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Redefining Doctoral Education: Preparing Future Faculty to Lead Emerging Media Curriculum

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Abstract

New tools that accommodate data, social media, multimedia, virtual reality and other emerging platforms influence our concept of what it means to be a storyteller and have influenced varied levels of curriculum change in mass communication academic programs. The education of doctoral students in mass communication, however, has not progressed to support the demand for educators and scholars who are confident in and adept at emerging concepts. This study compares the requirements of academic position descriptions with students' and graduates' attitudes about their preparedness for these roles. It concludes with a case study designed to identify approaches necessary to develop the digital scholar-educator of the future.

Introduction

Doctoral education is the cornerstone of academic life. It not only prepares future faculty for a career in scholarship in its respective disciplines, but it generally serves as the training mechanism for those who will teach. "Research is the dominant focus of the doctorate, and it defines the life of most research university faculty, but it is not the primary work activity of most faculty at American colleges" (Golde & Dore, 2001). In mass communication, Ph.D. students work with mentors, perform original research, work as graduate assistants and often teach their own sections and courses. This preparation helps improve their chances on the job market upon graduation with their terminal degree.

The mass communication profession has experienced profound change in the past two decades due to the proliferation of technology that has disrupted the traditional models of professionalism, distribution, trust and the marketplace of ideas. The influence of the technology industry has caused media companies to participate in new types of economics, competition and engagement with the audience (Royal, 2014). These changes have led to curriculum modifications in some undergraduate and master's programs across the country, with new courses, concentrations and degrees being developed to incorporate new methods of storytelling, including social media, data visualization, content management, multimedia, mobile applications, virtual and augmented reality, artificial intelligence and more (Castaneda, Murphy & Hether, 2005; Royal, 2005; Kraeplin & Criado, 2005; Mensing, 2010; Van Buskirk, 2010; Sarachan, 2011; Journalism, Computer Science, 2015; Jarvis, 2015;

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Royal, 2016; Royal, 2019).

The digital ecosystem introduces more than new skills to a program. It offers a new mindset about the role of a media organization that now manages a range of digital products and operates on a variety of platforms, engaging audiences and using data in storytelling and decision-making. Media organizations must recognize their role among the broader technology industry, where the activities of Facebook, Twitter, Apple, Amazon, Craigslist, Buzzfeed, Vox and more have an influence on media. The technology industry has introduced new terms and processes that are required to be comprehended in order to influence meaningful change in the profession and curriculum, including innovation concepts around product management, platforms, data, algorithms, engagement and other trends. But journalism faculty are often unable or unwilling to adapt to new digital concepts and skills (Bright, 2018).

Doctoral education in mass communication, however, has remained fairly constant over the past twenty years. Most programs provide education in research methods and mass communication theory, allowing students to customize a program around their scholarly interests, working with mentors in their field. Few programs offer more than a single course on teaching or the pedagogy of the discipline. Combine this with the lack of a comprehensive appreciation for the role of technology in media, and the demand for scholar-educators who are prepared to address curriculum innovation greatly exceeds the supply of qualified applicants.

The tenure track provides a process by which early career faculty prove their ability to publish meaningful scholarship in their field. It also provides the pipeline by which faculty progress to positions of authority and judgment in the administration of a program. Personnel, curriculum and search committees are often led by, or have decisions approved by, tenured faculty. In the mass communication discipline, while many programs rely on the contributions of professionals in the form of adjuncts and lecturers who provide valuable insight to professionalism, more strategic and comprehensive changes to curriculum are guided and approved by those with tenure. It is critical that these decision makers have a strong appreciation of the modern media ecosystem.

This study is an analysis of the role of the Ph.D. in mass communication in preparing future faculty to lead innovative curriculum. While those holding other doctoral degrees are also often employed in mass communication programs – for example, the Ed.D. degree from education programs, the J.D. degree from law schools and doctorates from other disciplines, this study focused on those seeking doctoral degrees in journalism and mass communication to assess opportunities to affect doctoral curriculum in the specific discipline. Using a mixed methods approach, the market for digital skills and mindsets is compared to doctoral students' and recent graduates' attitudes toward their preparedness for these roles. The study culminates with a case study of a program designed as a prototype and proof-of-concept to prepare future faculty to lead innovative curriculum.

Review of Literature

Disconnects between what Ph.D. programs in journalism and mass communication teach and what is demanded by both the professional and academic industries have been identified throughout the past two decades (Wilkins, 1998; Cohen, 1997; Reese, 1999). As early as 2000, researchers realized how an increasingly media-saturated and dependent culture is attracting greater attention toward the education of journalists (Reese & Cohen, 2000). There is, however, division in the identities of journalism schools being increasingly appropriated by different spheres of influence: the vocational identity influenced by the industry and the research identity influenced by academia. This discussion was magnified in 2002, when Columbia University president Lee Bollinger mounted a task force to outline the goals of journalism education, recommending a more academic approach. Criticisms were launched from those more closely aligned with the profession, making a plea for journalism education to sustain focus on the "basics" of reporting and editing (Kirtz, 2002). This dichotomy on j-school priorities, whether real or imagined, has landed journalism and mass communication research in an academic "no-man's land" where it's neither accepted by the news industry nor the traditional liberal arts disciplines (Cohen & Reese, 2000). A balance between research and teaching is often sought, but difficult to achieve, and an emerging media ecosystem centered on digital products has complicated this scenario (Royal, 2017).

At the core of most doctoral programs is a fundamental contradiction: Ph.D. students spend three to five years learning to conduct research, but journalism and mass communication departments focus

on pedagogy when hiring (Wilkins, 1998). What a Ph.D. student can teach and how that future educator performs in the classroom has a significant bearing on almost all entry-level hiring decisions. While large, research-oriented universities grant tenure based on a dossier that emphasizes research, other institutions put teaching first, and even those research institutions don't ignore teaching (Wilkins, 1998).

Journalism education was once seen as interdisciplinary, oriented both toward liberal arts and professional applications, but then faced mounting pressure to abandon academic ethos and embrace industry patrons, essentially rendering it vocational (Reese, 1999). Some argue the ultimate objective of journalism education should be to improve the practice of journalism by training skilled practitioners, teaching how journalism affects public life and illustrating critical, social issues. This creates not only better editors, writers and producers, but it also fosters a more media-literate press consumer (Reese, 1999).

Doctoral programs were found to offer little, if any, training in teaching, course development and curriculum building (Cohen, 1997). This research suggests that various improvements are needed in graduate and doctoral education and recommends requiring students to become well versed in the body of knowledge focused on curriculum and teaching careers, searching for job candidates who demonstrate experience in the scholarship of teaching and the establishment of a division within AEJMC dedicated to research about teaching and learning in schools of journalism and mass communication.

Nearly a decade later, practice and research training in graduate schools were separate, insulated and isolated, though they were adjacent in curricula (Thorson, 2005). A dichotomy of priorities exists between journalism academia and the news industry: the industry assumes academia will provide them well-trained students who can be hired into both general and niche news production roles, while academic institutions focus more heavily on research. Further, when the industry does need research, they seldom turn to academia and favor professional research companies for studies and analysis (Thorson, 2005). Those findings are rarely shared with academia nor do they become public.

There is a disconnect between academic research and its effect on reporting and editing. Being caught between these two cultures likely limits the conceptualization of what graduate courses, both master's and doctoral, might look like (Thorson, 2005). An analysis of doctoral education in mass communication found Ph.D. programs are expected to adequately train students in research and teaching, but not service to the journalism community (Christ & Broyles, 2008). It was found that, upon graduating, Ph.D. students should demonstrate the ability to teach undergraduate students, perform research and understand the importance of service in the academic and the professional world. While these were identified as the expectations, questions arise regarding how to accurately measure these outcomes and what successfully meeting these expectations means (Christ & Broyles, 2008). The areas of doctoral education that need attention were identified, but the means by which programs could improve remained a mystery. Thorson (2005) identified beyond these fundamental flaws a more general issue in Ph.D. programs of communicating innovative thinking about both news practices and research to both academia and the news industry.

To innovate or further the field of journalism and mass communication, scholars both inside and outside of the field have to re-ignite debates about what journalism is and should be, and postulate concepts, models and theories accordingly (Deuze, 2006). Some argue journalism must always be framed in terms of journalism and society, as it then can be situated in particular technological, economic, political and social contexts (Deuze, 2006). Macdonald (2006) found North American journalism education has been tasked with teaching students traditional journalistic values, though this method is often criticized by scholars for allegedly contributing to public apathy around news media. To remedy, j-schools fostering students' critical understanding of the role of media industries is recommended as a way to address the challenges of contemporary journalism (Macdonald, 2006). Ph.D. students, then, must be trained to appropriately criticize media and must be familiar with current industry practices.

Notable recent changes in the news media landscape compared to journalism's 100-year history have left education programs behind and unprepared to respond to such structural changes (Mensing, 2010). Programs attempted to expand technology training and reorient sequence and media tracks, but a shift from industry-centered models to a community-centered model is recommended to re-engage journalism education in a more productive and vital role to the future of the field (Mensing, 2010).

Senior faculty often view Ph.D. students as "colleagues in training" rather than simply graduate assistants, and those with a Ph.D. believe a terminal degree is more important for faculty than significant work experience in journalism (Pardun, et al., 2015). This supports the idea that mentees follow in their mentors' footsteps, but if mentors are in programs that do not focus on contemporary journalism practices, mentees will perpetuate the lack of modernization seen throughout the journalism industry.

Methodology

Diffusion of innovation is "the process by which an innovation is communicated through certain channels over time among the members of a social system" (Rogers, 2010). In relation to emerging topics in media curriculum, innovation is often communicated through the position descriptions for hiring faculty. Doctoral training represents one level of education whose influence spans throughout a discipline's curriculum. Those hired on the tenure track progress to positions of authority on faculties that have influence over topics, courses, degree programs, new undergraduate majors and new graduate programs. Understanding the role of emerging media in the preparation of doctoral students in the field of mass communication provides a lens for assessing their ability to effectively influence the future direction of the academic discipline. This, in turn, affects undergraduate and graduate student preparation for professional careers.

A mixed method approach was used to first analyze faculty position descriptions and then survey mass communication doctoral students' attitudes toward digital concepts, identifying gaps in supply and demand for stated faculty positions. A case study of a program designed to train future faculty on digital concepts provides a model for further consideration.

Research Questions

1. How is innovation communicated through mass communication faculty position descriptions?
2. How do doctoral students and early career faculty feel about their preparation to teach in emerging areas?
3. What emerging competencies should be introduced in doctoral curriculum? How can emerging topics be introduced in mass communication doctoral programs to integrate teaching and scholarship?

Analysis

AEJMC Job Hub Position Descriptions: To address RQ1, an analysis of positions on the AEJMC Job Hub (http://www.aejmc.org/jobads/) was made for items mentioning digital skills and concepts. They date from March - August 2018. This time period was selected as it led up to the Association for Education in Journalism and Mass Communication conference, where many doctoral students first interview for stated positions. Positions were analyzed for mentions of terms to include digital, online, social and new media, as well as data journalism/visualization, multimedia, virtual reality, programming/coding and other emerging topics. The analysis included job descriptions, qualifications and requirements, but did not include paragraphs where schools described their existing competencies or general program or university descriptions.

A total of 108 positions for roles in Journalism, Mass Communication, Communication and other departments were identified and analyzed in this study. Of those positions, 65 or 60% were identified as tenure/tenure-track roles. Within the tenure-track positions, 46 or 71% of the position descriptions indicated a preference for candidates demonstrating digital skills and/or conceptual appreciation of digital topics. A sample of 20% of the positions were analyzed by a second coder and compared for intercoder reliability of 90%.

Of the 46 positions that mentioned digital requirements, the following terms were the most frequently used (Table 1).

Table 1

Term	Percent
Digital	54%
Social Media	37%
Data	30%
Analytics	24%
Multimedia	17%
Emerging	11%

Key Phrases Used in Job Ads Associated with Digital: The following are examples of phrases used in AEJMC position descriptions associated with digital concepts. They range from phrases associated with multimedia and social media to game studies, virtual reality and analytics. Some descriptions were specific

about the candidate's ability to lead students in new concepts and drive change in the curriculum.

- "an emphasis in social media or data analytics"
- "data journalism and digital/ multimedia journalism"
- "experience incorporating digital technologies in the classroom"
- "evolving nature of journalism in the age of social media; the role of algorithms and infrastructure in the circulation of news"
- "experience using analytics; experience in coding is also desirable"
- "emphasis will be placed on big data analysis, computational propaganda, social media and branding, and algorithm/platform politics"
- "teach media audiences and analytics; audience and data analytics; social media applications in strategic communications; virtual reality; and audio or video streaming"
- "seeking a candidate with expertise in news writing and writing for digital environments and applications"
- "professional expertise in digital media to teach courses in at least two of these areas: digital storytelling for news and/or promotions, social media, media analytics, digital literacy & culture"
- "teaching in game design, writing for interactive media, gaming cultures, game industries and ecosystems, interpretive approaches to gaming texts, and/or psychological, social, or cultural impacts of interactive play environments"
- "emphasis can include the politics of AI, augmented and virtual systems of representation, human machine communication, and sentient technologies/robotics"
- "introduce digital media elements and teaching into curriculum"

The trends identified highlight a strong need for increased and improved exposure in doctoral programs to a range of digital concepts and topics in order to meet the requirements of a majority of available tenure-track positions.

Mass Communication Doctoral Curriculum Survey

To address RQ2, during Spring 2018, an online survey was administered to doctoral students and recent graduates of doctoral mass communication programs to assess their ability to teach digital topics and the level to which they felt their programs prepared them to teach in these areas. Respondents were recruited through emails sent to graduate advisers and administrators at 44 ACEJMC accredited schools in journalism and mass communication with doctoral programs in the United States. A total of 70 respondents replied and 59 met the criteria of being a current doctoral student in mass communication or having recently graduated from a mass communication doctoral program (since 2012). Respondents were not asked to indicate name, program or location, as to encourage candid responses.

Level and Disciplines Represented in Respondents: Table 2 demonstrates the level and disciplines represented by respondents to the survey.

Table 2: Level and Discipline of Survey Respondents

Doctoral Student	74.6%
Assistant Professor	25.4%
Journalism	42.4%
Digital	18.6%
General	15.3%
Other	11.9%
PR	8.5%
Ad	3.4%

Self-Assessed Ability to Teach Digital Topics: Table 3 depicts the range of digital topics that could be introduced in a mass communication curriculum. Respondents were asked to rate their ability to teach these concepts on the following 5-point scale.

5 expert: could easily teach, or have taught, with minimal prep
4 above average: could teach with some prep
3 average: could teach with extensive prep
2 below average: could introduce topics in another media course
1 poor: no ability to, no interest in, teaching this topic

Considering that an academic program would need those who have an expert or above average understanding of a topic in order to be hired to teach it, the results of this sample of mass communication doctoral students indicate many topics in which respondents felt they had weak ability and little preparation. While many felt comfortable with basic digital topics, when asked about more specific, ad-

Table 3: Self-Assessed Ability to Teach Digital Topics

	% 4/5 rating	% 3 rating	% 2/1 rating	Avg
Basic Digital Concepts	79.66%	15.25%	5.08%	4.19
Photos/Video for Social Media	72.88%	16.95%	10.17%	4.07
Digital research and theory	64.41%	22.03%	13.56%	3.81
Social media marketing/analytics	62.71%	25.42%	11.86%	3.73
Mobile Storytelling	59.32%	23.73%	16.95%	3.59
Data Analysis	44.83%	29.31%	25.86%	3.19
Innovation	44.07%	33.90%	22.03%	3.25
Data Journalism/Visualization	42.37%	30.51%	27.12%	3.22
Product Management Concepts	37.04%	29.63%	33.33%	3.07
Basic Web Design	22.03%	35.59%	42.37%	2.68
Virtual Reality/360 video/augmented reality	20.34%	30.51%	49.15%	2.54
Mobile Application Development	13.56%	27.12%	59.32%	2.20
Drone Journalism	13.56%	20.34%	66.10%	2.19
Advanced Web Development	10.17%	22.03%	67.80%	2.08

vanced competencies, their confidence levels dropped. They were least prepared to teach Basic and Advanced Web Development, Drone Journalism, Mobile Application Development and Virtual Reality/360 Video/Augmented Reality topics. Respondents were most prepared to teach Basic Digital Concepts, Digital Research, Photos/Video for Social Media and Social Marketing/Analytics.

Attitudes Toward Digital Preparation, Teaching and Research: A second series of statements assessed the level to which respondents agreed or disagreed that their doctoral program prepared them to teach digital concepts, their enthusiasm for the topics, their ability to lead curriculum change in the future and the role and confidence of performing digital research.

Respondents were asked to rate their ability to teach these concepts on the following 5-point, Likert scale: Strongly Agree (5), Agree (4), Neutral (3), Disagree (2) to Strongly Disagree (1).

The results in Table 4 indicate a disconnect in how well respondents felt their doctoral programs had prepared them and their enthusiasm for teaching digital concepts. 61% did not agree with the statement "My doctoral program prepared me to teach digital topics." But 89.8% indicated that they were enthusiastic to teach these topics during their careers.

Case Study: Doctoral Student Bootcamp on Digital Skills and Concepts

To address RQ3 and the disconnect between supply of candidates with specific digital sensibilities and the demand as stated in academic job descriptions and to explore the ways in which doctoral education in mass communication could integrate digital scholarship and teaching, the idea of a bootcamp introducing digital methods was conceived. This program, the PhDigital Bootcamp, recruited mass communication doctoral students or those within two years of receiving their doctoral degrees to participate in a hybrid online/in-person workshop. With the support of the John S. and James L. Knight Foundation, the program has held two cohorts, in 2018 and 2019, each with 20 participants selected. The Knight Foundation has committed to at least one more year of the program, to be held in Spring 2020.

The program began with ten online modules leading up to a one-week, in-person session in the Media Innovation Lab in the School of Journalism and Mass Communication at Texas State University. Digital product management was used as an organizing concept for this program, introducing participants to a range of topics meant to lead toward a greater appreciation for digital skills and culture.

Topics included:

- Product Management, Platforms and Design

Table 4: Attitudes Toward Digital Preparation, Teaching and Research

	Agree	Neutral	Disagree	Avg
My doctoral program prepared me to teach digital topics.	39.0%	20.00%	41.00%	3.02
My current program values and encourages the teaching of digital, emerging topics.	66.7%	22.00%	11.00%	3.85
I am excited to teach digital topics in my career.	89.8%	6.78%	3.39%	4.37
I feel confident in my ability to help drive curriculum change in the future.	84.7%	10.17%	5.08%	4.22
My doctoral program prepared me to research digital topics.	85.2%	3.70%	11.11%	4.26
My current program values and encourages research on digital, emerging topics.	81.4%	10.17%	8.47%	4.17
I feel confident in my ability to perform research on emerging, digital topics.	85.2%	11.11%	3.70%	4.19

Thinking
- Social Media and Analytics
- Web Development and Mobile Concepts
- Computational Data Analysis
- Data Journalism
- 360 Video, Virtual Reality and Augmented Reality
- Drone Journalism
- Digital Curriculum Trends
- Digital Pedagogy and Scholarship

Each topic was represented in the online modules to efficiently prepare for sessions during the in-person workshop. Online modules consisted of video tutorials, exercises and discussion posts. The in-person bootcamp took place over the course of one week, with lessons corresponding to the preparation received in the online modules. During the in-person session, participants got hands-on experience with the platforms under study.

In addition to the topics above, guest speakers presented to the group, either in person or via Skype. Discussion with scholars included ways in which digital topics presented research opportunities and challenges. A field trip the Texas Tribune and visits with Texas State alumni working in emerging fields validated and confirmed many of the program's concepts and allowed participants to interact with professionals.

The goal of the bootcamp was broad introduction to topics and not necessarily to create expert practitioners in any of these concepts. Digital products and platforms are in constant flux, and there will always be new technologies to learn and integrate into curriculum. A key mission of the bootcamp was to begin to establish a mindset of constant change and share strategies for staying up-to-date and integrating new skills and concepts into curriculum.

Assessment

The program was well received by participants. Self-assessed competency levels using the following scale were measured in a pre- (February) and post-assessment (May) for both the 2018 and 2019 cohorts with the 39 participants who completed the program. Table 5 shows the shift from pre-assessment to post-assessment for those indicating expert or above average competency. A two-tailed t-test for a non-paired sample assuming equal variances was performed on the raw assessment data to identify topics experiencing significant change during the bootcamp.

All topics covered in the workshop indicated significant increase in self-assessed competency, with greatest improvement attributed in the areas of Frontend Web Development, Interactive Web Development, Digital Product Management Concepts, Design Thinking, Data Visualization and Storytelling, Virtual Reality/360 Video, Drone Journalism and Digital Curriculum Trends.

The average total point change for expert/above average ratings from pre-assessment to post-assessment on all items measured was 46.68 percentage points (13.12% pre-assessment, 59.8% post-assessment). This indicates a meaningful increase in exposure and confidence in the participants, adding to their qualifications for digitally focused academic positions.

Comments from Participants

Comments on a final evaluation from those participating in the program included ways in which they

Table 5: Pre and Post Self-Assessment
% Expert(5)/Above Average (4) Rating

	pre	post	point change	p-value
Frontend Web Development	5.56%	64.71%	59.15	0.000
Interactive Web Development	0.00%	52.94%	52.94	0.000
Data Analysis Languages	25.00%	35.29%	10.29	0.018
Responsive Design	0.00%	38.24%	38.24	0.000
Mobile App Development	0.00%	20.59%	20.59	0.000
Multimedia Storytelling [photos and video]	47.22%	82.35%	35.13	0.002
Social Media Engagement	41.67%	79.41%	37.75	0.000
Social Media Certifications	16.67%	63.64%	46.97	0.000
Data Visualization and Storytelling	28.57%	82.35%	53.78	0.000
Digital Product Management Concepts	5.56%	61.76%	56.21	0.000
Design Thinking	13.89%	70.59%	56.70	0.000
Virtual Reality/360 Video	0.00%	76.47%	76.47	0.000
Augmented Reality	0.00%	41.18%	41.18	0.000
Drone Journalism	5.56%	70.59%	65.03	0.000
Bots/Artificial Intelligence/Machine Learning	2.86%	38.24%	35.38	0.000
Entrepreneurship and Innovation	11.11%	47.06%	35.95	0.000
Digital Curriculum Trends	19.44%	91.18%	71.73	0.000

planned to incorporate topics, improvements they anticipated to their career potential and the importance of integrating emerging topics into their research.

- I plan to use the resources on further developing my skills on data visualizations and computational data analysis. I also plan on using the project that we developed the last day. I want to expand on it and be able to use it for a possible future class.
- Teaching for me stems from my own interest in various topics, and each of the topics were so immensely exciting that I cannot wait to make myself better at the job.
- There is no other place where we can learn the new skills, and how to incorporate them into curriculum.
- While it is hard to become an expert in any of these things in this amount of time, it is a great place to gain confidence to move forward with these different concepts and tools.
- PhD programs in our field need to think about more than just research. They must also focus on pedagogy (we need to teach professors how to teach), and they must encourage and push students toward emerging technologies, especially as they will be the newest members of their respective departments.
- I was petrified of the term "Big Data" and the idea of immersive storytelling practices. Now I feel much more confident. And it took just 10 weeks of online modules and one week of intensive Bootcamp. This is definitely something that all doctoral programs can incorporate into their schedule.
- This Bootcamp makes me realize that theoretical and practical explorations are both important and inseparable, especially for researchers who study technologies and digital culture. Researchers need hands-on experiences to better understand how the given technology works and how it might affect society positively and negatively.
- The direct interaction with technologies that I had at this Bootcamp makes me a more open-minded person about the possibilities and new affordances of technology, which will inspire me for new ideas for my future research.
- I was afraid of coding, HTML, CSS, JavaScript, Python, and R, but now I feel more comfortable with these terms and what they are and what is possible with it.

- We owe it to our students to prepare them for the job market. We live in a digital era, there's no looking back... that train already left the station.
- Resistance to this kind of innovation in our discipline is killing journalism education and may eventually kill journalism.

Discussion

This analysis discussed the disconnect between descriptions for faculty positions in journalism and mass communication with perceived candidate preparedness for these roles. In addressing RQ1, a majority (71%) of tenure-track positions indicated a preference for candidates demonstrating digital skills and/or conceptual appreciation of digital topics. Topics mentioned most frequently were the phrases "digital," "social media," "data" and "analytics." Many mentioned emerging topics, including coding techniques, artificial intelligence, virtual reality, data journalism, game design and algorithmic thinking.

In addressing RQ2, when doctoral students and early career faculty were polled, there was weak self-assessed proficiency in many of the desired areas around digital topics. Fewer than 40% of those polled indicated an expert or above-average comprehension of product management concepts (37.04%), basic web design (22.03%), virtual reality/360 video (20.34%), mobile application development (13.56%), drone journalism (13.56%) and advanced web development (10.17%).

Only 39% of respondents agreed with the statement "My doctoral program prepared me to teach digital topics." But 66.7% agreed that their programs valued and encouraged the teaching of digital and emerging topics and 89.8% said they were excited to teach digital topics. These results indicate a disconnect in candidate perception of their preparation for these roles.

The case study of the PhDigital Bootcamp was used to provide support for RQ3 and the potential for a program to improve the preparedness of candidates for digital faculty positions. Self-assessed competencies were measured in a pre-assessment taken before the program began and a post-assessment taken immediately after the program's completion. Most significant improvements were attributed in the areas of Front End Web Development, Interactive Web Development, Digital Product Management Concepts, Design Thinking, Virtual Reality/360 Video and Digital Curriculum Trends. Overall, a meaningful increase of 46.68 percentage points in Expert/Above-Average ratings was witnessed across all workshop topics. Participants indicated marked enthusiasm and increased desire to implement and integrate digital concepts into their teaching and research. Given the success of this short program, more integrated doctoral programs, comprehensively addressing these topics, could influence faculty competencies and future curriculum strategies.

The workshop identified new topics, modules and formats for engaging doctoral students in emerging media skills and concepts. The lessons from this program can be used by mass communication doctoral programs in considering new topics and methods into their academic programs of study. More information about the PhDigital Bootcamp can be found at phdigitalbootcamp.com.

Limitations

The limitations of this study are in the non-generalizable nature of the data collected. The mass communication doctoral student survey sample was not randomly identified. However, the sample size was large compared to the relatively small overall population of mass communication doctoral students. Recruitment through emails sent to graduate advisers assured direct access to the population under study.

Another limitation of the study has to do with the environment in which faculty position descriptions are developed. Quite often, these descriptions felt like laundry lists of digital skills, without much insight into the specific competencies needed. "Digital" is often conceived as a single competency, when it encompasses a broad swath of new and emerging competencies that will be required in modern curriculum.

The case study is limited in its ability to project results onto other programs, given its unique format and resources dedicated to it. It does, however, provoke insights to further the discussion on education in journalism and media programs. The self-assessed competencies are limited in their ability to predict actual competency. Future research should implement competency-based pre- and post- tests as another measure of success.

Conclusion

Demand is strong for those who can teach and research across a range of digital topics in mass communication programs. This trend is expected to continue as digital and emerging technologies impose

increasing influence on media and communication in the areas of social interaction, the veracity of information, the sustainability of the business of news, the influence of technology companies, the importance of privacy and information security and more. Doctoral programs in mass communication, however, have not produced enough graduates who are exposed to emerging technologies and who are competent and confident in their ability to direct teaching and research in these areas.

The results of this study have implications beyond those associated with mass communication doctoral education. A new model of preparing faculty is needed that develops a digital scholar-educator and creates a pipeline of academics who will progress through the tenure track and be able to influence future curriculum innovation across the discipline. The bootcamp model described in this study provides a proof-of concept that can be used as a template for doctoral curriculum development, with the goal of fostering a mindset of innovation that can support the constant progression of emerging communication technologies. With these technologies influencing the future of media, we will need a discipline whose faculty are prepared to adapt and lead in order to best prepare students for emerging media careers. We run the risk of other disciplines – for example information and computer science programs - better preparing doctoral students to teach and research in our own discipline. While having some diversity of doctoral faculty is desirable in any program, the journalism and mass communication discipline should be responsible for the majority of the preparation and training pipeline of qualified candidates to our field.

In order to meet the demands of the academic and professional disciplines, several options should be considered. The ACEJMC accrediting body could develop enhanced guidelines for doctoral curriculum. AEJMC could provide leadership and training on topics to be addressed in doctoral education that can better integrate teaching and research in the modern communication environment and specify the role of doctoral education in affecting curriculum innovation at all levels. Mass communication doctoral program should individually embark on curriculum innovation to introduce digital product management topics in both skills-based and research-focused courses. This could take the form of certification credentials that students can present when apply for faculty position. Programs may develop specific emphases around their own competencies that could attract students to their offering. And a general focus on pedagogy, innovation and digital products should be elevated in faculty metrics and incentives. The research presented here provides a starting point for these discussions.

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