 | “We use Brandwatch a lot for social media. And so, familiarizing yourself with those tools, I think, is very important” |
| Cision | 4 | “We use Cision a lot” |
| Sprinklr | 4 | “So for instance, Sprinklr, all the social media listening tools, basically just get the Twitter Firehose and then you drill down by keyword type of thing.” |

Discussion

In this study, seasoned communication professionals from a wide range of industries shared recommendations on how public relations educators can best prepare students to succeed in our increasingly digitized world. According to participants, students need a range of knowledge and hard and soft skills to work effectively with data and analytics. Most importantly, students must understand PR fundamentals, including how PR connects to other organizational functions and goals (Adams & Lee, 2021; Brunner et al., 2018; Ewing et al., 2018; Krishna et al., 2020). Practitioners explained that knowing business basics and knowing one's own industry are critical for asking the right questions, considering the nuances and context, and discerning actionable insight. Understanding how data aligns with or drives organizational objectives overshadows knowledge of any one digital tool or metric. While practitioners explained students do not need to be a data scientist (Neill & Schauster, 2015; Wiesenberg et al., 2017) nor know a programming language, they must have a strong grounding in research and statistics (Brunner et al., 2018; Krishna et al., 2020). Students must understand statistics and research in order to know how to examine frequency distributions, correlations, regression analysis, A/B testing, and more when examining data. Qualitative research skills are also needed for examining digital conversations and discerning meaning in data. Finally, students must also know how to succinctly and compellingly tell a story using data visualization for a wide range of audiences. Students must learn how to filter unnecessary data points to construct a simple story.

Much of the feedback from practitioners relates to soft skills, which employers often weigh more heavily than hard skills when making hiring decisions (Lee & Meng, 2021; Xie et al., 2018). The soft skills mentioned by participants included a willingness to learn, adaptability, and critical thinking, all of which align with the cognitive analytics

and sensemaking skills recommended for data competency by Lee and Meng (2021) and Xie et al.'s (2018) research. PR educators, mentors, and internship supervisors can all help to cultivate these necessary soft skills. Study practitioners suggested assignments that could foster critical thinking and adaptability, such as requiring students to wade through data dumps, thinking about data biases when cleaning and sorting data, and figuring out how the data provides solutions to specific problems.

Given constantly changing technology, a plethora of programs, and the high price tag of many tools, it is daunting to decide which digital tools to teach to PR students. However, participants explained data competency relates more to the approach than the tool. Encouragingly, the tool most widely recommended by participants was Google Analytics, one that provides free training and certification. Excel was another basic and cost-effective tool recommended frequently and vehemently by practitioners. According to participants, students must know how to create and analyze a pivot table and create graphs using Excel; therefore, educators may want to require Excel certification. For faculty who want to learn new tools or software, the key is to start and keep it simple. Educators can tap into resources, like Matt Kushin's Social Media Syllabus blog and Karen Freberg's Social Media Professors Facebook Community Group.

While this study builds upon other research touting the necessity for PR students to learn to work with data, the question remains whether educators should create a stand-alone course and/or to integrate data analytics into existing courses. Given increasingly tight resources and crowded curriculum requirements, a separate course might not be possible; therefore, educators should consider spoon feeding data and analytics training across the curriculum, including introductory public relations, campaigns, research, and social media courses. Educators could introduce data and common terminology and metrics in introductory classes and later require students to use and analyze data in more advanced courses

(Kent et al., 2011). Educators should continue to foster connections with industry professionals to serve as guest speakers, mentors, and project partners and to use real data and clients (Adams & Lee, 2021; Meng et al., 2019). Finally, students must take some responsibility for their own learning about how to work with data. Students can invest in their own learning by earning certifications, reading blogs and posts related to data analytics, attending brown bags and webinars, and completing internships.

While this study sheds much-needed insight into how to teach data and analytics, the findings are limited to a sample of 28 communication professionals. Future researchers might implement a survey with a larger sample of communicators to ask about data competency and tools needed. Future research could also compare the efficacy of various pedagogical approaches used by educators to teach data and analytics. Another possibility is to examine and describe data and social media labs housed in communication academic programs.

In conclusion, this research has indicated that while educators have many new tools and ways to teach data competency to public relations students, the basics have not changed. To succeed, students need foundational knowledge in PR concepts and models, strategy, business acumen, and research; skills in analyzing data and connecting to strategy and storytelling; and soft skills in critical thinking, adaptability, and a desire to learn. Educators should focus less on the tools and more on the knowledge outcomes and skills identified in this study. By investing small amounts of time in professional development and focusing on the basics (e.g., Google Analytics and Excel), educators can cultivate data competency among themselves and their students.

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