Articles

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Technology use in Canadian newsrooms: there's social media and then everything else

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Abstract

In this study we examine the different kinds of technological skills that journalism school graduates are expected to have in order to meet expectations in the workplace. We also examine what kinds of technology areas are seen as useful for the practice of journalism, based upon data obtained from newsroom leaders and from recent graduates of a university journalism programme. We find that technology-oriented tasks related to social media are by far the most commonly used in Canadian newsrooms to-

day. But we also find that there are many technologies, which are not used as commonly, but which are viewed as very useful by newsroom leaders and recent graduates. Both respondent groups indicated they would use many of these technologies more than they currently do, in an ideal world. This study adds another dimension to the long-standing issue of whether journalism programmes should play a more proactive role in technology use or should hew more closely to industry needs.

Keywords: Journalism education, technology, digital, social media

Introduction

The purpose of this study is to shed some light on the kinds of technological skills that are in demand and in use in Canada's newsrooms. A recent study (Wenger et al., 2018) examining journalism job postings in the U.S. in 2010 and 2015 found that "the traditional print or TV job is, in many ways, a thing of the past" (33).

In particular, the researchers found that the demand for web/multimedia skills had increased sharply. "As recently as 5 years ago, no more than a third of positions (33%) required web/multimedia skills—now it is nearly two thirds of all jobs (62%)" (Ibid.).

This study attempts to clarify with more precision the type of multimedia or technology-oriented tasks that young journalists are now expected to perform when they finish their programmes. It is anticipated that this information will be useful for journalism educators, particularly those who may develop and teach technology-oriented workshop courses or who are working to adapt programme curricula to rapid technological change.

What this study does not try to do is compare the importance of technological skills and abilities with what might generally believed to be fundamental journalism skills, such as critical thinking, the ability to research and write a good story, or interview people effectively.

Previous studies have found that these fundamental skills and abilities consistently rank higher in importance than the ability to produce interactive graphics, for example. In a U.S. study, Fahmy (2008), concluded that "while students should continue to learn about convergence to be familiar with the multiplatform reporting trend and how it will evolve, they should still concentrate on excellence in traditional journalism skills" (34).

A study in Western Australia (Callaghan and McManus, 2010) found that the skills and characteristics rated most highly by news employers were the ability to learn, good spelling, grammar and punctuation, enthusiasm and clarity of writing. And a U.S. study into desired skills in sports journalism (Ketterer et al., 2014) found that writing ability was perceived to be the most important among many different skills. The researchers concluded that "[a]s journalism and mass communication programmes continue making revisions to their curricula for addressing convergence journalism, these findings should be a reminder that even as new technology comes into newsrooms, the skills to construct and tell good stories remain the cornerstones upon which good journalists are created" (293-294).

And as one of the newsroom leaders in the current study put it: "I find journalism students need to focus on the basics of writing, interviewing and storytelling. Technological skills are important but at the end of the day, good basic journalism skills are what most hiring managers look for" (open-ended survey response).

This study assumes as a starting point that the importance of these fundamental skills and abilities is a given. However, it almost goes without saying that the media landscape has changed dramatically with the popularization of the World Wide Web in the mid 1990s, the founding of social media platforms such as Facebook (2004) and Twitter (2006) and the release of the first iPhone in 2007. Researchers and profes-

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sionals often refer to the 'convergence' taking place in the news media, wherein a newspaper's newsroom now produces written words but also video, audio and other content in various multimedia formats, or, conversely, a broadcast newsroom now produces more written journalism as well. Ureta and Fernandez (2018) refer to media convergence as "a gradual phenomenon of coordination between two or more media with consequences for the newsroom floor, content production processes and journalists' profiles" (878).

They report that journalists who are trained across the different media types are in demand by news organizations. "Specifically, online journalists are expected to have more skills and be more adept at cross-media reporting than their counterparts in print and broadcast media, as well as to demonstrate a special capacity for cooperative effort and teamwork" (Ibid.).

In an open-ended response, one newsroom leader in the current study expressed a desire for journalism programmes to be mindful of how they prepare their students for such a 'converged' media landscape: "I'm hoping the final data suggests that journalism programmemes in Canada need to adapt curriculum to better reflect the jobs that currently exist in media. You can't just specialize in 'print' or 'TV' anymore. Everyone is doing everything, and students who have recently interned with me aren't coming out of their programmeme with nearly enough training. I know our J-Schools can adapt and meet this challenge."

This raises one issue that is somewhat controversial among journalism educators, namely the extent to which students even need technology-oriented training (though the respondent just cited evidently believes that such training is required and even expected). Some researchers have suggested that the young people now entering journalism programmes need little or none.

"[T]hese are the kids who grew up online, whose childhoods evolved in a virtual universe as interactive and age-blind as it was dynamic and immediate," wrote Dianne Lynch for Nieman Reports in 2007. As a result, she wrote, journalism educators "need to stop teaching software (except, perhaps, to each other). Our students will come to us knowing it, or knowing they can learn it when they need to."

Other researchers have cast doubt on this idea. Hirst and Treadwell (2011) found, for example, that journalism students "are not professionally competent using media production technologies." They wrote that "in our experience many students are 'instrumental learners' focused on grades, assignments and outcomes; if something is not in the syllabus, does not attract marks or requires extra-curricular work; then it is an imposition" (450).

In another study that was focused on using social media, Bor (2014) concluded that "[b]ased on the present analysis, it appears that millennial students still require some instruction on using web-based platforms, and the importance of mastering technical skills in the classroom is enhanced by industry requests for technologically savvy job applicants who possess an array of multimedia skills such as posting content to the web" (252).

In the current study, one open-ended comment for a recent journalism programme graduate is notable: "I think doing a deep-dive into how to use Facebook (during training at my current job we actually had a [Facebook] session and it was useful) and practicing how to live-tweet more in j-school would have been great skills to really perfect while I was still in school. Also, teaching people how to get Facebook messages to go through without being the person you're messaging's friend is really important – I literally learned this last week and can't believe I didn't know before."

This comment suggests that students may still have things to learn about some of the functional aspects of social media platforms despite the fact that they use them regularly.

Assuming that journalism educators feel that some technology-oriented training should be part of a journalism programme, the question is what kinds of technologies or platforms should be included in that training. This study provides three different data points that help shed some light on this question: what kinds of technology-oriented abilities are currently in demand in Canadian newsrooms; what kind of technologies do newsroom leaders and recent graduates feel are useful for the work of journalists; and what kinds of technologies would newsroom leaders and recent graduates use more (or less) of, in an ideal world?

Methods

This study was conducted by surveying two different subject groups: newsroom leaders; and recent graduates of a Canadian university journalism programme. Each group was invited to participate in a separate survey, though each of the two surveys had some common questions. This approach was intended to allow a comparative analysis. Both surveys were developed using SurveyMonkey and each survey was pilot tested on members of the target groups. The surveys were revised based upon feedback from those target group members.

The newsroom leaders were drawn from a list compiled of news organizations in Canada that provide general news and information in English. Specialty publications focusing on such areas as fashion, real estate or personal finance were not included. The newsroom leaders had a variety of job titles, depending upon the kind of medium in which the organization produced news. For example, the personnel in broadcast were

typically executive producers or news directors. Personnel working in print media were often managing editors or editors in chief.

In all, 119 newsroom leaders were contacted by email and invited to participate in the newsroom survey. A total of 67 took the survey, a response rate of just over 56 per cent.

Recent graduates of a major Canadian university journalism programme were invited to participate in the recent graduate survey. The recruitment email was sent to 351 graduates. It is difficult to say what the precise response rate was since it's unclear how many recent graduates received the email invitation. That invitation was sent to the university email addresses and the researcher heard anecdotally that former students do not continue to use these email addresses indefinitely. However, the survey email was sent to people who had graduated from a university journalism programme between 2014 and 2017, and there were 114 respondents so the response rate was no lower than 32 per cent.

Results

Graduates' characteristics

Recent graduates were asked whether they had attained work in an area related to their journalism degree. As illustrated in Fig. 1, the most common response was full-time staff, followed by freelance, contract and casual.

Note that this question allowed multiple responses, so the number of respondents (206) is greater than the number of overall survey respondents (114). One possible interpretation is that recent graduates have moved from one kind of position to another over some period of time. It is possible, for example, that a recent graduate would have a paid internship for a period of time and then attain a full-time position. But it also appears, as illustrated below, that many recent graduates are also doing more than one job at any given time. These two possibilities are neither mutually exclusive nor exhaustive. Further research on the workplace
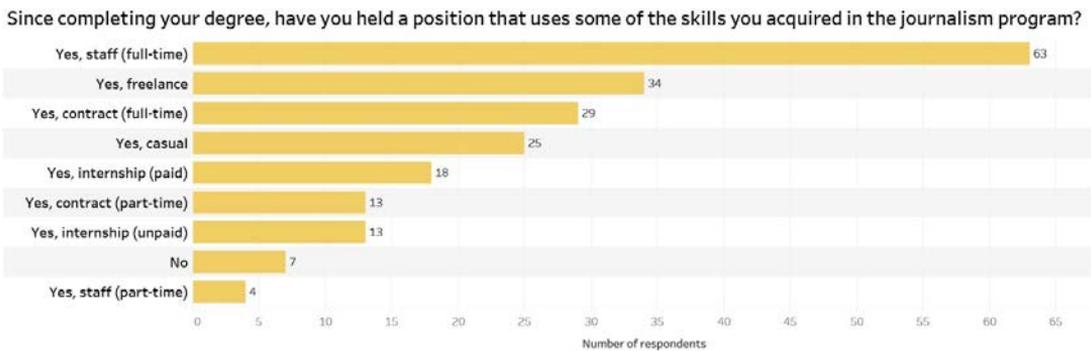

Since completing your degree, have you held a position that uses some of the skills you acquired in the journalism program?

Response	Number of respondents
Yes, staff (full-time)	63
Yes, freelance	34
Yes, contract (full-time)	29
Yes, casual	25
Yes, internship (paid)	18
Yes, contract (part-time)	13
Yes, internship (unpaid)	13
No	7
Yes, staff (part-time)	4

Fig 1: Journalism graduates' responses to the question: "Since completing your degree, have you held a position that uses some of the skills you acquired in the journalism program?"

specifics for recent journalism graduates could be valuable for journalism educators. However, journalism educators may find it encouraging that the 'full-time staff' response was by far the most common.

Respondents were also asked about the field in which they were working. As illustrated in Fig. 2, (over page) journalism was the most common, followed by communications and public relations.

As with the previous question, respondents could provide more than one response, which explains why the total number of respondents to this question (151) is larger than the number of overall survey respondents (114).

Of the respondents who indicated they were primarily doing journalism work, the most common job type was reporter/writer, followed by online and editor, as illustrated in Fig. 3.

The 'online' category included tasks related specifically to social media and website management.
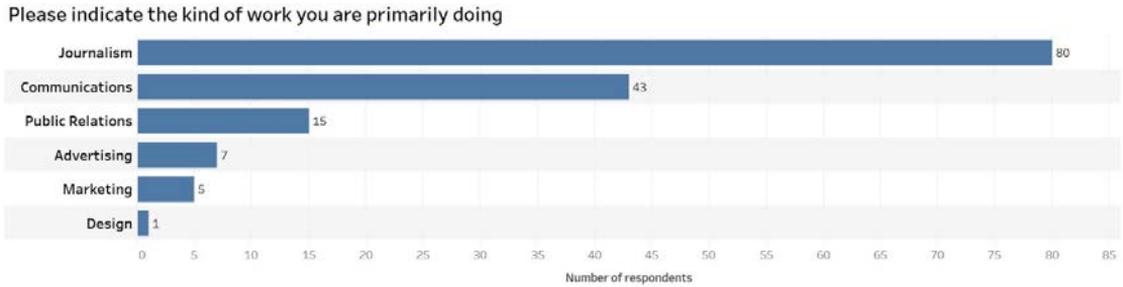
Please indicate the kind of work you are primarily doing

Journalism	80
Communications	43
Public Relations	15
Advertising	7
Marketing	5
Design	1

Number of respondents

Fig 2: Journalism graduates' responses to the question: "If 'yes' (have held a position related to your journalism degree), please indicate the kind of work you are primarily doing."

   As illustrated in Fig. 4, respondents overwhelmingly reported working for organizations that employ a relatively small number of people who produce news and information.
   While this study does not examine the size of Canada's newsrooms over time, the extent to which recent graduates are working in workplaces with relatively few people is striking. It is possible that newsrooms, which once had more reporters, photographers, editors and paginators, are now operating with fewer staff.

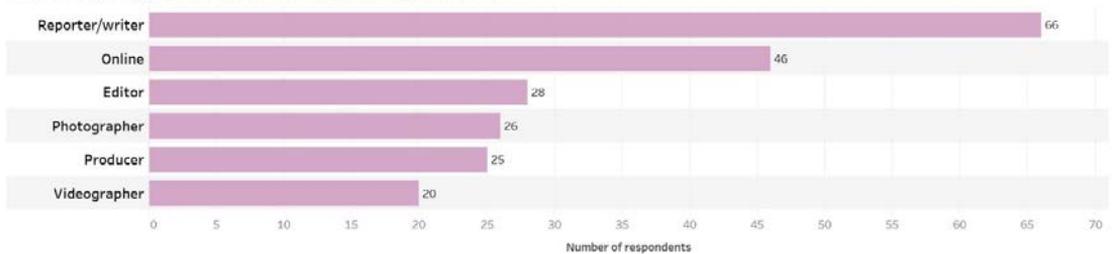Reported job types for those who indicated "journalism":

Reporter/writer	66
Online	46
Editor	28
Photographer	26
Producer	25
Videographer	20

Number of respondents

Fig. 3: Journalism graduates' responses to the question: "If 'yes' (have held a position related to your journalism degree), please indicate the kind of work you are primarily doing."

This would be consistent with the all-too-familiar story line of journalism job losses in Canada and elsewhere. In a presentation to the House of Commons Heritage Committee (Standing Committee report, 2017), members of the Local News Research Project based at Ryerson University noted that between 2008 and

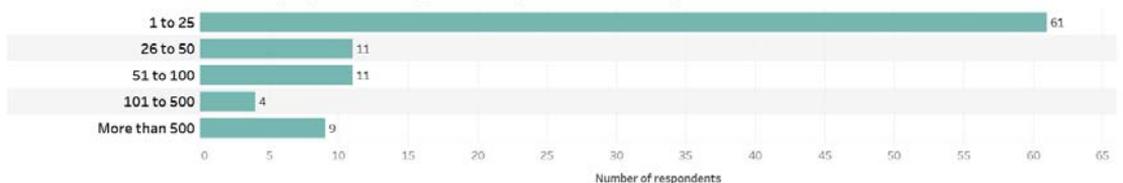Please indicate the number of people in the organization you work for who produce editorial or creative content:

1 to 25	61
26 to 50	11
51 to 100	11
101 to 500	4
More than 500	9

Number of respondents

Fig. 4: Journalism graduates' responses to the question: "Please indicate the number of people in the organization you work for who produce editorial or creative content."

2016, there had been 169 closures of local news outlets in 131 communities across Canada.
   Data from the Canadian Media Guild (Wong, 2013) showed thousands of job losses in Canadian media industries between 2008 and 2013. And in the U.S., the Bureau of Labor Statistics reported that in "June 1990, there were nearly 458,000 people employed in the newspaper publishing industry; by March 2016, that figure had fallen to about 183,000, a decline of almost 60 percent." Some news outlets have disappeared while others are operating with fewer people producing editorial content.
   The other factor that appears to be at play is the rise in digital-only news organizations. The same U.S.

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Bureau of Labor Statistics report noted that over the same period, "employment in Internet publishing and broadcasting rose from about 30,000 to nearly 198,000." Similarly, between 2008 and 2015 the Local News Research Project documented the launch of 53 local news outlets. Many of those are what the researchers describe as digital-first news sites. As illustrated in Fig. 5, respondents in the current study were far more likely to report working for a digital-first news site than newspapers, magazines and broadcast-based news organizations. It is possible that digital-first news organizations operate with a relatively small number of people who produce editorial content.

  Finally, as illustrated in Fig. 6, nearly 45 per cent of respondents said that they had more than one job. Of those respondents, nearly 90 per cent reported that their other job was related to their journalism degrees.

  This might suggest, for instance, that the respondents who reported doing freelance, part-time or casual work were doing work for more than one organization.

  Newsroom leader characteristics

  Respondents from the newsroom leader survey most commonly reported 'daily newspaper' as their pri-

Which of the following best describes the primary medium in which your organization has historically produced news and information:
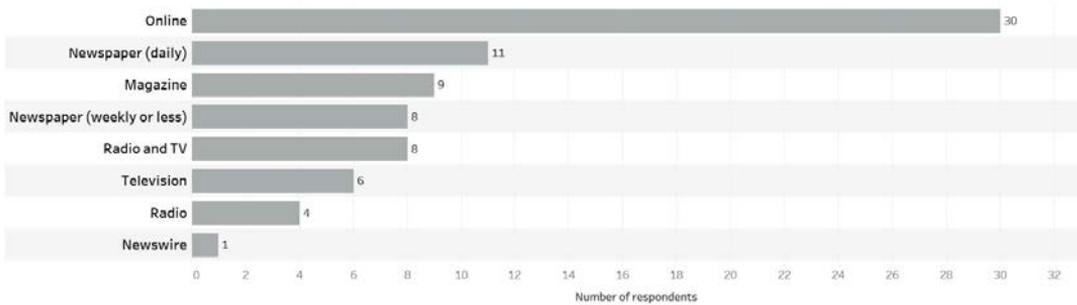
Medium	Number of respondents
Online	30
Newspaper (daily)	11
Magazine	9
Newspaper (weekly or less)	8
Radio and TV	8
Television	6
Radio	4
Newswire	1

Fig. 5: Journalism graduates' responses to the question: "If you have done journalism work, which of the following best describes primary medium in which your organization has historically produced news and information."

mary historical medium. As illustrated in Fig. 7, 'television' was the second most common medium, followed by 'online'.

Do you have more than one job?   ■ Yes   ■ No

Yes: 43.75% / 42   No: 56.25% / 54

Does your other job use the skills you acquired in the journalism program?
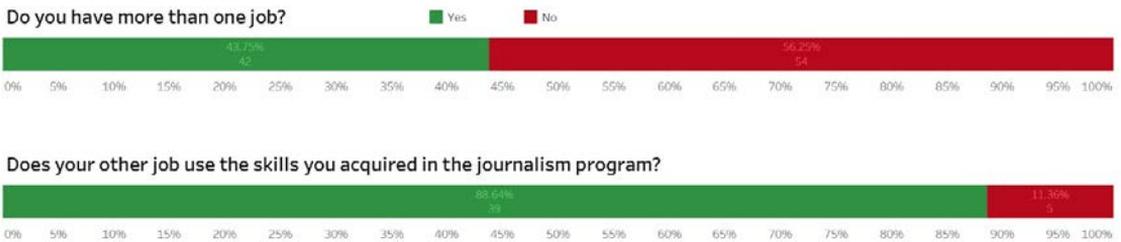
88.64% / 39   11.36% / 5

Fig. 6: Journalism graduates' responses to the questions: "Do you have more than one job?" and (If so) does your other job use the skills you acquired in the journalism program?"

  Newsroom leaders were also most likely to report working in small organizations. As illustrated in Fig. 8, the smallest newsroom size was by far the most commonly cited.

Skills importance

  Before examining specific results on technology usage, it should be noted that respondents were not asked about the usage of specific software packages. While newsrooms and journalism programmes have to make decisions about which software to adopt, the purpose of this study is to try and capture the broader tasks
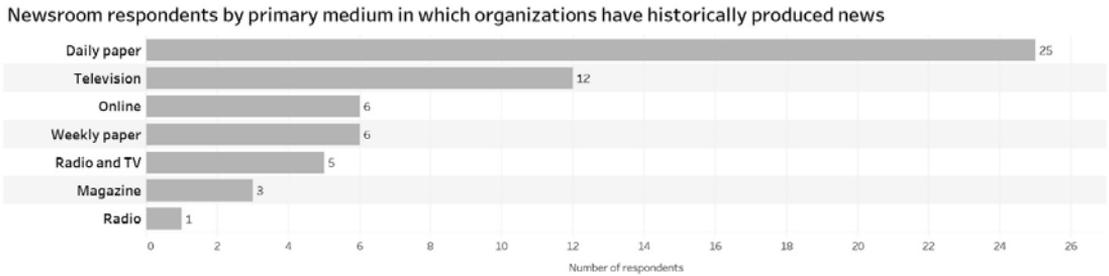
Newsroom respondents by primary medium in which organizations have historically produced news

Fig. 7: Newsroom leaders' responses to the question: "Which of the following best describes the primary medium in which your organization has historically produced news."
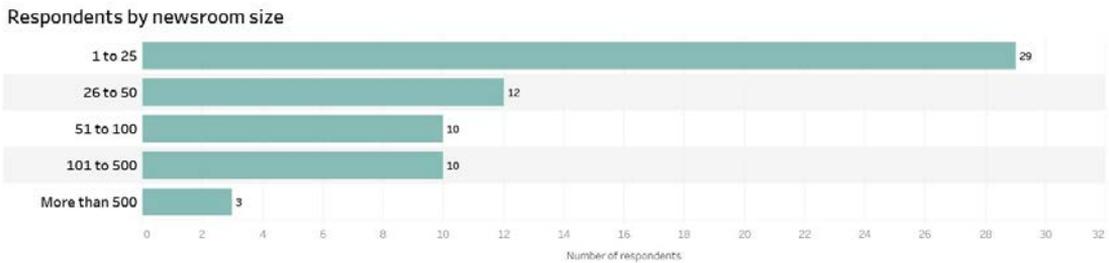
Respondents by newsroom size

Fig. 8: Newsroom leaders' responses to the question: "Please indicate the number of people who produce editorial content in your organization."

that software facilitates. In part, it is hoped this approach will help avoid the issue of software obsolescence.

For example, a study on journalism skills in Hong Kong (Du, 2014) identified software packages such as Flash, Soundslides and Dreamweaver. These packages have questionable relevance in 2018. Adobe announced (The Guardian, 2017) that it will retire Flash by the end of 2020, roughly a decade after Apple announced it would not support the technology on iPhones. However, in cases where Flash was used primarily for creating animated graphics, developers are now able to use HTML5, among various options.

Soundslides was discontinued on Dec. 8, 2018. But journalists can just as easily create an audio slideshow with iMovie or Adobe Premiere and upload it to YouTube, Vimeo or other video hosting service. Similarly, where journalism students might have learned how to create a website using Dreamweaver, they now have the option of creating a site by installing WordPress, adding plugins and tweaking the Cascading Style Sheets.

So, while many software packages are not likely to be as commonly used in 2018 as in years past, many of the overall objectives for which the software is designed may be as relevant as ever.

Newsroom leaders and recent graduates were asked about the use of digital skills in the media workplaces, though the questions were phrased differently for each group. Recent graduates were asked: "Please indicate the frequency with which you perform the following tasks as part of your regular job." Newsroom leaders were asked: "Please indicate the frequency with which you would expect young journalists to perform the following tasks." In both cases, responses were provided on a five-point Likert scale from 1 (Never) to 5 (Very Frequently).

Fig. 9 shows the responses for newsroom leaders sorted by the percentage of respondents who indicated "very frequently."

Among the more notable features of these results is the reported importance of tasks related to social media. Nearly 94 per cent of respondents indicated that they expect young journalists to use social media for research and finding contacts/sources very frequently. Also notable is that not a single respondent answered 'never,' 'rarely,' or even 'occasionally' to this question. Disseminating information on social media had a similar profile, with nearly 86 per cent of respondents indicating 'very frequently.'

Of the three top tasks related to social media, none had a single 'never' response. Only the "report on live events through social media" had 'never' responses (7.94 per cent).

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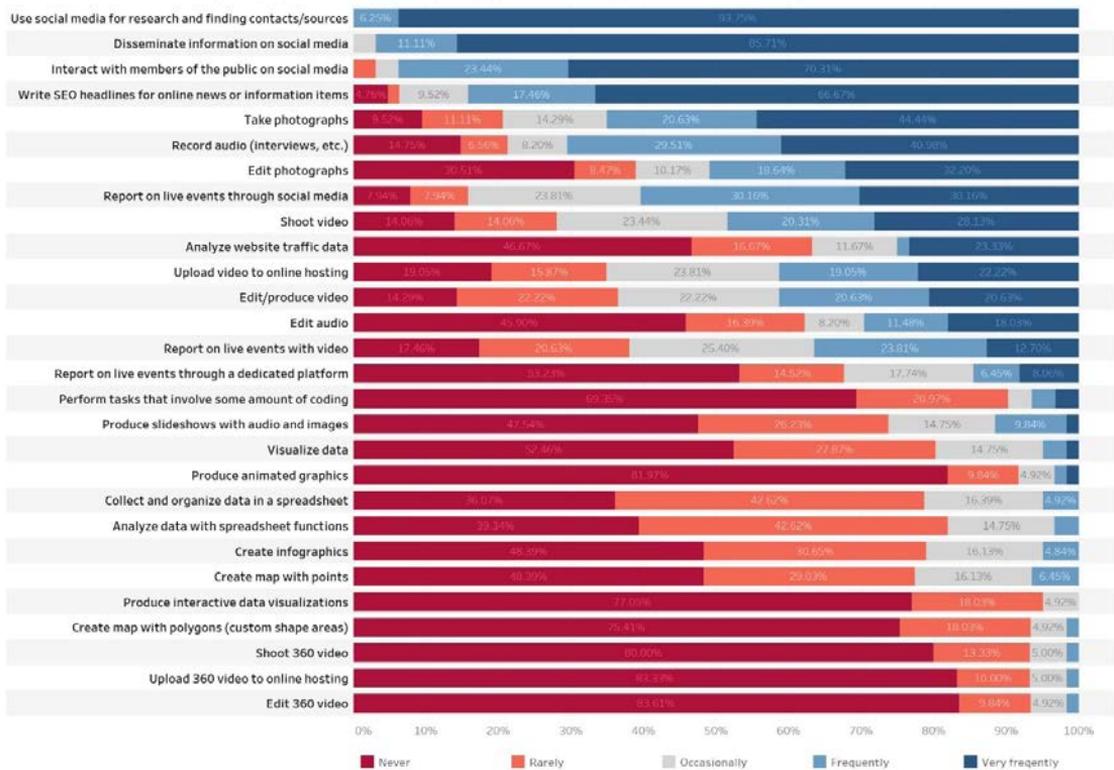Please indicate the frequency you would expect young journalists to perform the following tasks:

Fig. 9: Newsroom leaders' responses to the question: "Please indicate the frequency with which you would expect young journalists to perform the following tasks."

Apart from tasks related to social media, writing search engine optimized (SEO) headlines was the task newsroom leaders most commonly expected young journalists to perform frequently.

Broadly speaking, most respondents expected young journalists to perform tasks related to photo, audio and video production at least occasionally. However, it is notable that many more respondents indicated that they would 'never' expect young journalists to edit photographs (30.5 per cent) as compared with taking photographs (9.5 per cent).

Further down the list, there are many tasks that a majority of respondents indicated they would 'never' expect young journalists to perform, including working with 360 photos and video, producing animated graphics, doing coding work, creating polygon-based maps, visualizing data, and reporting on live events though a dedicated platform (i.e. other than social media).

Fig. 10 (over page) shows the same list of tasks as reported by recent graduates.

Note that while the recent graduates did not report doing the top technology tasks with the same degree of frequency, the order of the top four tasks, when organized by the "very frequently" response, is identical to the newsroom leaders ranking: 'use social media for research and finding contacts/sources,' followed by 'disseminate information on social media,' then 'interact with members of the public on social media' and finally 'write SEO headlines for online news or information items.'

(The comparison between newsroom leaders and recent graduates was intended to provide a broad measure of consistency. This study makes no claims to have established any formal statistical relevance between the responses from the two survey groups.)

All of the tasks to which a majority of the newsroom group responded 'never' got similar responses from the recent graduates. Large majorities reported that they never do the following tasks: working with 360 photos and video; producing animated graphics; doing coding work; creating polygon-based maps; visualizing data; and reporting on live events though a dedicated platform (i.e. other than social media).

Fig. 11 shows the mean Likert-scale response for both survey groups sorted by the average (highest to lowest) of the responses from each group.

One possible reason that tasks related to social media are performed more frequently is that they are more
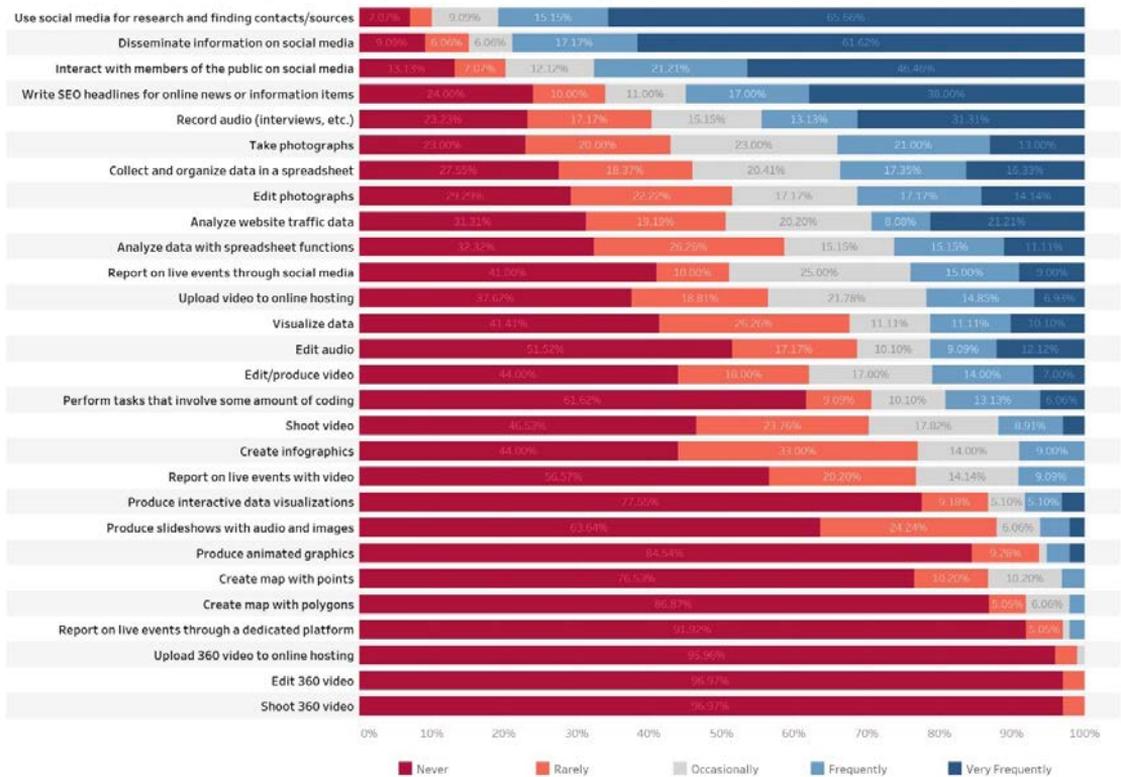
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Fig. 10: Journalism graduates' responses to the question: "Please indicate the frequency with which you perform the following tasks as part of your regular job."

broadly applicable to the work of journalists. For example, most stories a journalist produces could conceivably have involved some research on social media. Similarly, every story could presumably be disseminated on social media. Conversely, not every story would involve a data component.

As illustrated over page (Fig. 11), the reported task frequencies are, in most cases, higher among newsroom respondents than recent graduates. The differences in mean responses from each group should not be overstated: While graduates were asked to assess the frequency with which they perform certain tasks, newsroom leaders were asked about their expectations of young journalists to perform such tasks. It could be that newsroom leaders are conveying a more idealized picture. However, it is notable that the relative ranking of the different technology-oriented tasks is very similar for each group.

But there are some exceptions to this pattern. For example, recent graduates reported collecting and organizing data in a spreadsheet more frequently (mean Likert-scale score of 2.8) than newsroom leaders expected (1.9). Perhaps not surprisingly, given the similarity of the task, recent graduates reported analyzing data with spreadsheet functions more frequently (2.5) than newsroom leaders expected (1.8) as well as visualizing data (2.2 compared with 1.7).

Technology potential

Both respondent groups were also asked to rate the potential usefulness of different specialized technology areas. In particular, they were asked: "Please indicate the extent to which you feel the following are useful, or potentially useful, for the practice of journalism." Note that the different responses to this question are broader than those related to the task frequency questions. For example, 'videography' would presumably include shooting and editing video while 'interactive maps' could be either a map with points or a map with areas (polygons). Similarly, 'online audience engagement' might be mediated by social media, but might
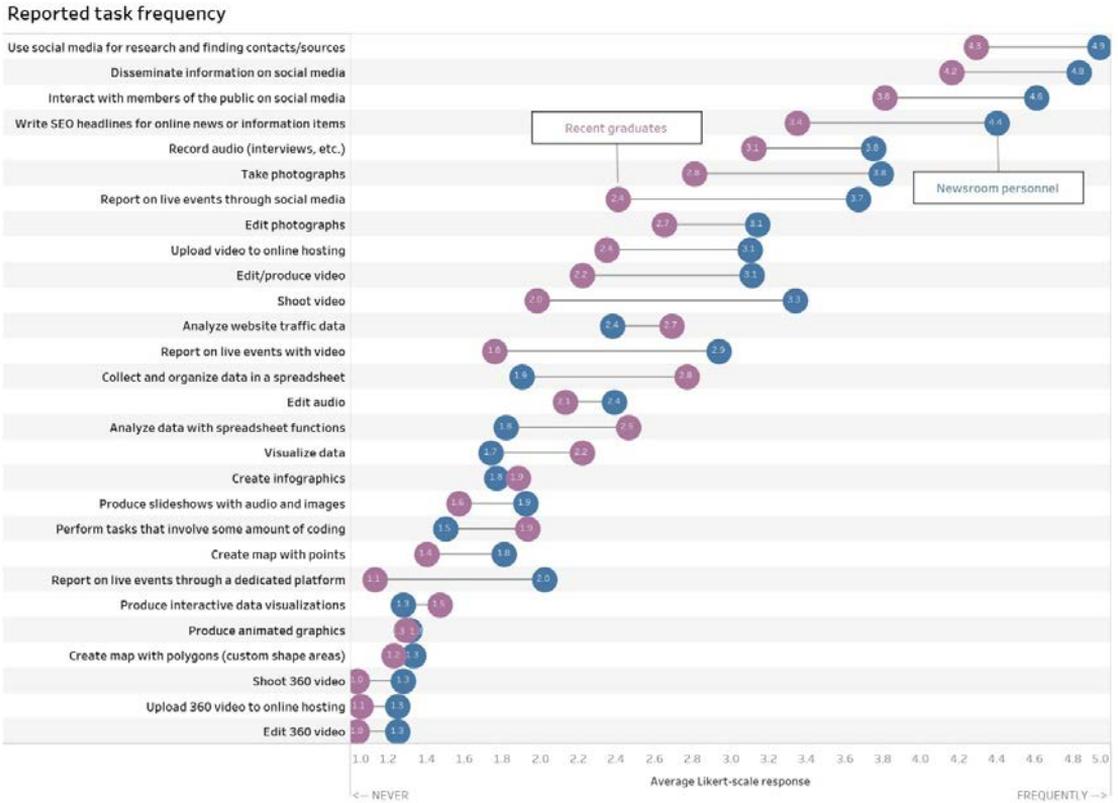
Fig. 11: Comparing responses from newsroom leaders and recent journalism graduates on the frequency of technology-related tasks.

also be mediated by smaller, organization-specific platforms. Fig. 12 (over page) shows the results for newsroom leaders sorted by the percentage of respondents who rated a particular technology as 'very useful'.

Fig. 13 (over page) shows the results of the same question from the recent graduates, also sorted by the percentage of respondents who replied 'very useful' to each of the tasks.

As with the reported task frequency data, a larger proportion of recent graduates rated many of the different tasks as 'very useful' as compared with the newsroom leaders. For example, the most commonly cited 'very useful' task for recent graduates was photography, with just over 76 per cent of those respondents reporting it to be very useful. The most commonly cited 'very useful' task for newsroom leaders was databases, with just over 66 per cent of those respondents reporting it to be very useful. However, there are similarities between the two respondent groups on this question. Notably, all the eight tasks which at least 50 per cent of newsroom leaders deemed to be 'very useful' were also the most highly ranked top eight tasks for recent graduates, as illustrated (with the percentage of each respondent group that rated the technology area as 'very useful'):

Table 1: Technology areas usefulness ranking.

Technology area	Newsroom ranking	Graduates' ranking
Databases	1 (66.7)	5 (67.7)
Interactive maps	2 (66.7)	8 (62.5)
Videography	3 (62.5)	4 (68.8)
Photography	4 (59.4)	1 (76)
Podcasting	5 (57.8)	7 (63.5)
Online audience engagement	6 (57.8)	6 (65.3)
Data visualization	7 (54.7)	2 (72.9)
Mobile apps	8 (51.6)	3 (68.8)

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Please indicate the extent to which you feel the following are useful, or potentially useful, for the practice of journalism:
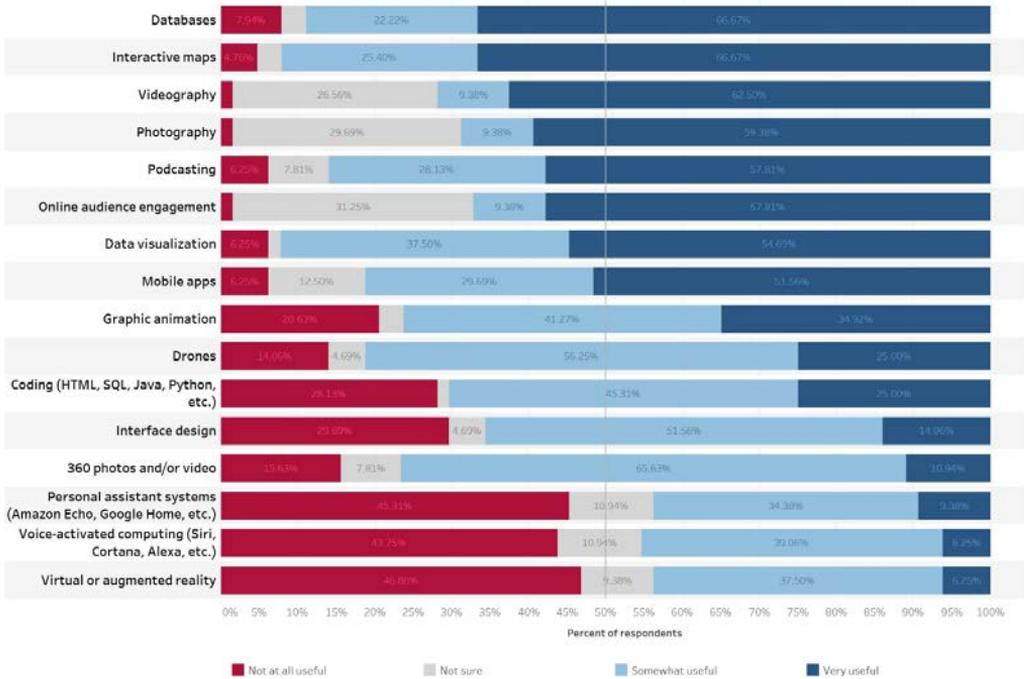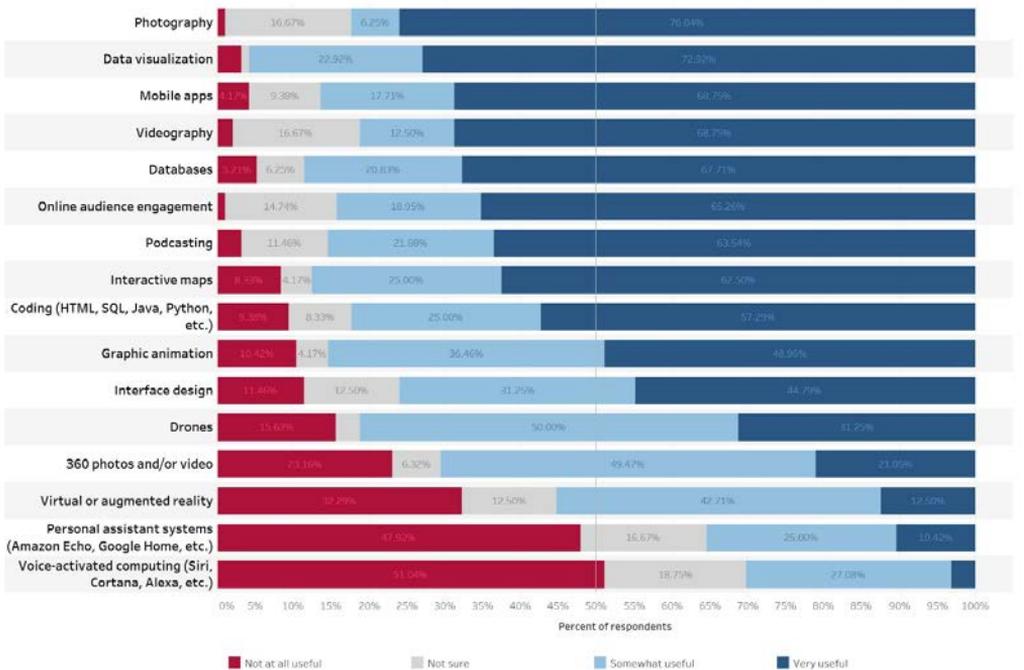

Fig. 12: Newsroom leaders' responses to the question: "Please indicate the extent to which you feel the following technologies or technology-related tasks are useful, or potentially useful, for the practice of journalism."

Please indicate the extent to which you feel the following are useful, or potentially useful, for the practice of journalism:

Fig. 13: Journalism graduates' responses to the question: "Please indicate the extent to which you feel the following technologies or technology-related tasks are useful, or potentially useful, for the practice of journalism."

Use more/less

This study employed one additional measure of the attitudes that newsroom leaders and recent graduates have towards technology areas. Respondents were asked whether, in an ideal world, they would use the listed technology areas less, more or about as frequently as they do now.

As illustrated in Fig. 14, just over 76 per cent of newsroom leaders indicated that they would use interactive maps more frequently, followed by podcasting, at 71 per cent. Respondents in this group also offered strong support for more frequent use of videography, databases, online audience engagement and data visualization.

As illustrated in Fig. 15 (over page), recent graduates again expressed somewhat higher rates of 'enthusiasm' for the different technology areas, with more than 77 per cent indicating they would use photography more, followed by data visualization (76 per cent), podcasting (75 per cent), videography (75 per cent) and interactive maps (69 per cent).

Almost all of the technology areas where at least 50 per cent of respondents reported they would use them more are common to both groups, with some variation in the relative rankings, as illustrated below (with the percentage of each group that replied 'would use more'):

Table 2: Technology areas respondent groups indicated they would use more.

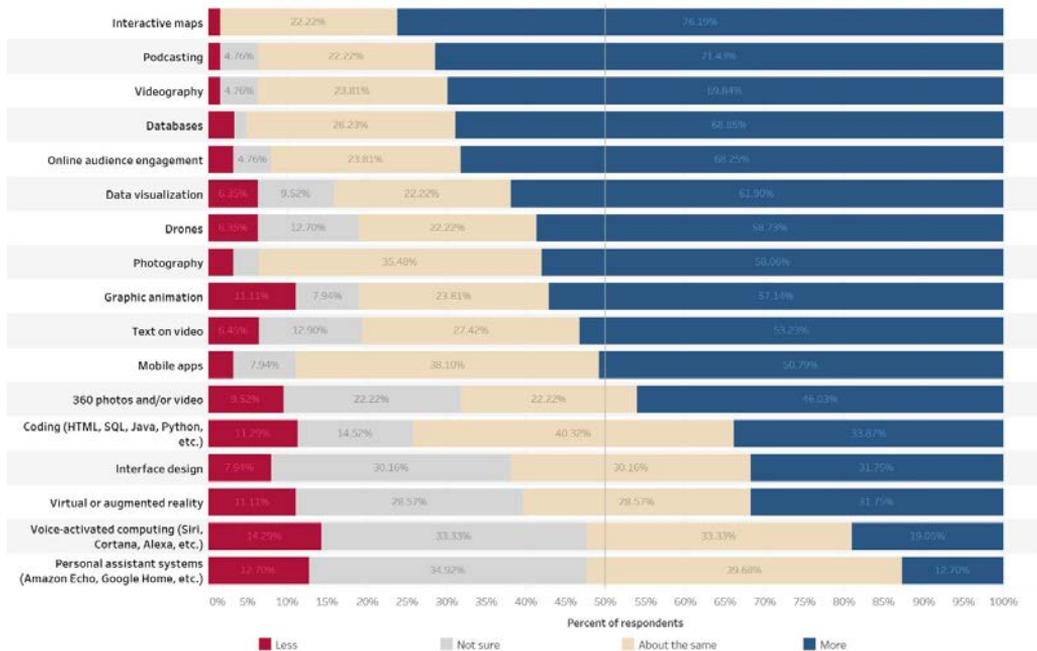| Technology area	Newsroom ranking	Graduates' ranking
Interactive maps	1 (76.2)	5 (68.8)
Podcasting	2 (71.4)	3 (75)
Videography	3 (69.8)	4 (75)
Databases	4 (68.9)	6 (67.4)
Online audience engagement	5 (68.3)	9 (54.8)
Data visualization	6 (61.9)	2 (76.3)
Drones	7 (58.7)	10 (52.2)
Photography	8 (58.1)	1 (77.4)
Graphic animation	9 (57.1)	8 (62)
Mobile apps	10 (50.8)	- (48.4)
Coding	- (33.9)	7 (63)

Fig. 14: Newsroom leaders' responses to the question: "Of those same technologies, please indicate whether, in an ideal world, you would use them more, less or about the same as you do now."

Please indicate whether, in an ideal world, you would use these more, less or about the same as you do now:
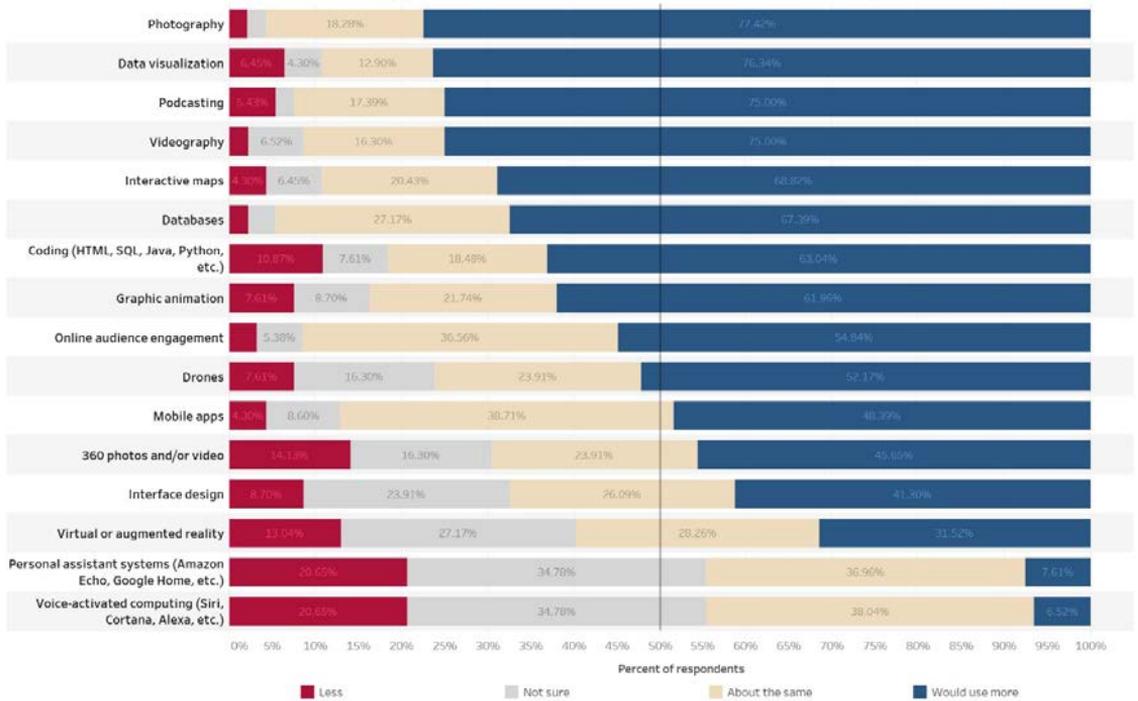

Fig. 15: Journalism graduates' responses to the question: "Of those same technologies, please indicate whether, in an ideal world, you would use them more, less or about the same as you do now."

Discussion

The purpose of this study is to provide some insight into the kind of digital skills or skills-related areas that might be included in a journalism programme. The data provides two different ways to approach this issue. The first emphasizes the kinds of skills and abilities that are currently in demand and currently in practice. The second emphasizes those that are seen as being useful – or potentially useful – for the practice of journalism and those that practitioners would employ more frequently in an ideal world.

Looking at current practice, it appears that skills and abilities around social media are in very ¬high demand. This is reflected in the responses from newsroom leaders and recent graduates to the questions about the frequency with which young journalists are expected to perform certain tasks. This may not come as a surprise to journalists, journalism educators or journalism students. According to a 2017 Canadian Digital News Report from the Reuters Institute (Brin, 2017), 48 per cent of Canadians cited social media as a source for news, compared with 70 per cent for TV, 33 per cent for print and 28 per cent for radio. (Online was cited by 76 per cent, though this included social media.) American news consumers also appear to be reliant on social media. A Pew Research study found that 45 per cent of American adults get news from Facebook, 18 per cent from YouTube and 11 per cent from Twitter (Pew, 2018). In other words, news organizations have good reason to believe that they need to play active roles on social media.

According to the data in this study, Canadian news organizations expect young journalists to play an important role in this space. As noted, of the tasks listed that newsroom managers expect young journalists to perform regularly, two out of the top three are "disseminating information on social media" and "interacting with members of the public on social media." In other words, young journalists a year or two out of their degree programmes are likely to find themselves being part of the public face of a news organization.

It's worth acknowledging here one of the limitations of this study, namely that it does not distinguish between all the different kinds of 'skills' that might be required to perform a particular technology-oriented task. For example, disseminating information on social media presumably involves softer skills associated

with effective communication as well as more technical skills associated with the social media platforms in question (including the tasks related to sending messages on Facebook cited by the recent graduate respondent quoted earlier). Interacting with members of the public on social media could potentially rely more heavily on good judgment and writing skills than on technical proficiency with a particular platform.

In a case study of a university broadcast journalism course that integrated social media, Bor (2014) identified four conceptual frames that contributed to successful teaching. "[A]pproaches to social media reporting instruction should emphasize the importance of ethics in an online environment, opportunities for career development, differences between personal and professional social media use, and instruction of technical skills" (248).

Students may learn and develop these various skills at different points of their journalism education and elsewhere. Nevertheless, tasks associated with research, dissemination and outreach using social media appear to be in high demand in Canadian newsrooms as of early 2018. The data also suggests that recent journalism graduates are actually performing these tasks with a high degree of frequency.

It also appears that newsroom leaders expect young journalists to work with audio, photography and video on a regular basis. Technology areas of photography, videography and podcasting (audio) also tended to be ranked highly in terms of their potential usefulness to journalism by both newsroom leaders and recent graduates.

Aside from current practice, there are a number of other tasks that don't appear to be performed frequently but are highly regarded as useful for the practice of journalism by both newsroom leaders and recent graduates. These include technology areas related to data (databases and visualization), interactive maps and mobile apps. As noted, a large percentage of both newsroom leaders and recent graduates indicated that they would use many of these technology areas more in an ideal world.

In its 2017 "Journalism That Stands Apart" report, the '2020 Group' at the New York Times suggested that online readers may now expect journalism to be more visual. In one example relating to maps, the 2020 group noted: "[n]ot enough of our report uses digital storytelling tools that allow for richer and more engaging journalism. Too much of our daily report remains dominated by long strings of text. … An example of the problem: When we ran a story in 2016 about the roiling debate over subway routes in New York, a reader mocked us in the comments for not including a simple map of the train line at the heart of the debate."

Assuming that the 2020 Group at the New York Times is correct in its assessment that online readers expect news to be more visual, where appropriate, journalism educators may want to ensure that their students have the ability to produce news and information in more visual ways. The obvious areas, such as photography and videography, already appear to be in demand. But newsroom leaders and recent graduates also expressed positive attitudes towards technology areas related to mapping and data, even though they report not making use of these technology areas very frequently.

Interestingly, it appears that recent graduates doing non-journalism work were much more likely to report doing tasks related to data than their journalism-based counterparts. Most technology-related tasks in the survey were likely to be performed more frequently by recent graduates who reported working in journalism. This should not come as a surprise, since many of the tasks relate specifically to work ordinarily associated specifically with journalism. Working with data is a notable exception, as illustrated in Fig. 16 (over page).

While recent graduates working in journalism report performing tasks with social media, photography, audio and video more frequently than their non-journalism peers, those working in journalism reported collecting and organizing data in a spreadsheet the least frequently (mean Likert-scale value of 2.36 vs. 3.57 for those working in public relations and a value of 3.11 overall for the five job groupings). Those working in journalism are also roughly middle of the pack when it comes to analyzing website traffic data but again the lowest when it comes to analyzing data with spreadsheet functions and producing interactive data visualizations and second lowest when it comes to visualizing data. This is not to suggest that journalism school curricula should be geared towards non-journalism career choices. However, it could be useful to determine whether these other communications-related industries have identified valuable areas related to data that could be applied to journalism work.

Podcasting is another area that both respondent groups tended to rate as very useful. Both groups also indicated they would use podcasting more than they currently do. Since journalism programmes generally have radio (or audio) components, podcasting could be a natural addition to this training.

Respondents in both groups were more skeptical of some of some of the emerging technology areas, including personal assistants (Google Home, etc.), virtual/augmented reality, voice-activated computing (Siri, Cortana, etc.) and 360-degree photos and/or video. Not only are these technology areas rarely if ever used in the newsrooms surveyed, but both respondent groups were more likely to rate these technologies as not at all useful for the practice of journalism than they were to rate them as very useful. Of this group of tech-
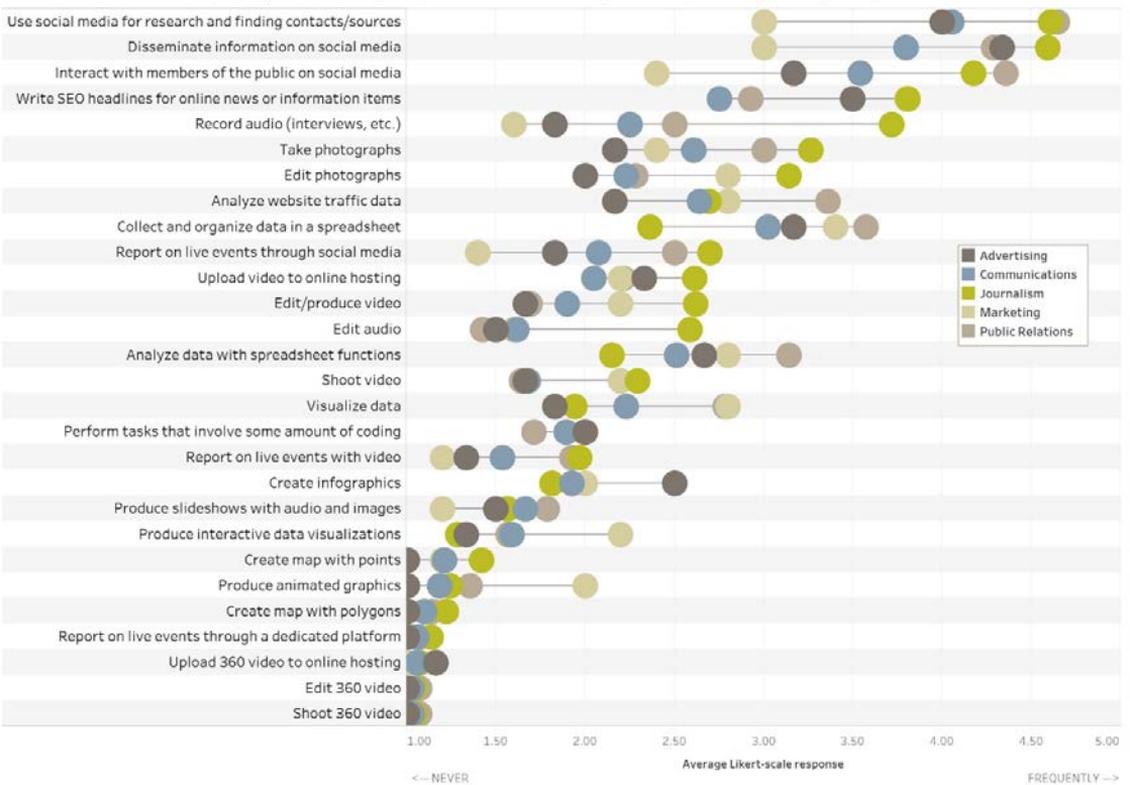
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Fig. 16: Journalism graduates' responses to the question: "Please indicate the frequency with which you perform the following tasks as part of your regular job." Mean Likert-scale responses listed from the highest (5, or 'very frequently') to lowest (1, or 'never').
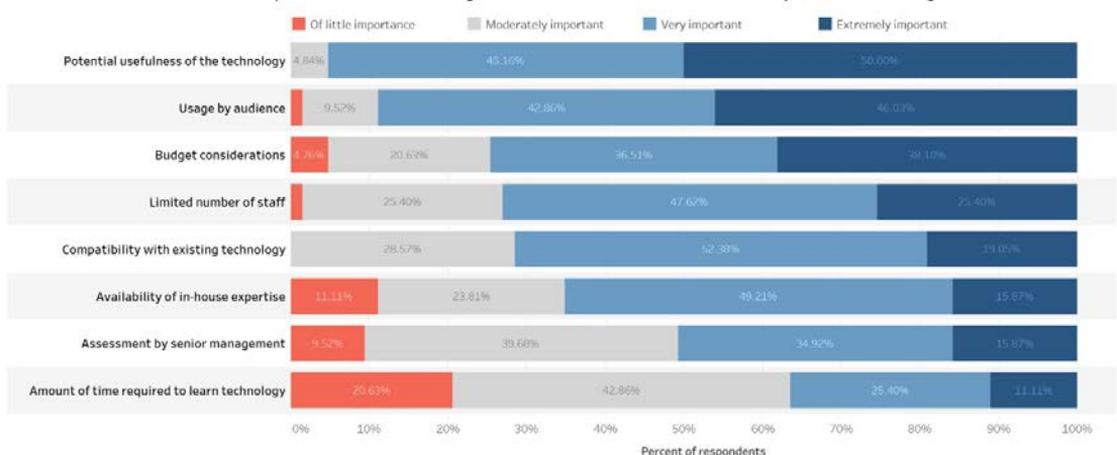

Fig. 17: Newsroom leaders' responses to the question: "Please indicate the level of importance the following factors have in the decision to adopt new technologies." Responses were on a Likert scale from 1 (unimportant) to 5 (extremely important). Note that there were no respondents who indicated that any of the factors were 'unimportant'.

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nologies, 360 photos and/or video fared the best, with roughly 46 per cent of newsroom leaders and recent graduates reporting they would use it more.

These results suggest some technology areas that might be considered for workshop courses in journalism programmes. They also raise a long-standing question for journalism educators, namely whether they should lead in technology adoption or whether they should follow current industry needs. This study adds an additional dimension to that calculation because the results suggest newsroom leaders effectively acknowledge that they are not utilizing technology as effectively as they might.

In this study, newsroom leaders were also asked about the importance of different factors in making a decision about adopting new technologies. As illustrated in fig. 17 (previous page) respondents tended to indicate that most of the factors were either very important or extremely important.

Further study on this issue would be worthwhile, since this is only a limited examination of the issue. But as noted above, there is plenty of evidence about the extent to which Canadian newsrooms are operating with fewer people and with smaller budgets than they once did. Few newsrooms are likely to have the kind of dedicated technology-oriented groups that Cindy Royal describes in her case study on the New York Times (Royal, 2012), for example.

It is likely that newsrooms would welcome students with relatively high degrees of competence in the technology areas broadly identified as having strong potential for application to journalism and which newsroom leaders indicate they would ideally use more widely. Might this suggest recent graduates could play an important role in helping newsrooms adopt useful technologies? If so, this could make a strong case for journalism programmes to lead in technology adoption rather than to follow, though further study would be needed to more specifically answer these questions.

References

2020 Group, The. 2017. "Journalism that Stands Apart." The New York Times, https://www.nytimes.com/projects/2020-report/index.html.

Bor, Stephanie E. 2014. "Teaching Social Media Journalism: Challenges and Opportunities for Future Curriculum Design." Journalism & Mass Communication Educator 69(3): 243-255.

Brin, Colette. 2017. "Digital News Report: Canada," Reuters Institute for the Study of Journalism: http://www.digitalnewsreport.org/survey/2017/canada-2017/.

Callaghan, Ruth and McManus, Joanna. 2010. "Building the perfect graduate: What news employers want in new hires." Asia Pacific Media Educator 20: 9-22.

Du, Ying Roselyn. 2014. "What is Needed versus What is Taught: Students' Perception of Online Journalism Courses in Hong Kong." Asia Pacific Media Educator 24(2): 225–237.

Fahmy, Shahira. 2008. "How Online Journalists Rank Importance of News Skills." Newspaper Research Journal 29(2): 23-39.

The Guardian. "Adobe to pull plug on Flash after years of waning popularity." July 25, 2017. https://www.theguardian.com/technology/2017/jul/25/adobe-flash-player-killed-apple.

Hirst, Martin and Treadwell, Greg. 2011. "Blogs Bother Me." Journalism Practice 5(4): 446-461.

Ketterer, Stan, McGuire, John and Murray, Ray. 2014. "Contrasting Desired Sports Journalism Skills in a Convergent Media Environment." Communication & Sport 2(3): 282-298.

Lynch, Dianne. 2007. "Incubating Innovation at Journalism Schools." NiemanReports. http://niemanreports.org/articles/incubating-innovation-at-journalism-schools/.

Pew Research Center. 2018. "5 facts about Americans and Facebook." http://www.pewresearch.org/fact-tank/2018/04/10/5-facts-about-americans-and-facebook.

Royal, Cindy. 2010. "The Journalist as Programmemer: A Case Study of The New York Times Interactive News Technology Department." International Symposium on Online Journalism 2(1): 5-24.

Standing Committee on Canadian Heritage. 2017. "Disruption: Change and Churning in Canada's Media Landscape." 42nd Parliament, first session. http://www.ourcommons.ca/Content/Committee/421/CHPC/Reports/RP9045583/chpcrp06/chpcrp06-e.pdf.

Ureta, Ainara Larrondo and Fernández, Simón Peña. 2018. "Keeping pace with journalism training in the age of social media and convergence: How worthwhile is it to teach online skills?" Journalism 19(6): 877-891.

Articles

U.S. Bureau of Labor Statistics. 2016. "Employment trends in newspaper publishing and other media, 1990-2016." The Economics Daily. https://www.bls.gov/opub/ted/2016/employment-trends-in-newspaper-publishing-and-other-media-1990-2016.htm.

Wenger, Deb Halpern, Owens, Lynn C., and Cain, Jason. 2018. "Help Wanted: Realigning Journalism Education to Meet the Needs of Top U.S. News Companies." Journalism & Mass Communication Educator 73(1): 18–36.

Wong, Jan. 2013. "Canadian Media Guild data shows 10,000 job losses in past five years." J-Source. http://j-source.ca/article/canadian-media-guild-data-shows-10000-job-losses-in-past-five-years.

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