Design On The Go: How African American youth use mobile technologies for digital content creation

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Abstract

The use of mobile technologies has been proposed for increasing access and designing innovative educational activities. Unfortunately, there is limited data on the current uses of cellular phones amongst low-income African American youth. In particular, there is little known about how this population may design on the rapidly adapting technology, what digital content they create and share via mobile technology.

In this exploratory study, I surveyed 103 youths, ages 13-21, and asked about their ownership of cellular phones and their patterns of use with media, the Internet, as well as whether they create digital content. The findings indicate that although these young people use many forms of technology and media, they are more prone to creating content such as photographs and share their writing through cellular phones than through the Internet. The results of this study may indicate trends in use and the opportunity to develop and support digital design and content on mobile platforms.

Key words

mobile, cellular phones, technology, creativity, design

Introduction

The latest advances in mobile communication devices and digital media offer the opportunity to create and share information unlike anytime before in history. For African American young people, specifically those living in low-income urban communities, the cellular phone may offer unique opportunities for creating video, music, writing and digital images, and to share these artifacts with the broader community. Although not all of these creative acts were out of reach to young people in the past, the confines of time, location, cost, and Internet availability may have tempered the capacity for low-income youth to participate as content creators (Jenkins, Clinton, Purushotma, Robison, & Weigel, 2007; Hargittai & Walejko, Forthcoming; Pew Internet & American Life Project [PEW], 2005). Today even inexpensive cellular phones and PDAs come equipped with cameras, sound/motion capture, digital memory, and Web 2.0 software (Greene, 2008). These features address so many of the prior limitations to creating digital content and they offer new opportunities for widespread participation in the activities (Marsden, 2008).

Unfortunately, in the current literature on young people and digital media production, the role of mobile technologies has been largely ignored. In the United States, it is only just recently that mobile devices have even emerged as a potential tool to provide educational opportunities (Fadel & Lemke, 2008; Prichard, 2004; Vaidhyanathan, 2008), and few proponents of the technology consider how prominent the devices are in the lives of young people (Vaidhyanathan, 2008; Prensky, 2004). The question of whether mobile technology has the ability to support the creative activities of young people and make them more widely available to audiences remains unanswered. What role can mobile technology have on young people as they engage in the creation of digital media? Does this technology support users in their role as artists, and producers? In order to investigate these questions, this paper will discuss the role of mobile technologies broadly, as well as share the findings of an exploratory study on cellular phone usage amongst low-income youth. It is important to consider the current availability of mobile technology and how these youths feel about using cellular phones. In addition, it important to consider how these youths engage in content creation. Finally, this paper will consider how educators may approach integration of mobile technologies with low-income youth by looking at some of the novel ways the technology is being used by poor communities around the world to foster creativity.

Cellular Phones and The Information Society

A recent study conducted by the Pew Research Center (PEW, 2008) polled a sample of media consumers in the U.S. One of the questions asked of the survey's respondents revealed a significant shift in the way we access information today, and how we may access information in the future: "What would be the hardest media platform to give up?". This question had been asked in a similar survey conducted in 2002, however six years later the results were significantly different. The cellular phone outranked the television, the Internet, electronic mail, and the landline telephone. In fact, over 50% of the respondents of the poll consider the cellular phone to be the hardest media access tool to live without.

This may seem like a shock to some of us. Especially when we compare the figures of cellular phone ownership to that of the other options mentioned in the Pew survey. For one, the television has a household saturation rate

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close to 100%, and many U.S. households have two or three television sets (Roberts & Foehr, 2008). There are even cultural icons that reflect our societal relationship with the television set, and for the typical *couch potato*, the television would be as hard to give up as food for a week. If we turn our comparison of the utility of mobile technology to that of the Internet, we will find that the Internet is increasingly accessible and is becoming the main source for obtaining important information (PEW, 2005; PEW 2008). Governments, federal agencies, and businesses are "going paperless" and many now require that their patrons access pertinent data via the Internet (Rice & Katz, 2003). Yes, the Internet would also be very difficult to live without. However, upon further reflection on my own habits and what I have observed casually, I have to agree with the findings of the Pew report – what would I do without my cellular phone?

Most people I know use their cellular phone throughout the day in an intimate way. For example, in the movie 'Forgetting Sarah Marshall,' one of the characters jokes about how he no longer wears a wristwatch not because he can dismiss socially prescribed scheduling, but because he can check the time from the clock on his cellular phone. When I travel on an airplane the first thing I observe after touching down are the large number of passengers who reach to turn their cellular phones back on – turning it off is usually the last thing I do before take off. And just recently when my Palm Treo died after being dropped into a cup of hot coffee I spent the remainder of a beautiful Sunday afternoon shopping for a new phone. I now anticipate spending another month trying to reconnect with friends and family, and adding their contact information into my latest mobile device.

The cellular phone companies also seem to know about our need for this particular device. Network communications and equipment companies top the Fortune 500's most profitable companies list in 2008 (Fortune, 2008) and companies like Motorola and Qualcomm report unprecedented growth even in once unprofitable sectors, such as the developing world (Foster, 2007). According to some manufacturer and recycling plant reports, more than half a billion cellular phones will be replaced this year alone (Greene, 2007), and current sale projections indicate that 40% of the world's population will have access to a mobile device in the next three years (Fails, 2007). These figures far exceed computer and broadband access (Ofcom, 2008). One day cellular figures will also rival the television. One thing is certain, among the rich and poor, young and old, despite gender, education and location, the cell phone is a tool that has permeated almost every segment of human society.

Mobile Access and the Culture of Creativity

As technology continues to advance and access to cellular phones and related communication networks continue to grow, the personal connection between humans and hand held devices seem inevitable. There is no denying that the small, yet powerful technology of the cellular phone has irreversibly transformed our vision of communication, community, and access to information in ways distinct from the Internet, the telephone or the television (Turkle, 2005). The way we value media, time, location, and relationships will never be the same. The ubiquity of the cellular phone not only reflects changes in technology, but also a change in our behaviour and social relationships. In a study on young people's social behaviour related to cellular phones researchers in Melborne found that mobile users exhibited more flexibility with making plans and scheduling meet up times. Also they tended to extend technology-mediated conversations into face-to-face discussions (Satchell & Singh, 2005). This indicates that perhaps boundaries and limitations once imposed on other forms of computer-mediated conversations are different with portable devices. This is only one example of how we may need to rethink the use of mobile technologies. There are undoubtedly many more to consider.

Two significant issues to consider in the relationship between youth and cellular phones are related to 1) access and 2) the patterns of use related to mobile communications. Young people's relationship with the cellular phone is quite complicated. In some respect they are the population who seems to have adopted the technology with the most passion, yet researchers have tended to focus on inequities in access, media consumption, and their role in content creation. The current literature on youth, technology, and media reveal some interesting trends. Youth seem to be using a lot of technology and media in their leisure time (Roberts & Foehr, 2008). They also seem to be less inhibited with using the technology for communication and self-expression than adults (Roberts & Foehr, 2008; PEW, 2008).

The questions raised by this data are important to the discussion of how mobile technologies can be used as creative tools. When it comes to young people's use of technology the issues of access and patterns of use are key to the future of the technology, in designing effective interventions, and considering the many aspects of social and cultural trends. In an attempt to unpack some of the issues confounding the use of mobile technologies as creative tools, there are two questions this paper and the survey hoped to address: Who actually owns the mobile

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technology? How does the population of lower-income youth use the technology? It is vital to consider these questions and to place them in both the global and local perspective because not only are there remarkable differences in the data that are available, but there are also indication in the behaviour revealed by the data.

Access
The issue of access is a topic of considerable importance to policy and design since educators generally agree that it is important to continue pouring resources into technology for education (Fails, 2007; Prensky, 2004), and especially in low-income communities. The term "digital divide" has been in use for more than 15 years to describe the inequity in computer and allied technology access and use. As low-income youth tend to depend more on community access to computers and the Internet (Subrahmanyam, Kraut, Greenfield, & Gross, 2000; Becker, 2000) efforts to close the gap in availability to the technology have been followed by large investments in computers for schools, libraries and other educational environments. Unfortunately for the last twenty-five years we have been captivated by the promises of the personal computer (PC).

As of late, the most innovative projects to address equity in technology are focused on increasing PC access and availability. Negroponte's One Laptop Per Child is an excellent example of a product that promises to make learning more portable and affordable to youth. Countries like Peru, that generally do not spend much money on resources on key educational needs, are investing millions of dollars to purchase these OLPCs for students (Abramson, 2008). Sadly many of the efforts to shrink the digital divide have not recognised the potential to engage learning audiences with a flexible, inexpensive, and increasingly more advanced device – the cellular phone (Prensky, 2004). As interventions have been primarily concerned with the personal computer, the failures of upkeep and outdated technology have plagued many efforts (Becker, 2000). In terms of quelling the digital divide, it is vital to consider adding all capable technologies into the picture and the cellular phone is one that is often left out of the discussion. Though there is evidence that in the U.S. lower-income cellular phone users have more restrictive connection plans, and may depend on their phone for business contacts more (Rice et. al, 2003), in terms of a "divide" in access as the result of economic barriers the cellular is much more widely accessible than the PC.

In Europe and parts of Asia the majority of young people own a cellular phone, but not as many own PCs. The reverse may be true in the U.S. Approximately 95-99% of youth in countries like Norway and Taiwan have a cellular phone (Thulin & Vilhelmson, 2008). In Japan for instance, the typical youth owns two phones (Ash, 2008). In the U.S. these figures are remarkably lower, varying from reports of 75-78% in cell phone ownership, but 85% own PCs (PEW, 2008). Some critics argue that the reports of extensive availability and use of mobile technology are flawed, often because the data is extracted by a larger survey (Vaidhaynathan, 2008). For example, in two recent survey's conducted by the Kaiser Family Foundation and the Pew Foundation, youth ages 8-18 were surveyed on the amount media, and forms of communication media they use. The findings of the two reports were similar, and seemed to indicate a trend of large media consumption – on average youth in the U.S. spend close to 6½ hour per day with screen media, and nearly all the young people surveyed had gone online (96%). Unfortunately, these questions do not delineate with what devices they go online with and whether these screens include cell phones. (PEW 2005; Roberts, 2008)

Content Creation
In addition to technology access we are also aware that there are differences in how youth are engaging in content creation. As the technology and media has changed, the dynamics of creating and sharing information have also transformed. When it comes to producing content it seems that as young people enter into their later teens they engage with the media differently. In a study on the developmental differenced in media use Livingstone (2004) found that as children got older they were more likely to become media producers. About 64% of teenagers ages 12-17 had at least one type of content that they had created available for others to view online (PEW, 2008). These included blogs, photographs, and online videos.

Since 1999, the percentage of young people in the U.S. who have a PC at home has increased from 75% to 86%, and Internet access has gone from 47% to 74% (Kaiser Family Foundation, 2005). As mentioned earlier, the numbers of cellular phone owners has also risen during this time. This data indicated some remarkable trends, but we are unaware if the differences we were able to identify in the realm of access are also consistent with content creation. Some argue that they are more profound. In a recent article the media scholar Vaidhaynathan (2008) wrote that not all youth are technologically savvy or interested in creating content. He attributes the high rates of participation in social networking site such as 'MySpace' and 'Facebook', which depend on user-generated content, largely the result of ease with the software, not necessarily

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because these are activities that youth would be prone to engage in individually. Similarly, in a study of online content creation researchers (Hargittai, & Walejko, forthcoming) found that household income was a significant indicator to predict a youth's activities and experiences with content creation.

Questions about what skills we need to teach young people in this emerging digital media environment has also been raised by media literacy scholars such as David Buckingham (2008), and Henry Jenkins (2007). In a recent paper written for the MacAthur Foundation, Jenkins and his colleagues address the issue of how youth utilise the digital media, and what is required to become a content creator. The paper provides an analysis of certain competencies required to read, or create the digital media. One of the most significant aspects that Jenkins and others point to are the way that boundaries which once separated public and private have become blurred by Web 2.0 software. The digital material is new and often gets used in more variety and across more environments with great ease than with traditional print materials.

Buckingham (2008) discusses this further in a stimulating article on digital media, and exemplifies this in a discussion about digital photograph. He points out the difference between the digital photograph and the print photograph. They may have similar images, but he posits that the nature of the materials make for different social experiences. By using Web 2.0 software a young person can take a photograph and upload, yet once that image is on a network the photo can exist far beyond the place and purpose they intended. In online environments such as 'Facebook', that image can be tagged which will broadcast to the rest of the community who is in the photo and what they have been doing. Also, since the photograph is digital it can be downloaded by someone else and reappear in another place the photographer never planned, say on a cellular phone, or in an email to a potential employer.

The capabilities to create content, as well as the rules of use, have shifted very drastically in a short amount of time. These changes have occurred in a way that youth have a lot of ability to create, but this comes with a new level of power and of responsibility. Many in education and media now argue that what we need to address these new rules and begin to prepare young people for participating in a digital life.

Any meaningful discussion about technology and active participation in content creation, become more complex when we include the cellular phone as a technology

device. This leads to many unanswered questions of regarding how we as educators, and designers, can utilise this technology to better serve our students. How can we get them to become not just the consumers of the technology, but also the designers of their experiences with the technology? The study I conducted is an attempt to provide data on the current trends in media access and technology use amongst low-income African American urban youth (ages 14-21). It is based on a sample (103) of teens and young people from Newark, NJ and Brooklyn, New York. Data was collected in November 2008 via anonymous written questionnaires of about 30 minutes in length. The goals of the survey are to explore the following: What are the media and media access tools urban youth own? With what frequency does these youth access media and use technology? What forms of media do they create (for example, participation in social networking)? This summary provides the key findings from the survey and draws some conclusions.

Methodology

I draw on data I collected to examine the question of mobile technology and content creation. Although there are published resources such as the Pew and Internet in the American Life (2005; 2008) that exist to explore young peoples engagement in online content creation, I found no data set that includes the detailed demographic background, or that included a population of low-income African American urban youth to analyse. In addition to background characteristics such as age, gender, and race/ethnicity, I also collected information about the respondent's choices in digital media focusing on content sharing, communication with others, and leisure activities.

I looked at mobile phone ownership and communication, as well as content creation and sharing practices of 103 young people between the ages of 13-21 years from two urban community centers. I conducted the study in November 2008, over two days at a Boys and Girls club in Newark New Jersey and a Public Recreational Center in the Brownsville section of New York City. Given my interest in looking at low-income youth these locations were ideal sites due to the population they serve and the surrounding economic base. Unfortunately, the sample population, which will be discussed below, did not reflect the ethnic/racial diversity I had hoped for as the centers served largely black and African American constituents.

I administered the paper/pencil survey to avoid the potential difficulty of getting youth to take an online survey. This population may not have reliable Internet service and therefore would be unable to complete a computer-administered survey. The average survey completion time

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was approximately 30 minutes. The survey included detailed questions about respondents' activities online and with cellular phones (e.g. experience, types of websites visited, and technology ownership) and their demographic background.

Sample Description
Surveys were collected at two Tri-state area community centers in New York and New Jersey.

Teens and Young People: (n=103, 69 male & 33 female)
Age: range {13-21 yrs}
   average male = 15.9 yrs
   average female = 16.1 yrs

Race: 73%   African American
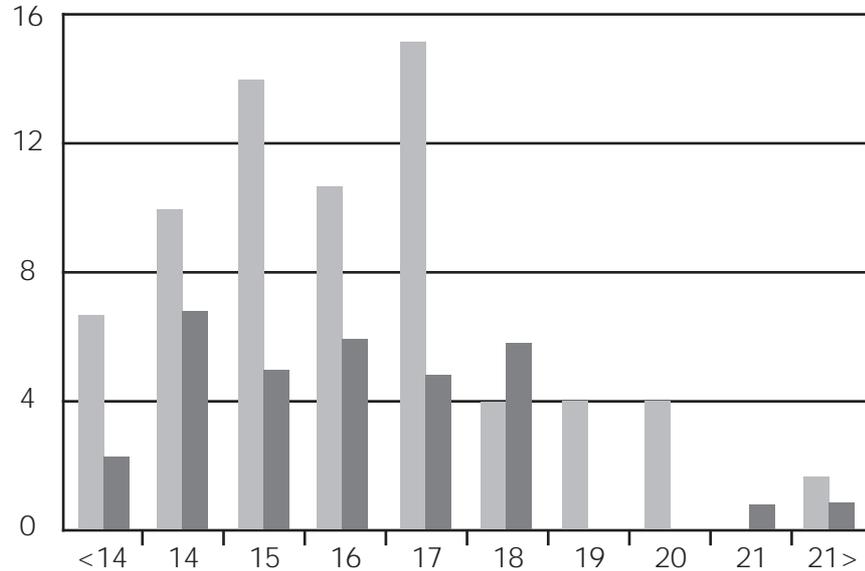   17%   Latino
       5%   Multi
       2%   White

Educational background: 72% currently in high school. The findings of the survey indicate that ownership of cellular phone is high among low-income African American urban youth and they tend to use the cell phone for many activities besides phone calls.
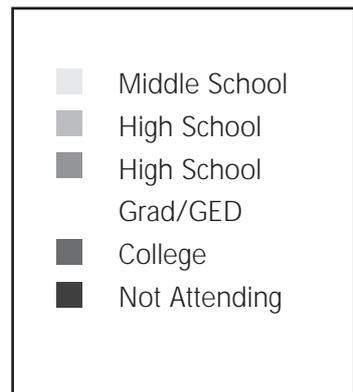• 74% of youth surveyed own a cell phone
• 59% play games on their cell phone
• 69% send text messages to their friends
• 63% use their phone to send or receive photos
• 52% access the Internet from their phone.

Cell Phone ownership
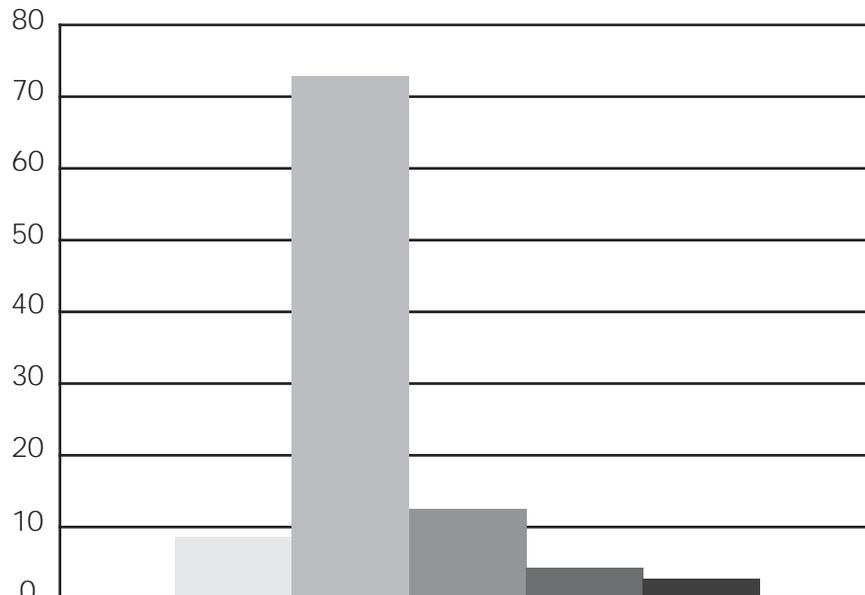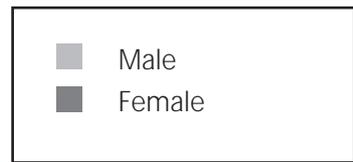
Male
Female

Findings

Middle School
High School
High School Grad/GED
College
Not Attending

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The findings of my survey are consistent with reports of other demographics. In a weekly reader poll of the young people in the U.S. (Knopstein, (2007), reports indicate that 74% of the 13-18 year olds own a phone. Also in terms of activities completed on the cellular phone from text messaging to playing games to recoding music, large numbers of youth respondents used the cellular phone as their primary tools for communication and as a tool for creative expression. The access to mobile technology is somewhat reflective of other technology trends, and does not seem to privilege a population with more economic resources. Rather, low-income youth have similar ownership patterns when is comes to cellular phones as other groups.

Low-income youth also seem to have computers and Internet access to home. The rates of ownership have gone up in the past five years according to several national surveys (PEW, 2008; Roberts & Foehr, 2008), additionally, the fact that these are youth residing in an around large cities may increase the likelihood of having home Internet access, as there are indications that Internet access is limited in rural communities more than in cities (Subrahmanyam, et. al, 2000). Also, respondents widely reported other locations beside home to use the Internet.

Home Computers
• 88% of the youth surveyed have a computer at home
• 89.3%* have Internet at home (* this figure may denote other Internet capable devices besides PC).

Other Computer Access:
• I can use the computer and Internet at **school** – 83%
• I can use the computer and Internet at my local **community center** – 55%
• I can use the computer and Internet at the **public library** – 27%
• I can use the computer and Internet at **church** – 4%

The findings that were most indicative of the importance of cellular phones to these youth was indicated in the frequency these youth reported using the Internet at home. Only 64% of the respondents said that they use the Internet at home on the daily basis, while 52% access the Internet on their cellular phone. This seems to reflect a trend that the cellular phone offers a level of access that captures a significant proportion of youth who go online. This would be a worthy topic to investigate further.

Social Networking
In an effort to look a content creation the survey explored how youth engage in social networking and other activities such as blogging, and posting video and/or musical content.

The most popular social networking sites were: **MySpace** (12%), **YouTube** (10%), **AIM** (18%) and **AOL** (10%). Although 'MySpace' was very popular amongst the respondents, those who report regular or meaningful participation in social networking sites were a considerably small group. Many of the respondents did not respond to the questions (72%) asked about social networking or content creation/sharing. Some expressed during the sessions that they did not know what a social networking site was or although they may have a profile on 'MySpace' that they did use these sites for networking, gaming, or further exploration.

• 87% of youth belong to **MySpace**
• 27% belong to **Facebook**
• 38% reported belonging to another social networking site.

My findings indicate that the low-income youth are creating digital media on their cellular phone more than online. In comparison, 63% do report taking and sending photographs to friends on their cellular phone and 69% send text messages. The proportion of these activities outnumbers youth who reported regular access to the Internet, indicating that they may not do similar activities online. This data may also indicate that the cellular phone provides new affordances for design and content creation. The cellular phone can and often is taken anywhere, the communication network allows for sharing both from device to device, or to upload onto the Internet. The majority of applications for content creation and sharing are dependent on the Internet, where creators can upload their artifacts online to websites. This imposes two obstacles for users without broadband and personal computers. The first is how they will be able to transfer their material and the second deals with the issue of having their contemporaries have a chance to view the materials. These limitations are not the same with cellular phones. The findings of the survey indicate that cell phones and computers may serve as reliable media platforms for access African American youth. Knowledge about the Internet and the potential uses for content creation are limited. Additional research with surveys that reach a diverse population (race and income) would provide an opportunity for comparison and allow for the generalising of trends.

Future Directions
Although I am not in line with folks like Prensky (2004) who declare that everything can be learned on a cell phone. I do not believe that everything can be learned on any device. I do, however, believe that we educators and scholars have overlooked an important tool in our quest to

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close the digital divide and address technological equity. But considering the sheer number and availability of cellular phones in our society I believe that American educators will lose out immensely if they do not embrace what is already available.

Nowadays, there are schools across the U.S. attempting to embrace products like the Palm and the Ipod. They sign up for expensive interventions with companies like Wireless Generation and Apple with the hope that the novelty and the portable aspects will increase teacher commitment and student interests. Unfortunately these programs tend to offer the same thing that didn't work in the traditional classroom – lectures, limited interactivity and worksheets on digital screens. The real questions that need to be asked in any attempt to integrate portable technology into the classroom are related to pedagogy (Soep, 2003). Educators and designers will need to conceptualise how we want our learners to learn. When we are focused on pedagogy we are forced to consider the cultural and social aspects of learning and to translate what we know into activities and opportunities for learning. Therefore, I would like to end this essay by sharing some innovative projects going on throughout the world with cellular phones. There are educators, researchers and designers who are proving that mobile device can be used as a collaborative tool to enable learning and help young people create and construct materials and new knowledge.

Jerry A. Fails (2007) is a researcher at the University of Maryland's Human-Computer Interaction Lab project on mobile technology who aims to promote literacy and writing on PDAs. The work of conducted by Fails and other researchers resulted in the development of a design platform on mobile devices that supports young children as they create and share narratives. Children in the project use mobile devices to write short informational texts about places they have visited. The texts are then integrated with photography or GPS data from the actual learning environment (a school trip to Washington DC for instance). Students can share their work with others by scrolling and directing text and photography on screen.

Another group of researchers in South Africa (Marsden, 2008) concerned with innovative ways to train young adults for jobs and provide vital health information have collaborated to develop a set of projects related to cellular phones technology. Instead of taking the approach that many in the field have in the past, and involving new software, they designed novel collaborative activities designed to surmount the constraints of the technology. The MobilED project has the goal to enhance

communication across communities, by allowing users to upload information (mostly audio files) to a website and a dial-in server via their mobile phone. This removes the issue of Internet connectivity that often limits the ability for people in regions with low PC ownership to share the content they created with others. In addition, once the audio is unloaded on the MobileED servers anyone can call into the server to hear the new material.

Digital Storytelling is a term used to describe short-format first person narratives that are presented in digital form. They tend to incorporate video or audio with picture. Digital storytelling has been widely adopted to help underserved communities find their voice and increase to amount of culturally appropriate media (Reading, 2008; Soep, 2003). One of the limitations to cellular phones to developing projects with digital storytelling in the past has been that the software involves a new editing system to support storytelling with text and pictures. In a project developed by researchers in India (Rooibas, A. C., Sabnani, N., & Sala, R. (2007) the goal was to transform traditional storytelling into digital storytelling. One of the principles of the project is to encourage collaboration by bringing people and devices together. This project developed an interface based on tradition storytelling scrolls and observed as generally low-tech communicated used the mobile phone in the collaborative and distributed activity of storytelling.

There are many other projects that explore writing and blogging. New software such as Twitter rely heavily on the cellular phone to update a network of people on your activities. Additionally, in Japan there has been a wave of books writing and published on mobile devices. Writing and sharing of literature on cellular phone is quite different than reading a book (Ash, 2007), the stories are conceive of with less plot, and are distributed episodically. However, mobile storytelling reflects the ability for the cellular phone to be an authoring and a democratic tool. Projects that focus on making music and visual arts are flourishing. Sound Art (Behrendt, 2008) is a project that explores distributed music, and how the cellular phone can be multiple tools at once. The project extends beyond the technology and involves the audience as participates in a live performance. And yet another project, Mobile Music (Gaye, 2006 explores the remix of music created by others and investigates how tagging and sharing through Bluetooth technology allow the cellular phone to be interactive and non-localised.

No longer limited by cost, location, or equipment, the ability to engage in creative activities has extended to younger and younger populations. As the ability to create

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digital content and share these creations with large audiences continues to extend to more audiences it is important to explore who these users are and what are the kinds of media they are making. This matter has particular impact on educators and designers, as they continue to conceive of how to use new technology to be truly interactive and have an impact on education.

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