AUDIENCE ASSESSMENT OF THE QUALITY, USABILITY, AND TRUSTWORTHINESS OF NEWS CONTENT CREATED AND DELIVERED VIA MOBILE DEVICES

This report presents findings of three studies examining the user and audience perspectives on traditional and mobile newsgathering technologies.
INTRODUCTION

Grant #2011-0317 was awarded to the Journalism and Multimedia Arts Department at Duquesne University in mid–2011. The purpose of the research to be conducted under this grant was to investigate audience perceptions of credibility and quality of newsgathering using both traditional techniques of backpack journalism and techniques that utilized new technologies such as the iPhone and iPad. Study design took place in 2011 and the early part of 2012 and resulted in three distinct phases of research.

The first phase of the study (Study 1) involved focus groups to explore perceptions and barriers to newsgathering technologies by those who gather the news. A total of four focus groups—two each of pre-technology education and post-technology education--were conducted between August 2012 and April 2013. The second phase of the study (Study 2) was conducted in a controlled laboratory setting and explored audience perceptions of credibility, transparency, and quality of news gathered using traditional and non-traditional methods. The final phase of the research program (Study 3) involved extending the concepts explored in Study 2 to a wider audience using a nationwide participant recruitment service and deploying the study via the Internet. This study also involved a comparative study of different generations' perceptions. Details of each stage of the research program, results, and analysis, are provided in detail. Key points and takeaways are identified in the Executive Summary.

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EXECUTIVE SUMMARY

Statement of Problem

With the expansion of mobile technology, news organizations are seeking ways to deliver content faster to an information-hungry public. Cell phones are able to shoot, edit, and deliver visual content as long as a signal is present. Broadband technology allows the content producer versatility in speed to upload and post news. Tablet technology, along with WiFi, is allowing users a larger screen to view content. With available editing software, content creators, including journalists, are migrating to mobile tools to capture and produce news. Tablets and cell phones offer the ability to capture video, still photos, record audio and edit the content. Moreover, mobile content production tools are usually cheaper than established video cameras, audio recorders and digital single reflex lens (DSLRs) cameras used for news photography, and new technology allows the journalist to be flexible and mobile without having to carry large, bulky information-gathering tools.

Despite the benefits of new technology, questions about news production quality remain. For example, cell phones do not allow content producers to zoom in for closer video shots, and video and sound may be less clear. As such, will audience members distinguish—and tolerate—qualitative differences between the visual presentation of mobile and traditional newsgathering technology?

Most research on quality has focused primarily on the content producer’s point of view. Little attention has been paid to how an audience perceives the quality of a news product. To date, most of these studies have focused on the influence of the content upon satisfying audience needs rather than the technical presentation of the news stories. Given the pervasiveness of new technology in society and the potential benefits of its use for newsgathering, the purpose of this study was to investigate audience perceptions of credibility and quality of newsgathering using both traditional techniques of backpack journalism and techniques that utilized new technologies such as the iPhone and iPad. These are both timely and pertinent concerns for the news industry.

Approach

Several hurdles had to be overcome to implement this pioneering study. The Principal Investigator (PI) developed a new academic course in which students experimented with gathering news and using new technologies. While other education institutions were already conducting multimedia journalism courses, those using mobile technology appeared to using it on a limited basis. Many seemed to be following Belmaker’s 2013 recommendations that journalists should use
smartphone technology to: record and file audio clips; shoot basic VOs; capture discrete photos; conduct live remote reports; and file copy on deadline.¹

Because Belmaker’s recommendations were not available when this study began, the research team relied upon previous research conducted by the Principle Investigator’s (PI) on the quality of backpack journalism. The PI’s background in television news, combined with his interest in video deployment on the print platform’s website, provided the basis for the study. The research team determined that in addition to studying audience perception of the quality of news gathered on various devices, the team should also examine a number of other variables: namely, viewers’ news recall, sense of credibility/transparency, and duration of attention.

The research team measured audience reaction to the video, using existing measurement scales for quality, credibility, transparency, news enjoyment, and news.

**Equipment**

The PI (and course instructor) searched for other best practices in backpack journalism (BPJ). He determined that NBC’s BPJ model provided the best guideline for equipment purchases.² Pack type, video camera, still camera, tripod, laptop purchases were selected, based on price, technological flexibility, and weight contribution to the mobile pack. The JVC GY-HM150u video camera was chosen for its ability to produce ‘broadcast quality’ high definition (HD) video with balanced audio inputs and ability to record on SDHC cards in either MP4 or MOV formats, which work with current software used in the PI’s academic department. It had also been used by CNN in battlefield situations. The PI also selected the Canon D-60 digital single reflex camera (DSLR), which records both still photography and HD video on SDHC cards. He chose this mid-priced camera, based on affordability and flexibility for print and television newsrooms.

**Mobile**

The mobile devices of the iPad 3 and iPhone 5 were the latest versions of those technologies. The study used 32-gig versions of the mobile devices to provide enough space for video acquisition and editing. The iPad did not use cellular service. The journalists relied upon WiFi connections/locations when using the iPad technology. The student journalists used iMovie as the editing software.

Pedagogical Implementation

The students enrolled in the experimental class produced five enterprise stories each for the semester. Story topics were based on previous research on story types (Huang, et al., 2003). Students were given story types in advance to start working on ideas. Class time was devoted to learning and working out problems with technology for about three weeks. The student journalists shot, wrote, edited, voiced and produced file transfer protocol (FTP) stories in the field, away from campus influence and technology. The research team wanted students to be as independent as possible. Each student had a pack with all tools for the semester. Students were randomly assigned a story type for each technology. They were required to submit a story file within a week of receiving each assignment. All stories were produced using the television platform standards. For the first four stories, students knew the technology type they were to use in advance. For the fifth story, students were randomly assigned a technology and a story type. Like their professional counterparts, students were required to meet deadlines and use a variety of tools for newsgathering.

Overview of Methods Used

Study One
Study one incorporated focus groups, composed of content producers. Informed adoption of technology is important to professional journalists so that they can decide what tool is best to cover an event. Producers were asked about their experiences in order to generate a best practices guide for future pedagogical implementation of the multimedia journalism (MMJ) concept. The focus groups’ content producers fit within the Millennial demographic.

Study Two
Study two explored how audiences evaluated the quality, credibility, transparency, comprehension, and perception of reality in news stories produced across four newsgathering technologies: namely, smart phones, tablets, video cameras and DSLRs. This study employed a controlled experiment design, which was implemented in a lab environment. All stimuli were presented on identical PC screens equipped with headphones. The news viewers watched a story produced via each technology. Each story shown was randomly drawn from a store of 28 stories. Video stimuli and hosting survey were stored on departmental servers. The participants in study two were news consumers from the Millennial generation.

Study Three
Study three expanded upon study two’s examination of news evaluation, quality, credibility, transparency, and perception of reality of news stories created across the same four newsgathering technologies. This study employed a national-level field experiment approach. Hence, the presentation of the stimuli on screen platforms, audio devices, broadband connections, and survey-taking environment.
were checked rather than controlled. The news viewers were shown a story produced via each technology, all of which were randomly drawn from a bank of 58 stories. Participants were solicited to take part in an online news survey through a third-party research company. Video stimuli and hosting survey were stored on departmental servers. This study included members of the Millennial (Gen Y), Gen X and Baby Boomer generations and examined differences across demographic cohorts in terms of perceptions of news stories.

**Summary of Results–Key Points**

**Study One**
- Focus group studies showed that even Millennials, who are digital natives with relatively little experience in the norms of video newsgathering, expressed trepidation about using multiplatform tools to gather and transmit news.
- Millennial generation students majoring in forms of media—at least at the subject institution—are not among the first to adopt new technology. Most preferred to wait until the technology has been proven through research.
- When performing in a multiplatform environment, participants in the course found the need for greater levels of confidence as a journalist and the necessity to develop stronger, more compelling stories.
- Benefits of such technology included ease of use, unobtrusiveness, and convenience. Overall the students preferred the iPhone to the iPad for such newsgathering.
- According to participants, the experiential learning from the course deepened their understanding of their role as storytellers.

**Study Two**
- Overall evaluation of news stories, perceptions of quality, transparency, credibility, and perceived realism were higher for traditional newsgathering technologies – the DSLR and JVC – than for new technologies represented by the iPhone and iPad. Comprehension of news stories across technologies was mixed. Specifically:
  - Evaluation of news stories filmed with the DSLR was higher than for those produced using the iPhone or those using the iPad. Perception of quality was also higher for the DSLR than for the other tools.
  - The JVC was perceived as providing better quality than the iPhone.
  - DSLR had greater perceived transparency than iPad and JVC higher than iPhone.
  - DSLR and JVC had higher credibility than iPhone and iPad.

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3 Millennials, also known as Gen Y, are defined as the generation born between 1984—2004; Generation X is the generation born between 1965—1983; Baby Boomers were born between 1944—1964.
Perceived realism was higher for the DSLR and JVC than for the iPhone and iPad. Comprehension of news stories was higher for the JVC than the other three tools; however, the iPhone was higher in comprehension than the DSLR.

Apart from newsgathering technologies, results show that:

- Senior students comprehended the news stories better compared to freshmen, especially those stories produced with JVC cameras.
- International students perceived the news stories to be less transparent and comprehended the stories less compared to domestic students.
- Females deemed the news stories higher in transparency, credibility, realism, and comprehension.

**Study Three**

There were no significant differences in perception of overall news stories, transparency, credibility, or realism among all four news gathering technologies. However, perceptions of quality continued to differ, specifically:

- Perception of quality was higher for the DSLR than for the iPad but not significantly higher than the iPhone or JVC.

Generational cohorts did not differ in their perception of news evaluation, quality, credibility, transparency, or perception of reality of news produced with various newsgathering technologies. There were, however, difference across generations in terms of how they evaluated the news stories and how they perceived realism of stories independent from the newsgathering technologies. Particularly:

- Those of the Millennial generation evaluated the stories lower than those of Baby Boomer Generation and perceived the stories to reflect reality less compared to those of Baby Boomer Generation and Generation X.

There were differences among generation in how they prefer to receive their news. Specifically:

- Those of the Millennial generation were most likely to pick online (websites and blogs) as their primary source of news.
- Those of Baby Boomer Generation were least likely to pick social media (Facebook, Twitter) as their primary source of news.
- Baby Boomers are most likely to pick print media.
- Generation X members are least likely to pick print media.
- Baby Boomers are most likely to pick broadcast media as primary source of news, followed by Generation X members.

Results showed that news viewing technologies, particularly screen platform and audio device influenced the perceived quality of news stories shot with different camera types. Specifically:
Those who used interactive TV perceived the quality to be lower than any of the other viewing platform.

Quality of stories produced with DSLR was perceived higher when headphones were used, while quality of stories produced with iPad were higher when earbuds were used.

- Results showed that journalism experience and education level also influenced how and to what extent individuals perceived differences across newsgathering technologies. Specifically:
  - When journalism experience was taken into account, stories shot with DSLR were ranked highest in perceived transparency and quality.
  - Participants with low (high school level) education perceived stories produced with JVC cameras to be highest in quality, iPhone to be highest in evaluation and credibility, and iPad to be lowest in transparency.

- Apart from newsgathering technologies, results show that females perceived the stories to be more transparent, credible, and realistic, while evaluating them higher than males did.
REPORT ON STUDY 1

[Focus Group Study]
Method

A total of 14 student journalists participated in two sets of focus groups in this study. A total of four focus groups were held with students who registered for a special topics multimedia journalism class designed to teach how to develop news stories and use newsgathering technologies. Students learned how to operate JVC and DSLR cameras, as well as iPhone and iPads in news production. Each student had to learn how to shoot, edit, voice, write, produce and upload from the field using each technology.

The first focus groups were held in the first week of class in both the Fall 2012 and Spring 2013 semesters and the second focus groups were held during the last week of class in each of those semesters. The focus groups were conducted by two researchers not involved in teaching the multimedia journalism class. Students were provided with consent forms and were allowed to opt out of the focus group. To ensure anonymity, students were referred to by ‘participant number’ during the focus groups and sessions were audio taped for later transcription.

Two focus group interview guides were developed, one for the beginning and one for the end of the semester. The first interview guide inquired about the expectations of students for the class and what they hoped to gain from the course; the ways in which they used new technology in everyday life; their confidence with such technology; and the extent to which they used the various features of the technology. In addition, students were asked about their confidence in their journalism skills; whether they felt some skills were more important than others; what skills they felt would be necessary for a multiplatform journalist; whether these skills were different than those required for traditional journalism; and what concerns they had about the skills necessary for conducting multiplatform journalism. The second interview guide used at the end of the semester reflected what had been learned through the course. There questions inquired what students had gained from the course; knowledge gained of specific new technology; how confident students felt about their journalism skills as the result of taking the course; and to what extent they felt they had learned the skills they felt necessary for multiplatform journalism. Both sets of focus groups ended with a fifth question requesting students to add anything else of relevance.

Findings of Study 1
Student perceptions prior to attending the multimedia journalism course

Themes that emerged from the focus groups held with students prior to the start of the course included:

1. Perceived benefits of multiplatform journalism
Some of the perceived benefits of multiplatform journalism expressed by the students included the speed of gathering and transmitting news, the ability to combine video and sound easily, and the capability to respond quickly to events. However, while discussing benefits of multiplatform journalism one student speculated that these technological shortcomings could lead to a loss of quality.

“Something that just occurred to me ... is that we shoot, edit and upload from the field. You lose the benefit of an editor or talking to your colleagues, really. Unlike print journalism, you write the story and then it goes through an editor; goes through a copy editing process; but here a lot of the responsibility falls directly on the reporter.”

2. Student use of and confidence with technology

The students were mixed in their confidence with the use of new technologies. As one put it, “We grew up in the right generation” but others were less sure. For example, one student noted, “when they gave me the iPad, I was petrified at not breaking it...You’ve got to get used to it. It takes a little bit even the iPhone.”

Despite their familiarity with their smart phones students acknowledged that they were not always aware of the many features and tools provided by their phones and were not concerned about this lack of knowledge. Overall they did not think it was necessary to know all of the tools and applications immediately because technology was always changing – each update or version came with new tools. The students were generally comfortable with learning how to use technologies like the iPhone and iPad experientially.

3. Early majority of technology adoption, not innovators

When asked whether they were among the first to adopt new technologies, the group concurred they were not among the innovators. Most preferred to wait until the technology had been proven through research. One acknowledged “being a little behind in technology” while another noted “[I] normally wait until something breaks to update it.”

4. Student perceptions of skills needed in journalism

Among the skills students identified as necessary for journalists were personal characteristics such as adaptability, strong social skills, the ability to ‘think on your feet,’ confidence, and the ability to face rejection. In addition the students felt journalists must be willing to learn, open to different types of stories, and have an understanding of audience needs and wants. Moreover, as one student said:

“I think the last thing is passion. You’ve got to actually, you need to feel good about it. You can’t just feel like, oh, yeah this story was nice. You have to feel excited
about it like, wow this was great. You know— this is great footage, this is a great story, great interview. [You’ve] got to be wanting to do better than you have before.”

In addition to personal attributes, students identified universal skills for good journalism, such as being able to ask good questions, to synthesize information, and to construct a news story. As one explained, “those are going to be important whether you are doing a video, or whether you are writing for the paper.”

When asked if there were additional skills they felt would be required in multiplatform journalism, students stressed the increased importance of multi-tasking, independence, organization, the ability to think on your feet and to deal with frustration, and adaptability. They also stressed the importance of personal accountability.

5. Students’ apprehensions regarding the multimedia journalism class

Student apprehension and of the multimedia journalism course stemmed from uneven skills. Some were strong writers but weak on video; others, just the opposite. Moreover, they expressed concern that interview subjects might see them as less than professional when confronted with a student capturing a news story on an iPad or iPhone rather than traditional cameras.

In addition, the students were uncertain of their ability to produce quality news stories that would be respected by the viewing public.

They also expressed apprehension of being responsible for the entire package – developing the story, interviewing and filming the subject, and editing as well as the challenge of doing so alone. As one student explained, “I think that’s going to be hardest. I’m used to working with somebody else....I guess part of it with me is the confidence thing.”

Student perceptions after attending the multimedia journalism course

Themes that emerged from the focus groups held with students at the conclusion of the course included:

1. Skills gained

Students gained a variety of skills through experiential learning during the course of the semester. According to their responses, most students felt that as users of multimedia technology to develop news stories, they had gained an increased understanding of technology while others highlighted better time management skills, better interviewing skills, and willingness to accept responsibility. Others felt that multiplatform journalists needed to be adaptable:
“being able to jump from technology to technology...and also willing to learn new things.” As one noted:

“Better understanding of the technology. I feel more comfortable using everything, like the iPad and iPhone which I’d never used before...and I think just generally overall my interviewing skills got a lot better. I was also to get more of what I wanted from the interviews.”

Students also benefited from the responsibility there were given both with the technology and for generating their own story ideas within very brief guidelines. Rather than being told what story to write and then filming the story, students had to generate their own story ideas from set topics and build the news product themselves. Such responsibility helped them mature in their confidence and abilities.

2. Greater understanding of multiplatform journalism

Students were surprised to find the extent of writing necessary for multiplatform journalism. They also learned to appreciate the differences between writing for print and writing for other media such as broadcast. Participants in the course found the need for greater levels of confidence when performing in a multiplatform environment and the necessity of developing stronger, more compelling stories. As they explained:

“I think it takes a lot more I guess you would say confidence to do multimedia because you not only have to talk to other people, but you have to believe in your script and you have to speak convincingly and you have to sell every aspect of the story to the viewer.”

“With multimedia you kind of have to make that person not change the channel. They have to want to be interested in it.”

Other benefits included greater understanding of the multimedia news product – story, writing, video, and editing – as a holistic process rather than several individual parts. It was helpful for those who felt they would focus in one media area to have understanding of what others in the process would produce. “I don’t think it’s possible to tell a complete story without learning or at least getting that viewpoint from the photographer, from the video,...you see it in a different way...it just gives you more options in your head about how you can tell a story.”

3. Benefits to multiplatform technology

In addition to gaining an understanding of the strong writing skills and confidence necessary to engage in multimedia journalism, users also found much to appreciate in the use of new technology such as the iPhone and iPad for
creating news stories. Benefits of such technology included ease of use, unobtrusiveness, and convenience. Overall the students preferred the iPhone to the iPad for such newsgathering “because it was just very awkward to hold and try to focus in on different shots...the iPhone was a little bit easier to manage and shoot and edit.” The participant added, “It’s just all in your back pocket. It’s very convenient. So that’s why I liked it.”

As anticipated, some participants had experiences wherein interviewees were taken aback when presented by a journalist using the iPad or iPhone rather than a DSLR or JVC camera while others found the unobtrusiveness of the technology beneficial. Said one student:

“My last story was about the JPLC and I was wandering around the classroom. And I don’t think they would have allowed me to come in if I had a big JVC because it would have been very disruptive. It would have been very intimidating. I know that a lot of people there have difficult pasts and difficult stores; so they didn’t want us to be invasive...I was able to make them much more comfortable using the iPhone [because] they were obviously familiar with them.”

4. **Limits to knowledge gained**

Though the students were pleased with the skills they gained from the course they felt that they had learned just the beginning of what would be needed to truly understand the technology. “I think the steepness of our learning curve and the short time that we had necessitated that we just learn the basics.”

Others suggested that the basics were sufficient for the types of news stories they were developing for class. Feature stories would require more creativity and depth in filming technique than hard news or breaking stories.

5. **Storytelling is key**

Despite the novelty of the technology and the time and dedication necessary to learn how to use it, users declared that storytelling was most important. According to participants, the experiential learning aspect of the course deepened their understanding of their role as storytellers and that listening to those they interviewed in developing the story was very important. As one user explained:

“I feel you can’t let the technology distract you from the basics you need, like the truth. That’s what journalism is about – getting the truth out and all this fancy technology is great but if we didn’t know how to tell an ethical story, where would that lead us? So I think you just need everything, but you can’t forget what you learned before learning how to use all the technology.”
Another noted that the professor “always emphasizes that we are storytellers and I think we all have a lot to learn on the technology side; but I think [this process] has put us through so much in [developing] our ability to tell a story—we are first and foremost storytellers.”

Conclusions of Study 1

Some fear the introduction of converged curriculums in journalism will dilute the quality of news production as journalists become jacks of all trades and masters of none (Huang et al., 2006). Yet students who participated in the experiential multiplatform journalism course not only identified similar key skills for multiplatform journalism as indicated in earlier studies, but they also developed a deeper understanding of themselves as storytellers.

Before engaging in the course students’ primary concern was for their ability to learn the technology and concerns over the quality of news product they might produce with such technology. They also expressed concern about making mistakes or breaking expensive equipment.

After the course, students reported being less apprehensive about the technologies. They now focused on telling quality stories. Participation in the course strengthened both students’ technological skills and skills of importance in traditional journalism – the ability to write, interview, and listen well, to construct a news story, and to adapt to varied situations. As a result students gained confidence in these skills and their ability to succeed as journalists in a highly competitive market, in whatever form that journalism may take.
REPORT ON STUDY 2
[Controlled Laboratory Setting]
Method

In order to examine the differences in perceived news evaluation, quality, credibility, transparency, comprehension, and perception of reality of news stories produced on various newsgathering technologies, a controlled experimental research design with within-groups repeated measures was employed using self-administered online questionnaire in a lab setting.

A total of 380 college-age participants were recruited via instructors throughout the university. Students were offered certificates that can be used towards extra credit in any one of their classes. The participants were admitted to a computer lab with 25 PCs, each with a standard headphone, and Internet browser.

Each participant evaluated a total of four randomly assigned news stories created via four different levels of the manipulation. The four levels of manipulation were four newsgathering technologies, namely Canon D-60 DSLR, JVC HM150-u video camera, the Apple IPad 3 and Apple IPhone 5.

The news stories (a total of 28 videos across four technologies) were produced by journalism undergraduate (75%) and graduate (25%) students in a special topics multimedia journalism class. Student journalists were randomly assigned a story type or theme based on Huang, Rademakers, Fayemiwo, and Dunlap’s, (2004) categories of news content: Business, government, tragedies/malfeasance, education/family, culture/entertainment, health/environment, and science/technology. Student journalists shot, edited, voiced, wrote, produced and uploaded from the field using each technology. Students were asked to shoot in high definition to standardize the methods of recording.

The survey was distributed via a website that was created by the systems administrator to include the study questionnaire and to randomize the viewing order of news stories. Participants were exposed to a total of four videos followed by accompanying questions. These four videos were presented randomly in standard windows through the automated survey that showed a video per technology among 28 stories recorded across 4 news gathering devices (DSLR, JVC video camera, iPhone5, and iPad3).

All videos were compressed to a consistent size and bitrate; therefore, any potential changes introduced by compressing the videos were uniformly applied to all videos.

Videos were streamed from a server on the local network, and no buffering was observed during the test period.
Findings of Study 2

Characteristics of the Participants

All participants in this study belonged to the Millennial generation. The characteristics of the participants are as demonstrated in the charts below:
Audience Perceptions across Newsgathering Technologies

Overall Evaluation of News Stories

The results of a repeated measures ANOVA demonstrated that there was statistically significant difference in overall evaluation of news stories between the four camera types (DSLR, iPhone5, JVC, iPad3), *Wilk’s Lambda* = .96, *F*(3, 295) = 4.55, *p* = .04, multivariate partial eta squared = .04.

Post hoc pairwise comparisons using the Bonferroni correction revealed statistically significant differences between the evaluation of videos shot with DSLR (M=4.95, SD=1.04), were evaluated higher compared to iPhone5 (M=4.72, SD=1.10) at *p*<.01 level, and compared to iPad3 (M=4.70, SD=1.20) at *p*<.05 level. JVC (M=4.84, SD=1.22) camera was not evaluated significantly differently compared to other recording technologies.

Legend:
1= DSLR
2=iPhone5
3=JVC
4=iPad3
Quality of News Stories

The results of a repeated measures ANOVA demonstrated that there was a statistically significant difference in perception of quality of news stories between the four camera types, Wilk's Lambda = .72, F(3, 329) = 43.54, \( p < .001 \), multivariate partial eta squared = .28.

Post hoc pairwise comparisons using the Bonferroni correction revealed statistically significant differences between all combinations for the four camera types in terms of perceived quality of the news stories. The perceived quality of videos shot with DSLR (M=4.86, SD=1.11) was significantly higher than all other camera types namely iPhone (M=4.12, SD=1.27 at \( p < .001 \) level), JVC (M=4.41, SD=1.35 at \( p < .001 \) level) and iPad (M=4.24, SD=1.25 at \( p < .001 \) level). Stories created with JVC cameras were perceived to be higher quality than iPhone (at <.01 level), but iPad was not significantly different from iPhone or JVC.

Legend:
1 = DSLR
2 = iPhone5
3 = JVC
4 = iPad3
**Transparency of News Stories**

The results of a repeated measures ANOVA demonstrated that there was a statistically significant difference in perception of transparency of news stories between the four camera types, *Wilk’s Lambda* = .94, \( F(3, 312) = 6.47, p < .001\), multivariate partial eta squared = .06.

Post hoc pairwise comparisons using the Bonferroni correction revealed statistically significant differences between some combinations for the four camera types in terms of perceived transparency of the news stories. The perceived transparency of videos shot with DSLR (M=5.22, SD=1.03) was significantly higher than iPad (M=5.00, SD=1.14) at p<.05 level. Similarly JVC (M=5.28, SD=1.12) was perceived to be higher in transparency compared to iPhone (M=5.06, SD=1.06) and iPad both at p<.01 level. However, iphone or ipad were not different from each other, and DSLR and JVC did not differ between each other either.

![Estimated Marginal Means of transparency](image)

**Legend:**
1= DSLR
2=iPhone5
3=JVC
4=iPad3
Credibility of News Stories

The results of a repeated measures ANOVA demonstrated that there was a statistically significant difference in perception of credibility of news stories between the four camera types, Wilk’s Lambda = .96, F(3, 296) = 4.54, p<.01, multivariate partial eta squared = .04.

Post hoc pairwise comparisons using the Bonferroni correction revealed statistically significant differences between some combinations for the four camera types in terms of perceived credibility of the news stories. The perceived credibility of videos shot with DSLR (M=5.23, SD=1.00) was not different from those shot with JVC cameras (M=5.23, SD=.99) or iPhone (M=5.17, SD=.92). iPhone and iPad (M=5.04, SD=1.02) did not differ either. However, both DSLR and JVC stories were higher in credibility than iPad at p<.01 level and at p<.05 level respectively, but not from iPhone.
Perceived Realism of News Stories

The results of a repeated measures ANOVA demonstrated that there was a statistically significant difference in perceived realism of news stories between the four camera types, *Wilk's Lambda* = .91, *F*(3, 324) = 11.31, *p*<.001, multivariate partial eta squared = .10.

Post hoc pairwise comparisons using the Bonferroni correction revealed statistically significant differences between some combinations for the four camera types in terms of perceived reality of the news stories. The perceived reality of videos shot with DSLR (M=5.01, SD=.99) was not different from those shot with JVC cameras (M=4.97, SD=.99). iPhone (M=4.79, SD=.99) and iPad (M=4.73, SD=.95) did not differ either. However, both DSLR and JVC stories were higher in perceived realism than iPad at *p*<.001 level, and higher than iPhone at *p*<.05 level.
Comprehension of News Stories

The results of a repeated measures ANOVA demonstrated that there was a statistically significant difference in comprehension of news stories between the four camera types, Wilk’s Lambda = .77, \( F(3, 377) = 38.45, p<.001 \), multivariate partial eta squared = .23.

Post hoc pairwise comparisons using the Bonferroni correction revealed statistically significant differences between some combinations for the four camera types in terms of comprehension of the news stories. The comprehension scores ranged between a minimum score of 0 to a maximum score of 15. The comprehension of videos shot with JVC (M=8.73, SD=2.45) was significantly higher compared to those shot with DSLR (M=7.34, SD=2.87), iPad (M=7.56, SD=2.46), and iPhone (M=7.81, SD=2.77) all at \( p<.001 \) level. Furthermore, comprehension of stories shot with iPhone was significantly higher than those shot with DSLR at \( p<.05 \) level.

![Estimated Marginal Means of comprehension](image)

Legend:
1 = DSLR
2 = iPhone 5
3 = JVC
4 = iPad 3
Audience Perceptions of Newsgathering Technologies across Education

More analyses, particularly repeated measures MANOVAs, were run with education in terms of college grade level (freshman, sophomore, junior, senior, and graduate) and whether or not participants were international or domestic students.

Results showed that there was a main effect of newsgathering technology in terms of evaluation, quality, transparency, credibility, perceived realism, and comprehension when analyzed in relation to education. Furthermore, there was a main effect of education in transparency and comprehension, and there was an interaction effect between newsgathering technology and education in terms of comprehension, as seniors understood the news stories better compared to freshmen, especially those created with JVC cameras.

There was a main effect of newsgathering technology in terms of quality, transparency, perceived realism, and comprehension when analyzed in relation to being international student. There was a main effect of being international student in terms of transparency, and comprehension, where domestic students perceived the stories to be more transparent and comprehended the stories more.

Audience Perceptions of Newsgathering Technologies across Gender

Results showed a main effect of newsgathering technology in terms of evaluation, quality, transparency, credibility, perceived realism, and comprehension when analyzed in relation to gender. Although there were no interaction effects in any of the measurers, there were differences across males and females in terms of transparency, credibility, perceived realism, and comprehension. Females perceived the stories to be more transparent and credible, found the stories to reflect reality more, and comprehended the stories more compared to males.

Conclusions of Study 2

All news stories shot via either traditional or backpack journalism technologies were evaluated similarly and focused on how interesting, enjoyable, or relatable the stories were. Stories shot via DSLR cameras were perceived to be highest quality, followed by JVC, then the iPhone. Quality differences amongst backpack journalism devices were not detected. In terms of transparency, both of the traditional camera recording techniques led to a perception of higher transparency of the stories compared to backpack journalism devices. Stories that were shot with traditional cameras were found to be more credible. Stories shot with iPad were found to be low in credibility, but not necessarily those shot with iPhone. Stories shot with traditional cameras were perceived to be a better reflection of reality compared to both types of backpack journalism cameras. Finally, comprehension of stories shot with two backpack journalism technologies were similar level, yet those shot with
JVC were better comprehended than all others, while those shot with DSLR were not as comprehensible.

Considering that the participants have evaluated DSLR camera stories higher in evaluation, quality, transparency, credibility, perceived reality; it is interesting that the content of these stories were not comprehended as much. This suggests that the participants were particularly focusing on technical aspects of the news stories in their evaluations.

Finally, even though the effect of newsgathering technology prevailed in participants’ perceptions of news stories, college seniors understood the news stories better. Domestic students perceived the stories to be more transparent and understood the stories better. Females perceived the stories to be more transparent and credible, found the stories to reflect reality more, and comprehended the stories more.
REPORT ON STUDY 3

[National Survey]
Method

In order to further examine the differences in perceived news evaluation, quality, credibility, transparency, comprehension, and perception of reality of news stories produced on various newsgathering technologies, a field experimental research design with within-groups repeated measures was employed using self-administered online questionnaire in participants’ natural setting.

A total of 600 participants nation-wide (with mean age of 40, SD = 13.8) were recruited by a national research company via e-mail. Participants were offered e-Reward credits for their time. Each participant took an online survey that contained the stimulus materials and questionnaire at a time and place of their convenience. Since the survey-taking environment and technologies used could not be controlled, they were checked with survey questions.

Similar to study two, each participant evaluated a total of four randomly assigned news stories created via four different newsgathering technologies, namely Canon D-60 DLSR, JVC HM150-u video camera, the Apple iPad 3 and Apple iPhone 5.

The news stories (a total of 58 videos across four technologies) were produced by undergraduate and graduate multimedia journalism students. Student journalists were randomly assigned a story category including business, government, tragedies/malfeasance, education/family, culture/entertainment, health/environment, and science/technology (Huang et.al., 2004). Student journalists completed the production from writing to voicing, shooting, editing, and uploading from the field using standard methods of recording.

The survey was hosted by a website that was created by the systems administrator to include the study questionnaire and to randomize the viewing order of news stories. Participants were again exposed to a total of four videos followed by accompanying questions on their perceptions of the news stories, demographics, and survey taking technologies and environments. The four videos were again presented randomly through the automated survey that showed a video per technology among 58 stories recorded across the four news gathering devices (DSLR, JVC video camera, iPhone5, and iPad3).
Findings of Study 3

Characteristics of the Participants

The characteristics of the participants were as demonstrated in the charts below:

- **Gender**
  - Male: 52%
  - Female: 48%

- **Race**
  - White: 79%
  - Asian: 8%
  - Hispanic/Latino: 6%
  - African American: 4%
  - Other: 3%

- **Generation**
  - Gen Y: 38%
  - Baby Boomer: 31%
  - Gen X: 31%

- **Education**
  - Graduated College: 38%
  - Some College: 16%
  - Completed: 25%
  - Masters Degree: 8%
  - Completed High School: 6%
  - Had Some High School: 3%
  - Doctoral Degree: 3%
  - Some Doctoral: 1%
The participants’ experience with journalism and news consumption habits were as demonstrated in the charts below:

### Journalism Experience
- Extensive: 74%
- Considerable: 18%
- Some: 5%
- Minimal: 2%
- None: 1%

### Primary Source of News Consumption
- Online: 50%
- Broadcast Media: 32%
- Social Media: 9%
- Print Media: 9%
In addition to the characteristics of the participants, the technologies they used during the study were as follows:

**Broadband Connection**
- 35% Cable modem
- 30% Wireless
- 19% DSL
- 9% Fiber
- 2% BPL
- 1% Satellite
- 2% Not Sure

**Platform**
- 56% Laptop computer
- 35% Desktop computer
- 7% Smartphone
- 6% Tablet
- 2% Interactive TV

**Audio Device**
- 57% Built-in speakers
- 21% External speakers
- 11% Earbuds
- 9% Headphones
- 6% Stereo speakers

**Distraction**
- 56% Not distracted
- 32% Not Distracted at all
- 11% Distracted
- 1% Very distracted
Audience Perceptions across News Gathering Technologies

Overall Evaluation of News Stories

The results of a repeated measures ANOVA demonstrated that there was no statistically significant difference in overall evaluation of news stories between the four camera types (DSLR, iPhone5, JVC, iPad3), *Wilk's Lambda* = .99, *F*(3, 485) = 2.51, *p* = .06, multivariate partial eta squared = .02.

Quality of News Stories

The results of a repeated measures ANOVA demonstrated that there was a statistically significant difference in perception of quality of news stories between the four camera types, *Wilk's Lambda* = .98, *F*(3, 483) = 2.61, *p* = .05, multivariate partial eta squared = .02.

Post hoc pairwise comparisons using the Bonferroni correction revealed statistically significant differences only between DSLR and iPad in terms of perceived quality of the news stories. The perceived quality of videos shot with DSLR (M=4.07, SD=.06) was significantly higher than iPad (M=3.92, SD=.06 at *p*<.05 level).

Transparency of News Stories

The results of a repeated measures ANOVA demonstrated that there was no statistically significant difference in perception of transparency of news stories between the four camera types, *Wilk's Lambda* = .99, *F*(3, 459) = .17, *p* = .92, multivariate partial eta squared = .00.
Credibility of News Stories

The results of a repeated measures ANOVA demonstrated that there was no statistically significant difference in perception of credibility of news stories between the four camera types, Wilk's Lambda = .99, \(F(3, 431) = .75, p=.52\), multivariate partial eta squared = .01.

Perceived Realism of News Stories

The results of a repeated measures ANOVA demonstrated that there was no statistically significant difference in perceived realism of news stories between the four camera types, Wilk's Lambda = .99, \(F(3, 490) = .56, p=.65,\) multivariate partial eta squared = .00.

Audience Perceptions of Newsgathering Technologies across Generations

Additional results of repeated measures MANOVA tests showed that there was no interaction effect of newsgathering technology and generation, or main effect of newsgathering technology in terms of evaluation, quality, transparency, credibility, or perceived realism when analyzed in relation to generation. There were also no generational differences (main effect of generation) in terms of differences in perceived news quality, transparency, or credibility across newsgathering technologies.

There were, however, differences across generational cohorts in terms of how they evaluated the news stories, and how they perceived the stories as reflection of reality. Baby Boomers evaluated the news stories higher compared to Generation Y members (p<.001). Finally, Generation Y members perceived the news stories to reflect reality the least compared to Generation X members (p<.05) and Baby Boomers (p<.001).

Primary Source of News across Generations

Additionally, members of different generations reported that they prefer different news outlets as their primary source of news. Those of Generation Y were most likely to pick online (websites and blogs) as their primary source of news, followed by Generation X, \(\chi^2 (6, n=584) = 56.49, p<.001\). Those of Baby Boomer Generation were least likely to pick social media (Facebook, Twitter) as their primary source of news, \(\chi^2 (6, n=578) = 86.61, p<.001\). While Baby Boomers are most likely, Generation X members are least likely to pick print media \(\chi^2 (6, n=580) = 74.81, p<.001\). Finally, Baby Boomers are most likely to pick broadcast media as primary source of news, followed by Generation X members, \(\chi^2 (6, n=582) = 65.93, p<.001\).
Audience Perceptions of Newsgathering Technologies across Viewing Technologies

Results showed that news viewing technologies, particularly screen platform and audio device influenced the perceived quality of news stories shot with different camera types.

Repeated measures MANOVA test results demonstrated that there was no interaction effect of screen platform and camera type on quality (Wilk's Lambda = .98, $F(12, 1262) = .64, p=.81$, multivariate partial eta squared = .01), but there was a significant main effect of screen platform, $F(4, 479) = 2.46, p=.05$, multivariate partial eta squared = .02. Only those who used TV ($M=1.46, SD=.97$) perceived the quality to be lower than any other viewing platforms.

Another Repeated measures MANOVA test results demonstrated that there was an interaction effect of audio device and camera type on quality, Wilk’s Lambda = .96, $F(12, 1262) = 1.84, p=.04$, multivariate partial eta squared = .02. This indicates that the impact of camera type is influenced by the level of audio device used to view the video. However, there was no significant main effect of audio device or camera type on quality. Particularly quality of stories produced with DSLR was perceived higher when the participants used headphones, while quality of stories produced with iPad were higher when the participants used earbuds.
Audience Perceptions of Newsgathering Technologies across levels of Journalism Experience

Results of additional repeated measures MANOVAs showed that there was a main effect of newsgathering technology in terms of quality, transparency, and perceived realism when analyzed in relation to journalism experience. Stories shot with DSLR were perceived to be the highest in quality and transparency. There were no interaction effects between newsgathering technology and journalism experience in any of the measures. There was a main effect of journalism experience on news evaluation, perceived quality, and perceived realism. The only significant difference was between those who have extensive experience and those who have minimal (p<.05) and no experience (p<.01), where those with more experience perceived the quality to be lower than those with minimal or no experience. Additionally, within participants with no experience, evaluation was different across newsgathering technologies. Credibility was different only among those with extensive journalism experience.

Audience Perceptions of Newsgathering Technologies across Education

More analyses were run with low (some and completed high school), medium (some and completed college), and high (some and completed graduate school) education levels. Results showed that there was a main effect of newsgathering technology in terms of evaluation (p<.01), and quality (p<.05) when analyzed in relation to education. There were also interaction effects of education and newsgathering technology in terms of evaluation (p<.05), quality (p<.01), transparency (p<.01), and credibility (p<.05). Particularly stories shot with iPhone was evaluated the
highest among those with low education, while those produced with iPad were evaluated highest among those with high education. Stories shot with JVC were rated highest among the low educated group, while they are the lowest among the high educated group. Stories shot with iPad were perceived to be least transparent in low educated group, while they are the highest in highly educated group. Credibility of stories shot with iPhones were highest, while those shot with iPad were lowest for low educated group, while the credibility of all technologies were similar in medium and highly educated groups. Additionally, within participants with low education, evaluation, quality, and transparency were different. However, there was no main effect of education on any of the measures.

For evaluation, and transparency, significant differences across newsgathering technologies were detected only by those with low education. For quality, differences were detected by low and medium levels of education. Those with high level of education did not perceive any differences across news stories shot with different technologies.

**Audience Perceptions of Newsgathering Technologies across Gender**

Results showed a main effect of newsgathering technology only in terms of evaluation when analyzed in relation to gender. Although there were no interaction effects in any of the measures, there were differences across males and females in terms of evaluation, transparency, credibility, and perceived realism. The differences across newsgathering technologies in terms of quality were detected only by males. Females evaluated the stories higher, perceived the stories to be more transparent and credible, found the stories to reflect reality more compared to males.

**Conclusions of Study 3**

Results of Study Three showed that the only difference across newsgathering technologies detected by the participants in the nation was in terms of quality. Similar to findings in Study 2, the perceived quality of videos shot with traditional journalism technologies, particularly DSLR was significantly higher than backpack journalism technologies, specifically iPad. There were no effects of newsgathering technologies on evaluation, transparency, credibility, or perceived realism.

However, education level, journalism experience, and gender also influenced to what extent individuals have perceived differences across newsgathering technologies. Particularly, when journalism experience is taken into account, stories shot with DSLR were perceived to be highest in perceived transparency in addition to quality. When education is taken into account, participants with low (high school level) education perceived stories produced with JVC cameras to be highest in quality, iPhone to be highest in evaluation and credibility, and iPad to be lowest in transparency. When gender is taken into account, although newsgathering
technologies did not matter, similar to study two, females perceived the stories to be more transparent, credible, and realistic, while evaluating them higher.

Different generational cohorts did not detect differences across newsgathering technologies, in terms of overall evaluation, perceived quality, realism, transparency, or credibility. However, cohorts have detected differences in terms of evaluation and perceived reflection of reality.
OTHER RESEARCH PROGRAM INITIATIVES

Collaboration with Professional Media

Knoxville

In fall of 2012, the first section of the MMJ class visited East Tennessee. The trip had two outcomes. First, the students met with Erin Chapman, a MMJ with the Knoxville News Sentinel newspaper and Jack Lail, multimedia editor. Both are featured in the Mark Briggs’ book, *Journalism Next*, a prominent book used by top journalism schools using the MMJ model. The PI had worked with the News Sentinel in the past. The students received first-hand instruction on MMJ procedures from a print platform perspective. They also met with Allie Spillyards, a MMJ from the local CBS television affiliate to compare protocols from different platforms. The second part of the trip allowed the students to enterprise business stories in the small town of Norris near Knoxville. The town was built in conjunction with the construction of the Norris Dam in Tennessee Valley Authority (TVA) system. The small town scenario was chosen in order to place students outside their comfort zone of a campus exercise. Students explored the role of local businesses to the identity of the former TVA company town. These types of company towns exist throughout western Pennsylvania. Plus, chances are they may be faced with similar situations early in their careers. Stories produced with traditional technologies were published on the KNS website.[1]

The second semester of the class visited local steel community, McKeesport, PA, to feature businesses in exploring their contribution to keeping the town flourishing. The MMJ class collaborated with the Investigative Journalism and Visual Sociology classes providing the business stories for the multimedia website.[2]

Allegheny Front

The second semester MMJ class invited Jennifer Szweda Jordan, host of local environmental radio show, Allegheny Front (AF), to class wherein students pitched ideas for exploring water quality issues in the area. Students practiced with traditional technology producing water-themed stories. This experiential learning process did not yield any publishable stories to the AF website. However, it did establish future collaborative efforts with the radio program.
Center for Public Integrity

The grant provided opportunities to bring in guest speakers who are working in the multimedia realm. Former Duquesne University graduate and Pittsburgh investigative journalist, Chris Young of the Center of Public Integrity, presented best practices to students.


International Inclusion

Pulitzer Center

The grant enabled us to bring an international perspective to the project. On Feb. 4, 2013, in conjunction with the Pulitzer Center, we hosted Bulgarian multimedia journalist and Pulitzer Fellow Dimiter Kenarov, who gave a public presentation about his ongoing investigation of the economic and environmental ramifications of shale gas extraction in Eastern Europe and the mobile methods he used in his reporting. Kenarov then spent several hours with Dr. Gee's mobile journalism students, sharing his knowledge and experience and evaluating their work.

International Student Inclusion in Study 2

Results of International Student responses to our investigation can be found in the details of Study 2.


Several additional articles are anticipated from the Knight Grant studies including: comprehension of viewers; transparency and credibility of news produced with various technologies; and a pedagogical approach to teaching multimedia journalism.
CONCLUSION

This study examines the viability of mobile devices from a multiplatform journalism perspective compared to a more traditional backpack journalism model. Both have their advantages and disadvantages. With the advancement of mobile technologies, the gap in quality of presentations is diminishing. The explosion of accessories in the growing ‘iPhoneography’ field will drive greater acceptance by both journalists and audiences. It may grant greater inclusion of public participation in the way of citizen journalism.

However, this potential paradigm shift is without scrutiny. Will technical skills sets suffer as journalists are asked to do more in their professions? For example, mobile devices allow the ability to snap a picture or record a video. With the need for constant updates via social media and the web, time constraints may force journalists to grab whatever piece of visual information that is acceptable or good enough. There is the potential for increased mediocrity in the profession if decisions are based on solely expedience. Shrinking newsrooms add to workloads, piling pressure on those covering the news. In depth context may suffer when newsrooms try to economize. A basic component of journalism is good writing and solid story telling. When reporters must also produce audio, video, still photographs, and infographics, a question is arises about whether writing suffers. When a journalist must get aural and visual pieces while working solo, will time allotted for the written part diminish? Mobile devices are less technically intricate, easier to operate, and more portable than traditional news-gathering equipment. But, as results of the study suggests, audiences may not find the news they produce as acceptable.

This finding also raises pedagogical questions. Each technology has limitations. Academic institutions would be shortsighted if they abandon traditional newsgathering tools for strictly mobile adoption. Mobile technology can add immediacy to covering an event. As with any technology, it can also fail. Redundancy of tools should still be emphasized when journalists go into the field. For example, a DSLR can capture still photos and video with quality and clarity. Then the content can be imported into a tablet or laptop for editing before using a mobile device as a hotspot to post on a server. If the DSLR has problems, a mobile device can provide ‘acceptable’ redundancy. Academics need to push the basics of journalism and the critical thinking and problem solving needed in the field to resolve technical problems. Technology provides wonderful tools that may add depth and breadth to an event, but it will never replace solid journalistic inquiry.