

Mobile Journalism 101: Teaching Students to Use Mobile Devices to Produce News Content

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The findings from this study underscore the need for journalism educators to train students on the use of mobile devices to produce news content. A survey of journalism students found that they regularly use mobile devices for personal use, but not necessarily for reporting assignments. After being taught by faculty how to use mobile devices for content production, however, most students were adopting mobile technologies to cover news, including recording audio for interviews and shooting photos and video. The advantages of using mobile technology, according to the students, were convenience and accessibility, ease of use, speed, and familiarity. The main disadvantages included specific technical problems and perceived low quality of the media produced. The study highlights the need for educators to encourage and train journalism students on the use of mobile devices to produce news content to best prepare them for a more technologically sophisticated news environment.

INTRODUCTION

Mobile devices such as smartphones and media tablets present significant technical innovations to the news industry. The technology offers users the ability to consume as well as produce news. Mobile devices are powerful reporting tools that can produce audio, video, photos, and texts for nearly instantaneous publication online.

News organizations are increasingly requiring their reporters to use mobile devices for reporting. A broad range of broadcast journalism positions, for example, now require mobile skills and, regardless of media platform, journalism employers want new hires to understand how to gather news with mobile devices (Wenger,

Owens, & Thompson, 2014). The demand for these skills is growing. Wenger and colleagues found that in 2010, references to mobile skills were mentioned in just a little more than 2% of television job postings. However, “By the end of 2012, mobile was mentioned in more than 27% of all TV news job listings—and that still lags behind mobile’s prominence in newspaper and online job ads” (Wenger, Owens, & Thompson, 2014, p. 139).

The Gannett chain, which owns 82 U.S. daily newspapers, including the nation’s top newspaper in print circulation, *USA Today* (Gannett, 2013), has purchased thousands of dollars worth of smartphones and other

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mobile equipment for its reporters' use (Poynter.org, 2011a). A fact sheet distributed to Gannett reporters indicated the phones were "meant to enable you to do better, more timely journalism. ... There are also many basic functions of a smart phone—voice recorder, video camera, still camera, etc.—that enable you to capture notes or imagery you can use in your reporting" (Romenesko, 2012). Meanwhile, developers have been adapting a special app that would allow BBC reporters to file video, photos, and audio directly to the network's production system from an iPhone or iPad (Poynter.org, 2011b). To effectively use mobile technology in reporting and to reach digital audiences, future journalists must understand how to produce news on and for a variety of mobile devices.

In university settings, increasing numbers of journalism students own smartphones and tablets, but it is not clear how many have integrated the devices into their classroom reporting assignments. A study that examined journalism and communication programs in the U.S. found that only one in four journalism and mass communication programs is teaching students how to create content for mobile devices (Becker, Vlad, & Desnoes, 2010). But whether or how students are using mobile devices to gather information and produce content has not been well documented. This study seeks to fill this gap by examining how the next generation of journalists is adopting mobile devices in order to produce news content.

Factors that influence an individual's decision to adopt a new technology or device have been a focus in user acceptance, social cognition, social psychology, and innovation diffusion scholarship for the past several decades. User acceptance research and innovation diffusion scholarship, in particular, have been used to develop several theories and models that help to explain the adoption of new information technologies.

This study uses particular aspects of a unified user acceptance model to assess journalism

students' use and acceptance of mobile technologies and devices for reporting assignments. The study was conducted as part of a university-sponsored mobile journalism project in which journalism faculty taught and provided technical assistance to students in using mobile devices for their news reporting assignments. A component of the project was a survey to determine how students were currently using mobile devices, whether and how they were using them for journalism projects, and how they evaluated their experiences with the devices. The project investigators also wanted to assess the influence of teaching on the students' decision to adopt the devices for journalism projects. The information gained from the study will help to improve understanding of how and why journalism students adopt new technologies for news work, as well as to help educators become more effective in teaching future and current content producers to use these important tools.

REVIEW OF THE LITERATURE

Mobile devices such as smartphones and tablets are increasingly becoming part of the news media landscape. Smartphones are cellular telephones with built-in applications and Internet access (PCMag.com, 2013a). In addition to digital voice service, smartphones provide text messaging, e-mail, Web browsing, still and video cameras, an MP3 player, video playback and calling. Smartphones have turned cellphones into mobile personal computers (PCMag.com, 2013a). A tablet is a general-purpose computer contained in a single panel with characteristics such as a touch screen as the input device (PCMag.com, 2013b). Tablets such as the iPad also offer web browsing, still and video cameras, an MP3 player, and video playback.

These new tools have the potential to dramatically change the ways journalists gather and produce news content. Journalism scholar Jeff Jarvis, who used mobile devices to report during the World Economic Forum in 2008, declared that "all journalists, in print and broadcast,

whether desk-bound or mobile, should be equipped as *mojos*,” or mobile journalists (Jarvis, 2008). Media scholar Stephen Quinn wrote that technologies, such as mobile devices, that save time and accelerate the newsgathering process will continue to push journalism into new areas, and students with mobile journalism skills possess a unique selling point in the job market (Quinn, 2009). The opportunity, and even necessity, for journalists to adopt and use new technologies highlights the need to better understand why they seem reluctant to do so as we move further into the 21st century.

User Adoption of Technology

For the past several decades, scholars from a variety of disciplines—including communication, social psychology, social cognition, business and information sciences, and sociology—have been examining the reasons behind decisions to adopt new technology. Scholarship related to user acceptance of technology and innovation includes models related to the Theory of Reasoned Action, the Theory of Planned Behavior, and Innovation Diffusion Theory. The Theory of Reasoned Action (TRA), developed in the 1970s, identified people’s intention to behave in a certain way, based on a favorable or unfavorable attitude toward the behavior as well as a subjective norm that encouraged or discouraged its performance (Ajzen, 2012). A subjective norm is defined as an individual’s perception that people important to him or her think s/he should or should not perform the behavior in question (Venkatesh & Davis, 2000). An extension of TRA is the Theory of Planned Behavior (TPB), which included perceived behavioral control as an additional influence on behavior (Ajzen, 1991).

Meanwhile, Innovation Diffusion Theory (IDT) (Rogers, 1962/2003), which emerged as groundbreaking research in the early 1960s, also examined factors that lead to the acceptance of new technologies. Core constructs from the theory that have been used to study or develop models of technology adoption include: relative

advantage, or the perception that the technology is better than its precursor; compatibility with existing values and past experiences; complexity; trialability; and observability (Chan-Olmsted, Rim, & Zerba, 2013; Rogers, 1962/2003; Weiss, 2013).

The Theory of Reasoned Action was the underpinning for another frequently cited area of scholarship related to technology adoption, the Technology Acceptance Model (Davis, 1989). The Technology Acceptance Model (TAM) posited that perceived usefulness and perceived ease of use significantly influenced the decision to adopt a new technology (Davis, 1989). TAM later was expanded to TAM2 (Venkatesh & Davis, 2000), which explained perceived usefulness and usage intention in terms of social influence and cognitive instrumental processes such as subjective norm, job relevance, and output quality, while TAM3 (Venkatesh & Bala, 2008) identified certain interventions, such as management support and training, that influence the adoption of a new technology.

Regarding user acceptance of smartphones in particular, studies have found that adoption of the devices was affected by perceived usefulness and the individual’s attitude toward using the phone (Park & Chen, 2007), as well as perceived cost savings and the company’s willingness to pay for the device (Kim, 2008). Kim also found that job relevance and prior experience had a moderating effect on the decision to use a smartphone. Perceived usability and perceived quality were found to help predict users’ attitudes and behavioral intentions toward smartphone technology for u-learning, or ubiquitous learning, an advanced form of mobile learning in which learning environments can be accessed in various contexts and situations (Shin, Shin, Choo, & Beom, 2011). Meanwhile, relative advantage, utility, and ease of use all positively related to young adults’ consumption of mobile news (Chan-Olmsted, Rim, & Zerba, 2013).

Thus over the past few decades, numerous factors have been found to influence the decision

to adopt new technologies. A useful model to consider for this study is the Unified Theory of Acceptance and Use of Technology (UTAUT), which combines eight models of user acceptance, including core concepts from TRA, TPB, TAM and IDT (Venkatesh, Morris, Davis, & Davis, 2003). The UTAUT model identifies four determinants of intention and usage of new technology: performance expectancy, effort expectancy, social influence, and facilitating conditions.

Facilitating conditions.

In the context of the current study, the construct of facilitating conditions is the focus of the investigation. The purpose of the mobile journalism project was to teach, encourage, and provide technical assistance to journalism students to use mobile devices to produce news content, particularly multimedia content, for online news blogs. Facilitating conditions were included in the UTAUT model and defined as “objective factors in the environment that observers agree make an act easy to accomplish” (Venkatesh, et al., 2003, p. 430). Training and support, also included in the TAM3 model, are considered key dimensions of facilitating conditions. Facilitating conditions also relate to other factors found to influence the adoption of technology, including ease of use, subjective norm or perceived social pressure, management support, and job performance.

The construct of facilitating conditions was first articulated by social psychologist Harry Triandis (1980), who defined the conditions as “objective factors, ‘out there’ in the environment, that several judges or observers can agree make an act easy to do” (p. 205). These conditions have since been used in studies related to the adoption and use of personal computers (Thompson, Higgins, & Howell, 1991). Thompson et al. developed a Model of PC Utilization, one of the eight models used in UTAUT, which defined facilitating conditions, in part, as having a specific person available for technical assistance and specialized instruction about software packages. While they did not find strong support for

facilitating conditions related to the use of PCs, they noted that they had narrowly defined the concept, and that the finding was inconsistent with previous studies. Lucas (1978) found that management support and leadership, which also represent facilitating conditions, were helpful in model- or system-building in computer information systems. In the UTAUT model, facilitating conditions were conceived as individuals’ understanding that they had the resources and knowledge necessary to use a new technology and that a specific person was available for assistance with technical problems (Venkatesh et al., 2003). They found that facilitating conditions were a direct determinant of usage behavior, although usage was significant only when moderating effects, such as age and experience, were taken into account. Specifically, facilitating conditions mattered more for older workers in later stages of experience.

For this study, investigators wanted to determine if the teaching and technical assistance provided by faculty would influence students’ use of mobile devices to create news content. Because previous research has generally found that facilitating conditions have had a positive influence on user acceptance of a technology, the following hypothesis was proposed:

- H1.** Students will be positively influenced to accept mobile devices for producing news content after receiving training and technical assistance.

To explore this hypothesis and to assess whether and how journalism students were using mobile devices, the following research questions were formed:

- RQ1.** How are students using mobile devices?

RQ2. How are they using mobile devices specifically to produce content for journalism assignments?

Another objective of the research was to evaluate the student experience in using mobile devices in reporting and producing multimedia content. Thus, the following research question was included in the study:

RQ3. What was the students' experience when using mobile devices for journalism assignments?

METHOD

This study was conducted at a medium-sized university located in the northeastern United States. In Fall 2012, faculty members in the journalism department initiated a mobile journalism project in which mobile reporting training was integrated into three basic undergraduate news production courses: News Reporting I, Online Journalism I, and Online Journalism II. Each of these classes required that students create content for news blogs. The students were taught how to use mobile devices for taking photographs, collecting audio, and producing videos for the news blogs. Faculty members were available for technical support. Funding from a university grant was used to purchase tripods, microphone adapters, and software to improve the quality of the photos, audio, and video collected by the devices. The department also purchased an iPad for classroom demonstrations and exercises. All of the equipment was housed in a journalism department equipment room and available for instructor and student use.

The use of mobile devices for coursework was not required because not all students owned smartphones or tablets. The undergraduate students and instructors used their own mobile devices and purchased selected apps as part of their course work. Audio recorders, video cameras, and still cameras were available through the department for students who either did not own

a mobile device or did not wish to use their own to complete a particular assignment.

The courses that participated in the project were re-designed to include lectures and exercises on various aspects of producing content with and for mobile devices. The lectures included discussions on how to write headlines for mobile content—such as using simple, direct, and literal language and incorporating keywords for search engines—as well as how to write articles using extremely concise text and including fewer links than one would for news articles intended for PCs or tablets. Students were taught to shoot video and photos with their smartphones in landscape mode and with considerations of natural light and sequencing of shots. They also were taught how to import audio and video recordings from their mobile devices to the classroom computers and how to edit these media.

Two surveys were distributed to the students. The first, given at the beginning of the semester in September 2012, was designed to establish whether and how they were using mobile devices, whether and how they were using them to complete journalism assignments, and, if so, what their experience had been when working with the equipment and technology. The survey consisted of 35 questions and was distributed through Survey Monkey to more than 111 students taking one of four basic news production courses offered by the university's journalism department, including two sections of News Reporting 1, one section of News Reporting II, four sections of Online Journalism 1, and one section of Online Journalism II. Students were asked questions about their use of mobile devices, including the types of device they owned, how often they used the devices, the purpose of the use, and their experience with the phone. They also were asked about their use of mobile devices specifically for news reporting.

A second survey was given to students at the end of the semester in the classes that participated in the mobile journalism project's training, which included News Reporting I and Online

Journalism I and II. The second survey consisted of 15 questions and was designed to determine whether and how students had used mobile devices for journalism assignments, which would help to determine the influence of the training and technical assistance, and to evaluate their experiences. The second survey was distributed through Survey Monkey at the end of the fall semester and was completed by 72 students. Because the second survey was distributed to students in all of the courses and sections participating in the first survey with the exception of one section of New Reporting II, essentially the same group of students participated in both surveys. A paired-samples *t*-test was conducted on selected responses to see how the responses differed from the beginning and the end of the semester.

RESULTS

Most of the 111 students responding to the survey (93.6%; $n=104$) were either journalism majors or minors. More than half (57.6%; $n=64$) of those responding to the question said they were majoring in journalism, while another one-third (36.0%; $n=40$) was made up of journalism minors. Nearly half of the respondents were seniors (46.8%; $n=52$), while one-third were juniors (37.8%; $n=42$). Thus most of the students were nearing the end of their college studies and would soon be starting their careers.

Students who owned cell phones were asked to complete the entire survey, which examined their use of the devices. A total of 109 students (98.2%) completed the entire survey. The respondents also reported that their cell phones were able to access the Internet and had the capability to capture audio, video, and photos—therefore they owned smartphones. Most respondents (79.2%; $n=88$) said they did not own a tablet computer. Thus, smartphones were the most practical mobile devices the students would use for journalism projects.

Reported Use of Mobile Devices

The students reported regularly using their smartphones for a variety of purposes, including getting news, social networking, and taking photos and videos. About half of those responding to the question in the first survey (47.7%; $n=52$) said they used their phones to get news every day; one-quarter (25.6%; $n=28$) got news from their phones a few times a week. Slightly more students said they did not use mobile apps to get news on their phones than said they did (49.5%; $n=54$, said no; 44.9%; $n=49$, said yes). The mobile news apps used included a wide range of mostly legacy media, including: CNN, the New York Times, NBC/ABC networks and local affiliates, and ESPN. Not surprisingly, most of those responding to the question (82.6%; $n=90$) said they used their smartphones for social networking. More than two-thirds (70.6%; $n=77$) said they did so every day.

The vast majority of the respondents (98.2%; $n=107$) also said they had taken a photo with their phone. More than one-third (38.5%; $n=42$) said they did so a few times a week while nearly another third (30.2%; $n=33$) said they did so every day.

The respondents reported less experience using their smartphones to record audio or shoot video. While more than three-quarters (78%; $n=85$) said they had recorded audio with their phones, 44.9% of those responding to the question ($n=49$) said they recorded audio “hardly ever.” Another 28.4% ($n=31$) said they had recorded audio with their phones only a few times a month. The response was similar to a question on shooting video with a phone. While 88% ($n=96$) of those responding said they had shot video with their smartphones, nearly half said they do so a few times a month (44%; $n=48$), while another 37.6% of those responding to the question ($n=41$) said “hardly ever.”

Use of Mobile Devices to Produce Content for Journalism Assignments

While most of the students reported using their smartphones for personal use, slightly more than

half of those responding to the first survey said they had *not* used a smartphone for a journalism assignment (51.3%; $n=56$). By the end of the semester, however, most of the students who responded to the question (86%; $n=62$) said they had used a smartphone to complete a class assignment. A paired-samples t -test revealed that the difference in the means from the responses to this question at the beginning of the semester and the end of the semester was statistically significant ($t = 6.95$, $df = 71$, $p < .00$).

The differences between the means from the responses at the beginning of the semester and the end of the semester regarding use of mobile devices for specific assignments also were statistically significant. More than half of those responding to the question in the first survey said they had not used a smartphone to take a photograph for a journalism assignment (57.8%; $n=63$), but by the end of the semester approximately two-thirds (66.2%; $n=47$) reported that they had used a phone to take a photo for an assignment ($t = 3.68$, $df = 70$, $p < .00$). At the beginning of the semester, 58.6% ($n=65$) said they had not used a smartphone to record audio for a journalism assignment. By the end of the semester, 74.6% ($n=53$) of the respondents said they had used a phone to record audio for an assignment ($t = 4.01$, $df = 70$, $p < .00$). Most of respondents in the first survey said (86.5%; $n=96$) they had not used a smartphone to shoot video for a journalism assignment, while 67.6% ($n=48$) responding to the question in the second survey said they had used a phone to shoot video for an assignment ($t = 7.08$, $df = 70$, $p < .00$). Thus, H1 was confirmed.

Experience With Mobile Devices for Journalism Assignments

In open-ended responses about their experiences using smartphones for journalism assignments, students at the end of the semester generally reported more positive than negative experiences. The three most positive aspects of using mobile devices to produce journalistic content,

according to the respondents were: convenience/portability/accessibility, ease of use, speed and familiarity. One student wrote: "The phone was available at all times, it is easier and more discreet, it hooks right up to a computer to transfer your content." Another wrote: "I always had it with me; I know how to use it; small and easily handled."

The most negative aspects of producing content with smartphones, according to the students, were the perceived low quality of the media and a lack of specific technical knowledge. One respondent said: "1. Video quality when enlarged on the screen isn't so good 2. Calls/texts coming through while recording causes you to re-shoot. 3. The battery life on my phone sometimes was low and I had to pause and recharge." Other respondents complained that video was shaky when shot with the phone. One student wrote: "Sometimes a cell phone doesn't really look very professional. But, this is mobile journalism."

The comments in part reflect a lack of specific knowledge. The problem of calls and texts interrupting interviews, for example, could be resolved by putting the phone in airplane mode to avoid the disruption. Bringing a smartphone tripod or finding a natural tripod before shooting can resolve shaky video. Low batteries can be a problem, although students must be trained to remember to charge their phones prior to an interview or shoot.

When asked about the most important lesson they had learned about working with mobile devices in order to produce journalistic content, most said they came to understand that they are important tools for journalists, and encouraged their fellow students to "get a better phone." Others advised that students should familiarize themselves with all of their smartphones' features so they can use them effectively in assignments, while others advised using the phone as a backup tool only, in case of technical problems.

DISCUSSION

Undergraduate students responding to this survey, which included students who soon will be entering the job market, are using their smartphones for personal use, but not necessarily to produce content for news assignments. Student use of tablets is low; most students did not own a tablet and did not use it for news assignments. However, this study found that students made more use of mobile devices to produce news content when they were taught to do so. Technical support from faculty also influenced student use of the devices. Thus, facilitating conditions in the form of teaching and technical assistance positively influenced students' use of mobile devices to produce news content. The study's hypothesis was confirmed and its results provide empirical support for the Unified Theory of Acceptance and Use of Technology (UATUT) model, which found facilitating conditions to be a determinant of usage behavior.

Regarding personal use of smartphones, the students were most experienced using their phones for social networking and taking photographs, and less experienced in recording audio or shooting video with their phones. The lack of experience translated into the classroom, where, even though teaching and technical assistance were available, students still reported technical problems with uploading and formatting audio and shooting high quality video. This finding is consistent with previous user acceptance research, which found that compatibility and prior experience influence user acceptance of a technology.

Those who had used mobile devices for journalism assignments said they found them easy and familiar to use, accessible, and fast. The students also seemed to understand the importance of mobile technology to their work as reporters, encouraging future students to purchase or upgrade their smartphones for class assignments. It also could be argued that the training and support provided by the professors represented a subjective norm, thus influencing the students' decisions to use the smartphones for journalism

assignments. These findings provide empirical support for constructs identified as positive influences on acceptance of technology in previous IDT and user acceptance research, including the UATUT model, such as perceived ease of use, perceived usefulness, job relevance, subjective norm, and management support.

The problem of low-quality images and students' technical issues indicated a need for improved training for students and faculty. While the teaching that students received during the class helped to improve the quality of their audio and video, it was clear that more training was needed to solve relatively simple problems, such as remembering to charge batteries before a shoot or put the phone in airplane mode before an interview. Professors also need to provide additional support to students in the areas of capturing and editing audio and video, since students' prior experience with these skills is limited. In addition, the capabilities of smartphones and the quality of the media they produce are continually improving, which could address other problems with low-quality results using these devices.

LIMITATIONS AND FUTURE RESEARCH

Future research should consider expanding the study over multiple semesters and delve more deeply into student experiences with the use of mobile devices for journalistic work. The survey in this study was based on a convenience sample of students taking journalism classes during a single semester. Future studies also could explore user acceptance of tablets, if and when more students begin to own and use tablets in their news content production processes, the quality of training and its relationship to user acceptance, and the influence of training with equipment designed to enhance the content produced by phones, e.g., phone tripods.

CONCLUSION

Undergraduate students are using smartphones for personal use, but most are not considering

them for use in producing news content for journalism courses. Yet the news industry increasingly expects reporters to be able to report, shoot photographs and video, and record and develop audio packages, often using mobile devices. It is imperative that educators gain a better understanding of how and why the next generation of journalists adopt and use new innovations. This understanding will aid in the development of effective courses, training, and tools in mobile journalism and other types of communication technology. As we move further into the 21st century, it is vital for educators to be effective in teaching students how to use new communication tools and preparing them for a more technologically sophisticated news environment.

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