Generation Mobile: Online and Digital Media Usage on Mobile Phones among Low-Income Urban Youth in South Africa

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Complete results, survey topline, questionnaire and dataset are available on tinokreutzer.org/mobile

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ABSTRACT

Mobile phones introduce a range of new possibilities for the use and production of media, as well as for personal networking and communication, political activism, and economic development. For this study, 441 grade 11 students at nine schools in low-income areas in Cape Town, South Africa were surveyed about their use of mobile phones. These young South Africans have adopted a number of ways to use the Web and mobile Instant Messaging. They also commonly access, produce, and share digital media via their phones and the Internet. Access to the Web has, until recently, only been available to the wealthiest fraction of South African society (less than 10% of the population), making this a highly significant development. Until now, little quantitative data has been available to describe exactly to what extent and how this cohort is beginning to access and use the Internet and digital media on mobile phones.

The students reported intensive use of mobile phones to access mobile Internet applications, at a far greater level than they report using desktop computers to access the Web. Mobile Internet is considerably more accessible to these students than computer-based Internet access, and they are choosing to use the Internet primarily for mobile instant messaging and other characteristic forms of mobile media use. This suggests that these students encounter a distinct, mobile version of the Internet. Their experience of Internet access and digital media may consequently be quite different to that of their computer-using peers.

An exploratory media and technology usage approach was chosen to determine, first, the availability of mobile phones and specific features to the students, and, second, the extent to which online and digital media are being accessed, produced, or shared. A detailed questionnaire was distributed to all students from thirteen grade 11 classes at nine schools (N = 441). The schools were chosen as random cluster samples from all public secondary schools located in the city's 50% most deprived areas in order to provide a detailed assessment of mobile phone usage in an environment similar to that which prevails in many urban South African schools.

Activity-based questions show that a majority of respondents (68%) have used a mobile phone on the previous day to access the Internet, while half of all respondents (49%) used the mobile Internet to access the Web on the previous day. Interpersonal communication remained the most common use of phones, with 87% of respondents making calls or sending SMS messages on a typical day.

A significant minority (23%) of students did not own their own personal handset, despite the near-universal use of mobile phones among all respondents (96% use one on a typical day). While phone ownership correlated strongly with a sense of economic deprivation as well as lower academic performance, there was no significant difference between both groups in terms of their mobile Internet usage. Thus the fact that some students do not own a phone does not seem to create a 'mobile divide' or automatically lead to exclusion from the possibilities of mobile Internet access.

Online media were found to be less frequently used than broadcast and print sources. Nonetheless, the fact that 28% of low-income urban youth access online news about once every day, or more often, may have significant implications for South Africa's news media, particularly in the future. Despite the geographical limitations of this study, the results provide an illuminating snapshot of mobile media use by low-income school-going youth in urban Cape Town.

TABLE OF CONTENTS

1. INTRODUCTION 1

THE MOBILE INTERNET AND LOW-INCOME YOUTH IN SOUTH AFRICA 3
THEORETICAL FRAMEWORK AND RESEARCH QUESTIONS 5
SUMMARY OF METHODOLOGY 7
CONTENT OUTLINE 8

2. UNDERSTANDING MOBILE PHONE AND ONLINE MEDIA USAGE 10

THE RISE OF ONLINE (NEWS) MEDIA 11
MOBILE DIGITAL MEDIA AND USER CREATIVITY 13
ONLINE AND TRADITIONAL MEDIA USAGE IN SOUTH AFRICA 15
THE DIGITAL DIVIDE(S) – AND THE NEED FOR USAGE-BASED DATA 17
IMPACT OF MOBILE PHONES AND INTERNET ON SOCIETY 20
POVERTY AND ICT USAGE 21
UNDERSTANDING MOBILE PHONES WITHIN YOUTH CULTURE 23

3. METHODOLOGICAL APPROACH 25

EARLY ADOPTERS – AT THE CROSSROADS? 25
PILOT STUDY 26
QUALITATIVE INSIGHTS: CULTURAL PROBE, AND INFORMAL CONVERSATIONS 28
SURVEY 29
Sample and field access 29
Procedure/Data Collection 35
Variables 36
LIMITATIONS OF SURVEY RESEARCH 37

4. MAPPING MOBILE PHONE OWNERSHIP, ACCESS, AND OVERALL USAGE 40

OWNERSHIP VS. USAGE 41
EARLY AND LATE ADOPTERS 43
CHARACTERISTICS OF HANDSETS USED 43
DETAILED PHONE CAPABILITIES 45
DESIRABILITY OF CERTAIN FEATURES 47
EXPENSES AND SOURCES FOR FUNDING 49
COST-CUTTING PRACTICES 50

5. CHARACTERIZING ONLINE MEDIA USE AND DIGITAL MEDIA PRODUCTION PRACTICES 53

MEASURING INTERNET AND WEB USAGE 54
SOURCES OF INTERNET USAGE 57
MOBILE PHONES DOMINATE WEB USAGE – IN MOST CATEGORIES 59
GOOGLE AND A LONG TAIL 61
COMPARING ONLINE AND TRADITIONAL MEDIA USAGE 62
NEWS CONSUMPTION ACROSS MEDIA SOURCES 65
PERSONAL PERCEPTIONS OF THE INTERNET 68
DIGITAL AND PARTICIPATORY MEDIA 68

6. CONCLUSION 72

7. ACKNOWLEDGEMENTS 77

8. REFERENCES 78

9. APPENDIX 87

SURVEY TOPLINE 88

FIGURES AND TABLES

Figure 1 Media consumption by South African youth 17
Figure 2 The Cape Town municipality as measured by the Provincial Indices of Multiple Deprivation 31
Figure 3 The locations of sampled schools and the 50 most deprived wards in urban Cape Town 32
Figure 4 Recency of mobile phone usage 43
Figure 5 Handset manufacturers in South Africa and among low-income youth in Cape Town 44
Figure 6 Self-reported capabilities of respondents' handset, by ownership status 46
Figure 7 Desirability of phone features for a hypothetical new handset, among owners and co-users 48
Figure 8 Boxplot showing the distribution of respondents' weekly prepaid voucher expenses 49
Figure 9 Sources of funding compared by respondents' gender 50
Figure 10 Traditional personal communication applications, by usage *ever* and *yesterday* 51
Figure 11 Model showing Groups of mobile Internet users, including usage rates for a typical day 56
Figure 12 Internet and Web usage for mobile phones and computers, used *ever* and *yesterday* 57
Figure 13 Groups of Internet users, based on mobile and PC access, for 'yesterday' and 'ever' 57
Figure 14 Frequency of Internet access by source 58
Figure 15 List of Internet variables for mobile phones and computers, used *yesterday* 61
Figure 16 Combined graph of ownership and usage (ever and yesterday) of media technology 64
Figure 17 Comparison between different types of mass media and Web access by different sources 65
Figure 18 Comparison between different news sources by frequency 66

Table 1 Difference between usage levels of owners and co-users 42
Table 2 Top 10 most commonly used mobile phone models 45
Table 3 Sources of funding for all respondents 50
Table 4 Usage of mobile instant messengers, *ever* and *yesterday*, with average time used 52
Table 5 Internet variables for mobile phones and computers, used *ever* and *yesterday* 60
Table 6 News sources used 'several times daily', by ownership, gender, and race subgroups 67
Table 7 Personal media variables for mobile phones and computers, used *ever* and *yesterday* 70
Table 8 Overview of most usage-related variables, for mobile phones and computer access 87

1. Introduction

Mobile phones have long surpassed traditional landlines as the most common voice communication technology – particularly due to the marked growth in new mobile phone users in most so-called developing countries (Feldmann, 2003). In South Africa, a country still trying to escape its legacy of dramatic racial inequalities, mobile phones have enjoyed spectacular growth over the past decade, with more than 60% of all South Africans above the age of 16 already owning a phone themselves (Research ICT Africa [RIA], 2009; All Media and Product Survey [AMPS], 2008). This rapid growth – up from just 18% in 2000 (International Telecommunications Union [ITU], 2001) – is at least partially due to the immense popularity of prepaid subscriptions and low-cost phones (Hodge, 2005; Esselaar & Stork, 2005), which have made it possible even for many of the country's poor majority to own or use a phone themselves.

In most developing countries, access to traditional computers and the Internet remains limited to a small elite (Bracey & Culver, 2005), an observation that also holds true of post-apartheid South Africa. Despite many initiatives to create more equitable access to Information and Communication Technologies (ICTs) since the country's first democratic elections in 1994 (Lewis, 2007) marked inequalities persist in the access to and usage of these technologies to this date.

South Africa's 'digital divides' follow shifting and complex lines. Some distinctions demarcate the computer-based information practices of much wealthier (though very small) upper and middle classes from the analog sources available to the impoverished majority. Other divides, such as the inequalities of access to computers and Internet within the education system, indicate how South Africa has failed to achieve redress for the formerly racial basis of resource allocation that characterized so-called Bantu education under apartheid. Perhaps most significantly, many infrastructural, educational and economic disparities create vast differences in ICT access between urban and rural populations (Tlabela, Roodt, & Paterson, 2007). Under apartheid, fixed-line telephony infrastructure was put in place primarily to serve the affluent white population, and so the rise of mobile telephony in South Africa already marks a sharp departure from the past. But for many people, mobile phones are not merely substitutes for traditional landline connections. This study shifts attention to the ways in which, for many young South Africans, the relatively inexpensive mobile phone handsets are fast becoming the Internet platform and multimedia device of their choice.

Based on their users' interests and the technical features available on them, phones are being appropriated in a myriad of ways other than standard phone calls, but increasingly also to make up for a lack of domestic and school-based access to the Internet and computers. Mobile Internet access[1] has so far been largely neglected in media and technology research, leading some in the popular media (e.g. Selanikio, 2008; Economist, 2008) to suggest that a 'silent revolution' will come about owing to the growing number of people, especially in emerging economies like South Africa, who have begun using mobile phones to access the Internet.

This study follows a strict distinction between the World Wide Web and the Internet, by which the former is seen as a distinct part of the latter, comprising only hyperlinked websites which are considered synonymous with 'online media'.[2] In particular, access to and usage of the World Wide Web (or Web) by the formerly 'disconnected masses' should be of major interest to media researchers. The Web has certainly made an enormous difference to the way mass media is distributed, consumed, and, more recently, incorporated into the participatory practices of online communities (e.g. Gilmore, 2004). But despite many benefits derived from this technology, some have argued that the Web merely serves and connects wealthy nations, and (at least so far) the affluent elites in developing countries (Castells, 2000). Others, however, have argued that the idea of a single binary digital divide does not grasp the complex set of social factors that can support or inhibit ICT usage or their potential benefits (e.g. Warschauer, 2003; Livingstone & Helsper, 2007). But as more affordable and more appealing mobile phones transcend from mere voice and text communication tools into complex technologies capable of handling the Internet and various digital media[3] formats, the question of 'leapfrogging' online societies arises – which would possibly challenge many existing notions in the 'digital divide' debate. Indications for such a large-scale jump in Web usage have thus far not been assessed academically in South Africa, making anecdotal evidence often the starting point for initial assumptions and interpretations.

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[1] 'Mobile Internet access' does not refer to a different kind of Internet, but to is used to differentiate the mobile phone as platform from traditional sources of computer-based access, including dial-up, ADSL, or wireless broadband. Although there can be a technical convergence between forms of access that blurs this line, in South Africa the two forms are still very distinct. Mobile Internet thus signifies accessing the Internet through the network provider's gateway server via GPRS, EDGE (2G), HSDPA (3G), or similar cellular network protocols.

[2] This study puts significant emphasis on the distinction between the Internet and the World Wide Web, stemming from a technical as well as from a mass media perspective. Thereby, the Internet is considered an application-neutral technology of interconnected computer networks, or rather, the underlying infrastructure that is used by various applications, including the interlinked pages of the (World Wide) Web. The Web, on the other hand, is used synonymous with *online media* within this study, referring to mass media accessible through the Internet. I use the term Web to include hypertext pages and publicly accessible audiovisual content of all kind, or in short, content that is viewable in a Web browser. 'Mobile Web' thereby simply means 'the Web accessed through a mobile phone'. The term excludes, however, instant messaging applications, email, and other programs using non-http protocols. As we are witnessing an increasing integration of such applications into the Web browser format, it is important that this study's usage of the term Web is thus mostly adhering to a mass media point of view rather than a strictly technical one. Semi-public sites, such as Facebook, are also included, but must be viewed with special attention by mass media studies due to their half private, half public nature.

[3] Digital media here is used in reference to photos, videos, music (including ringtones), and games that can be consumed, produced, or shared on mobile phones and computers. Given the specific mobile phone focus, this largely applies to files that can be saved, downloaded, or transferred. It is not meant to include online media accessed or streamed through a browser, such as websites or video streaming portals.

The mobile Internet and low-income youth in South Africa

During my work with secondary students in Cape Town's Philippi and Khayelitsha townships[4], I started to notice the strong organic ascent of the mobile Internet among impoverished youth. Especially students in grades 11 and 12 were navigating through social networking sites and instant messaging applications with impressive ease, often using battered handsets passed down from older family members. The newly acquired Web navigation habit (and skill), so these students explained to me, coincided with the enormous popularity of the mobile instant messenger MXit over the past two years (Francke & Weideman, 2007). MXit, a Java-based application that all but the most basic mobile phones can install, allows users to chat with each other using the Internet, very similar to computer-based instant messengers like ICQ, Google Talk, AIM, and many others. Since the program required a data connection to transmit its messages, most of my informants had only enabled their phones for Internet access for this specific purpose. However, usage of other resources on the Web followed suit, especially with the intention of downloading videos and music off the Web.

This study was thus suggested by my own recent firsthand experiences with the rapid rise of the mobile Internet. The phenomenon was particularly noticeable among students from low-income families, many of whom still do not have regular access to computers or the Internet in their schools, let alone at home. As I had experienced in different media and computer literacy classes in these neighborhoods over the past years, there was an enormous demand for the Internet and training in Web use, which could not be fulfilled by the scarce number of volunteer projects or the schools that provided access to the Web. (Until 2006, I happened to work for one such organization, IkamvaYouth.) At this point, I realized young people in the townships had begun to defy their status of 'unconnectedness', despite the almost complete absence of fixed-line Internet in their area. Although I was unsure about the scope of this revelation, it appeared that a new generation of mobile Internet users was being born – a generation that would grow up knowing the Web mostly from the tiny screen in their hand.

The importance of this transition becomes evident if one looks at the level of ICT available to the majority of South African students. Research ICT Africa found only 15% of all households to have a working computer, while just 5% reported having 'a working Internet connection' (RIA, 2009). Even computers and Internet access at schools have only recently started to become available to the majority of South African sub-elite schools, but often remain behind their actual potential (Prinsloo & Walton, 2009). This picture

[4] In South Africa, the popular meaning of the term 'township' refers to urban neighborhood areas that were built and reserved for all non-white population groups under apartheid rule, usually consisting of shack settlements. Despite some progress, most townships remain distinctively underserviced in terms of infrastructure and are often synonymous with starkly worse living conditions than what is found in the better areas of a city. The distinct racial divisions that practically still define townships by the old classifications also remain largely intact.

differs vastly from the one found among the small group of middle and upper class South Africans, whose usage and exposure to computers and the Internet may be likened much more to the level found in most 'developed' countries. Some have argued that the Internet and related ICT have indeed exacerbated inequality levels in recent years by providing useful tools and networks only to wealthier classes (bridges.org, 2001), something Castells has coined the "technological apartheid" (Castells, 2000, p. 93).

Whether such trends might be halted or even reversed as youth in developing countries begin to explore and utilize the mobile Internet remains to be seen. Similar to the interest sparked by the rise of the Web (and the ensuing implications for societies) since its invention in 1993, I believe that the rise of the *mobile* Web among world's 'disconnected' people will present crucial research questions for scholars from a variety of disciplines. Questions for media scientists could be: How will this affect the traditional media sphere? Will usage follow the model of Western societies or does the different technology dictate different priorities? To be certain, the rapid integration of mobile phones into people's lives – in particular those with low income levels – has already lead to research being conducted from a plethora of academic orientations. The result is a wealth of data and analyses of mobile phone usage in South Africa and several other developing nations, often with an underlying interest in attaining certain development goals with this new technology (Donner, 2008).

In fact, social and economic development agencies often express keen hopes to see the mobile Internet flourish as they strive for improved ways to promote programs for health awareness and other issues to the poor. At the same time, businesses can be suspected of vying to establish new mobile marketing channels and to exploit the surprising willingness of the poor to spend relatively high portions of their income on communication (Zainudeen, Samarajiva, & Abeysuriya, 2006).

Reliable figures for mobile Internet use in South Africa have so far been difficult to assess, as will be discussed in more detail in the following chapters. Details of the extent to which mobile phones are already used by low-income youth to (partly) bridge this gap, and in what capacity they use them, are still not readily available. In South Africa, most of the data available focuses on broad figures of overall access to mobile phones, provided either by the networks themselves (e.g. Goldstuck, 2007) or through nationally representative household or individual surveys (e.g. AMPS 2008A, 2008; RIA, 2009). Such data usually features the question of 'access', i.e. those who own or use a mobile phone, and those who don't. Although recurring surveys have integrated more detailed questions into their questionnaires over recent years, most published studies have not yet caught up with the full scale of this relatively recent phenomenon, while those which have addressed it to some extent do not paint a sufficiently detailed picture for us to comprehend the scale of mobile Internet usage.

Theoretical framework and Research Questions

This exploratory study is the first of its kind to obtain detailed quantitative data on online and digital media usage of mobile phones among grade 11 students in low income areas in Cape Town. In particular, as this study follows a mass communication and media science perspective, it will not merely address the question of *access* to mobile phones, computers, or the Web, but also aim to assess their detailed *usage*. In particular, it investigates the following questions and respective sub-issues in relation to this cohort of students:

What are the patterns of phone ownership, and to what extent do students access and use specific handsets and their features?

- What are the characteristics of mobile phone ownership?
- How do overall numbers for mobile phone ownership and mobile phone usage compare?
- What phone features and applications are commonly available to and used by students?
- How recently have students started using mobile phones?
- What are the average levels of expenses, as well as sources of funding?
- To what extent do students use voice calls and SMS messages, and to what extent are cost-cutting measures applied (missed calls, 'please call me' messages)?
- To what extent are mobile instant messenger applications used (e.g. MXit)?

How can students' use of online media, and their use and production of digital media be characterized?

- To what extent do students utilize the Internet and the Web on mobile phones?
- How does mobile Internet usage compare to Internet usage on computers?
- What websites are used most regularly, both for mobile phone and computer access?
- How do students conceptualize the Internet?
- How does the use of mobile media (and particularly news media) compare to the use of other forms of widely-accessible media, such as television, radio, and print?
- How are students consuming, producing and sharing different kinds of 'local' digital media (photographs, videos, music, games) using mobile phones?

Can we detect significant differences for users in this population …

- between phone owners and those using someone else's phone?
- between early and late adopters of mobile phones?
- between male and female phone users?
- between language or ethnic groups?
- according to self-perceived socio-economic status?
- according to self-perceived academic performance?

The overall aim of this study was to find out just how widespread mobile Internet use had become among young people in low-income areas in Cape Town. I wanted to know whether the mobile Internet users I had met were only a small minority of 'early adopters', or whether the mobile Internet had grown into an everyday resource for communication among this cohort. Given the absence of sufficiently detailed data, it was necessary to include analysis of all major and minor mobile phone applications, ranging from basic voice calls to Bluetooth file sharing and free 'please call me' messages.

My own particular focus on online news (e.g. Kreutzer, 2006) meant that the extent to which students were accessing news sources on the Web was a particularly important issue for me. Over recent years, the relationship between youth and news media have attracted continued attention from researchers, particularly in the United States, ranging from the supposed decline of youth's interest in the news (Buckingham, 1997; Mindich, 2004) to the apparent reprisal through mobile and online social media during the past American presidential election cycle (Pew Research Center for the People & the Press [Pew People/Press], 2008). African Americans and other minorities with lower income levels, who were found to be particularly mobile phone savvy as it was often their most used technology (Horrigan, 2008a), may have had a key part in this mobilization effort. In South Africa, youth and news media studies remains an under-researched area (Ndlovu, 2008), with some researchers suggesting a decline in youth's news interest (Claasen, 1996; Pepler, 2003) while others claim that access to the news among young people is actually quite high (Strelitz, 2002).

At the same time, the extent to which the mobile phone allowed creativity and media sharing (e.g. videos, photos, music) seemed particularly worthy of investigation. Such practices might afford students with important skills development and opportunities for self-expression and participation in online communities, which many researchers consider the exclusive preserve of computer users (Jenkins, 2006b; Buckingham, 2005). The insufficiently researched relationship between youth and news media in South Africa (Ndvolu, 2008) will be addressed with regard to online and local digital media, as well as in relation to students' reported use of mass media such as radio and television. The issue of sharing and producing local digital media (Jenkins, 2006a; Buckingham, 2007) will be followed as a secondary issue due to the proximity to classic mass media research.

This study rejects the idea of technological determinism, which follows the notion of specific trajectories that are inherent in a technology and will lead to a certain usage thereof (Brey, 2004). I work under the assumption that mobile phones, like any other ICT, are being appropriated by users in various ways, leading to a unique set of uses and preferences that presuppose different conditions and will also have varying effects. For this reason, this quantitative study does not discuss the 'impact' of mobile phones, a notion suggesting a flat unidirectional causal relationship that is not only impossible to measure, but often

fails to account for human agency and does not reflect the hybrid ways in which technologies influence (and are influenced by) societies and individuals.

Although the mere availability of mobile phones should not be considered a goal in its own right for social and economic development, smart and responsible usage of their technical opportunities may well bring about new opportunities for students to acquire novel skills and knowledge, which may ultimately help them materialize their ambitions. The distinct challenges and possibilities that lie ahead for many urban youth in South Africa (particularly the high chance of HIV infection, as well as the enormous hurdles involved in completing secondary education and entering the formal job market), have also motivated this research, thus extending this study's purpose beyond strict academic goals.

Summary of methodology

A clustered convenience sample of 441 grade 11 students from the most deprived areas in the Cape Town metropolitan area was chosen because of the students' position as potentially intense adopters of the mobile Internet in South Africa, as well as their importance as a target audience for development and education initiatives. A random cluster sampling design informed the selection of nine schools in these areas, while convenience samples dictated the particular choice of the particular classes. A detailed self-assessment questionnaire was distributed to complete classrooms of 13 grade 11 classes from 9 different schools (N = 441), resulting in 299 direct variables and more than 80 derived aggregates or calculated variables.

This quantitative approach has allowed me to describe the online and mobile media use of a sample of low-income urban youth in considerable detail, as well as to control for statistically significant relationships between seemingly independent factors. The process of piloting the study helped to establish a methodology that may allow future studies to address these questions in relation to a larger and more nationally representative sample.

Without attempting large generalizations about secondary school students or even about South African youth as a whole, this study design allows a snapshot of a specific target population. The primary aim was not to generate data which was fully representative of the targeted population, but to develop a methodology and a research instrument (i.e. the survey questionnaire) along with a set of insights into the mobile phone and Internet usage and ownership patterns currently emerging among low-income urban youth in Cape Town. These findings should provide a foundation for future research with other groups or for a larger-scale study.

Content outline

In chapter two I introduce the wealth of existing research which helped to inform the design of this study. Studies investigating the consumption of online and digital media were a particular focus, although much of this research documents trends in the United States. In the absence of such detailed information about young people in South Africa, available household survey and industry data were consulted for broader measures of the level of technological 'diffusion' in the region. Although this study is based on a quantitative survey, it also draws on insights generated from ethnographic research and from the cultural studies tradition. These studies (together with the powerful insights gleaned through conversations with participants during the piloting process) underscore the challenges of coming to terms with specific meanings of technology use within particular cultural and social contexts (Ito & Okabe, 2005; Ling, 2007; Katz & Rice, 2002; Horst & Miller, 2006). Owing to this emphasis on technology's situated significance in people's lives, the study has gravitated towards research and theories which acknowledge the challenges of understanding and representing usage in a quantitative way.

Chapter three presents an outline of the iterative process of testing, piloting, and revising the questionnaire. In particular, a complete pilot study (Kreutzer, 2008) was used to test the survey design and the overall methodological approach. These initial results pointed towards the surprisingly high level of mobile Internet and Web usage found in the sample of two classrooms (N = 66) of a low-income township school in Cape Town, subsequently confirmed by this study's full-scale survey.

Two major themes emerge from the survey data regarding the media usage of mobile phones among low-income urban South African youth. First, the nature of mobile phone ownership and the factors associated with access and overall usage patterns will be discussed in chapter four. Chapter five will present the second theme, which identifies practices associated with online and digital media used by respondents, and presents detailed analysis of specific categories of Web usage, as well as the importance of online news media relative to other sources of news.

Despite the near-universal use of mobile phones among all respondents, a significant minority (23%) of the sample were not owners of a personal handset. While phone ownership correlated strongly with a sense of economic and academic deprivation, there were few differences in phone usage patterns between this seemingly more impoverished group, who used and borrowed other peoples' phones, and the possibly more well-to-do group of phone owners. The study suggests the importance of further qualitative study of the fit between these sharing practices and the assumptions about individual use and ownership which currently inform the design of mobile phones. In addition, the findings suggest the possibility that cost factors and the difficulty of participating in time-intensive activities may be a future source of exclusion for this already apparently deprived group of 'co-users'.

The detailed activity-based questions have shown that virtually all respondents (96%) had used a mobile phone on the previous day for at least one communication, mobile Internet, gaming or digital media activity. Interpersonal communication was the most common use of phones, with 91% of respondents making calls or sending text messages on a typical day. However, 68% were found to use the Internet on a mobile phone on a typical day, including 49% who do so to access the Web, and the same number of respondents using an instant messaging application on a typical day. This section also explains that online and digital media are accessed primarily via mobile phones, while computers only have a slight advantage in a small number of Web categories, most notably school research and retrieval of health information.

Regardless of the platform, Google was found to be by far the most dominant Web gateway to all kinds of information, followed at a considerable distance by WAP mobile phone media portals. This profile of popular online media sources is particularly interesting in that it diverges from mainstream South African media in terms of ownership, range and provenance of sources, and the nature of the available content, making this idiosyncratic profile very different from South African print, broadcast, and online publishers. For this reason it constitutes another area for future more in-depth study and analysis.

Chapter five also explains the importance of online news media *vis-à-vis* other established news sources, and analyzes other relevant features of media usage, while investigating subgroup differences in relation to deprivation, usage intensity, and gender. When measuring students' media use on a typical day, the Internet (68% use it on a typical day) is second only to television usage (81%). Nonetheless broadcast and print sources are still the primary ways in which students access the news. Even so, 28% of students say they access the news on a mobile phone once a day or more frequently. This additional news channel adds to an overall complex picture of news consumption among students, who reported accessing an average of more than two news sources 'several times daily'.

Chapter six discusses some possible conclusions and suggests potential areas for closer investigation. In particular, we need further qualitative research to better understand the share of high-intensity mobile Web users, especially in terms of their access to online news, the format of consumed and shared digital media, and the specific skills learned with respect to the phone(s) used. Through this study's exploratory approach, I hope that the findings and observations will spark sufficient interest and subsequent academic inquiry from a variety of academic schools, including media studies and other related fields. The areas to which this study will hopefully be of relevance will be discussed in more detail in the following chapter.

2. Understanding Mobile Phone and Online Media Usage

Patterns of contemporary media use have shifted rapidly in response to technological innovations associated with the rise of online and digital media. For the majority of the world's developing countries, including South Africa, Internet access has been the preserve of a small, wealthy elite, until the recent rapid diffusion of mobile phone technology. Since 1993, when the Web emerged to become a highly popular medium in many industrialized countries, the question of how this multichannel, hybrid, and interactive medium might alter usage of mass media has received considerable attention, both academically and within the media and technology industries. In addition, a number of researchers have focused their attention on the influence these rapid technological changes on society, on developing countries, and on the youth.

But the focus on social inclusion and equality of opportunity which characterized an earlier generation of studies of the 'digital divide' (Norris, 2001; Mehra, Merkel & Bishop, 2004) does not seem to have shifted to move from computer-centric investigations to also include access to mobile technology. Even the more recent discussions concerning the "participation gap" (Jenkins, 2006a, p. 3), which differentiates between those who have many opportunities to participate in social media and those whose access is more limited, do not seem to consider lack of mobile phone[5] access as a social disadvantage. A different approach is often adopted by researchers who investigate declining levels of news readership and civic engagement among young people, and who want to understand these phenomena in relation to the rise of new forms of media (e.g. Buckingham, 1997; Putnam, 2001; Mindich, 2004). As a group of 'digital natives' whose practices are alien and incomprehensible to older generations, these youth are also of interest to researchers in comparative media studies (Jenkins, 2006b). Some researchers in the field of sociology and social psychology are primarily interested in the possible dangers which mobile phone and Internet use presents to young people, and ask what social, educational and psychological problems are caused by mobile phone use (Ling, 2004; Ling & Pedersen (Eds.), 2005) or by the Internet in general (Katz & Rice, 2002). Other researchers (who often take an ethnographic approach informed by cultural studies) are motivated by an interest in understanding mobile phone use as a part of youth culture (Ito & Okabe, 2005). Some early research became enthusiastic about mobile technology's potential as a platform for new forms of social and collective action (Rheingold, 2003).

[5] This study's definition of mobile (or cell) phones includes all GSM, CDMA or UMTS-enabled technologies supporting voice telephony. It also encompasses so-called "smart phones", which is an often-used label for highly capable mobile phones.
Although there is no fixed definition of the term "smart phone", it usually refers to phones running a complete operating system that allows a wide range of advances software to be run, but also to handsets featuring considerably better functionality through faster processors, larger screens, extended input functionalities, faster connectivity (such as 3G), etc. Regardless of the exact definition, the survey results will show that most respondents do not own such phones. In the absence of a good working definition, this term is thus not used to avoid confusion.

In developing countries, the research agenda is somewhat different. There is widespread discussion in the popular press questioning whether the use of mobile technologies may allow developing countries to 'leapfrog' earlier stages of development (Selanikio, 2008; Economist, 2008). Quantitative research into mobile phone use is often motivated by the need to document diffusion of technology in a particular country as an index of its level of or readiness for development (e.g. Waverman, Meschi & Fuss, 2005; Heeks & Jagun, 2007) – and as an indicator of potential market opportunities (Goldstuck, 2007). In the case of young people, interest has focused on potentially beneficial applications of mobile phone use, such as health and education projects or 'm-Learning' (Attewell & Savill-Smith, 2005) as well as other pointed 'mobile for development' projects (Donner, Verclas & Toyoma, 2008). These studies are at least partly motivated by an interest in designing technologies with more appeal to the large potential market of people at the 'Base of the Pyramid', the least affluent consumers. A small number of researchers (e.g. Donner, 2007; Chipchase, 2006; Zainudeen, Sivapragasam, de Silva, Iqbal, & Ratnadiwakara, 2007), who are interested in understanding and expanding the markets for mobile technologies and services in developing countries focus on investigating the ways in which poverty and a lack of other technological infrastructure mean that people use mobile phones very differently in these contexts.

We know more or less how many South Africans have access to mobile phones, and what kind of things researchers and activists think they *should* be doing with the phones for developmental purposes. In contrast, we know very little about how South Africans actually *choose* to use mobile phones to access information or entertainment media or to create and distribute their own media.

Given the focus of this study, it is necessary to understand the context in which young South Africans use different forms of media, and to compare the cultural and social meanings of mobile phone use in this country to the findings of researchers elsewhere. A wide range of research from different theoretical paradigms, often motivated by a number of different social or economic development assumptions, is relevant to the problems addressed by this study. The following themes have been investigated in particular: online and mobile news media usage, creativity in mobile digital media production and distribution, the digital divide paradigm, and the impact of mobile phones on society and youth culture. This study uses an exploratory approach that has most in common with comparative and news media research, as well as the slowly growing repertoire of research focusing on mobile phone usage in media contexts in developing countries.

The rise of online (news) media

The established forms of mass media, such as film, radio, newspapers, or television, are often differentiated in media studies from the so-called 'new media' – a term that has been used on various

occasions in the past whenever a new technology appeared to 'threaten' conventional formats (cf. McQuail, 2005, p. 38). With the rise of Internet access since the invention of the Web in 1993, *new media* may often refer in broad terms to these technologies, but it is increasingly hard to differentiate them from traditional media due to the hybridity or convergence that is commonplace in much of the Web today (Jenkins, 2006b). Many existing books, radio and television programs, or newspapers can all be accessed online (and increasingly via a mobile device), making the distinction between 'old' and 'new' more difficult to maintain. Due to the ambiguous nature of the term 'new media' (Ito et al, 2008, p. 8), 'online media' will be used in this study instead.[6]

The Web is far more than a digital gateway for existing media outlets: Aside from increased interactivity with traditionally published content (such as comments, ratings, or rankings of a newspaper's articles), an enormous number of new publications and online genres have come about, including personal and professional blogs, citizen journalism portals, professional online-only news sites, and several other formats (cf. Gilmore, 2004; Kreutzer, 2006; O'Reilly, 2005). Similar to news media, a host of music clips, home-made and professional comedy videos, entire movies and TV show episodes, as well as billions of photographs are all freely available on YouTube, Flickr, TV network Websites, and uncountable other sites.

The effects of these changes on the wider media sphere have been widely discussed over recent years, in particular in respect to the news media (Rosen, 2001; Mindich, 2004; Gilmore, 2004; Kline et al., 2005; Benkler, 2006; Lessig, 2004). The reasons for trends in citizens' media preferences, however, are not always clear. There is an ongoing shift in media consumption that some argue reflects the younger generation's lower levels of interest in civic discourse and information (Buckingham, 1997; Putnam, 2001). Due to a wealth of available data, such claims can be easily established in industrialized countries like the United States. While a dated study found American youths to be more indifferent towards news than

[6] **Questions of definition:** Media research should strive to disentangle confusions between terms with better clarity. Technical definitions are often neglected by academic research and popular reference, confusing terms such as Web, Internet, or online, or new media. This study uses the term 'online media' as a synonym for the technically well-defined term 'Web'. The Web (or World Wide Web) is a part of the Internet which relies on the HTTP protocol and consists of hyperlinked web pages, and their associated rich media. It is accessed through Web browsers and can include text, video, audio, and other multimedia material. Although distinctions become increasingly harder to draw, owing to the use of webmail and web-based chat interfaces, the Web does not include other Internet-based applications such as email or instant messaging.
The Internet can be defined as a global interconnected network of computer networks that transmit data using the Internet Protocol (IP). Every client in this network (be it a traditional computer, Web server, PDA or mobile phone) uses a unique IP address that distinguishes the client from all others, allowing for this technology to be used in a decentralized fashion. It is within the *Internet* that various services are based, such as the subcategories of email, instant messaging, file transfer, and, most prominently, the interlinked pages of the Web.

Content posted on the Web is in most cases available to largely anonymous mass audiences, and this format thus most closely resembles traditional media such as newspapers or television. For this reason, I refer to the Web as 'online media', contrasting it with traditional analog or 'offline' media. However, instant messaging on computers or mobile phones, which also uses the Internet as a technical layer for communication but is not considered part of the Web, is an important form of personal communication that is of relevance to communication, youth, and cultural studies.

older generations (Times Mirror Center, 1990), more recently such trends appear to be reversed as the Internet assumes a key role as the dominant source of information for young people today. In particular, this trend involves the phenomenal role social networking and social media sites played during the 2008 U.S. presidential primaries and general election, whereby young people chose to access news and to be involved in the process predominantly through online media, (Pew Internet, 2008; Pew People/Press, 2008), which were increasingly accessed through mobile phones.

Mobile phones as a gateway to access and create online news media have not yet become a fully separate object for academic investigation. As this chapter will show, much attention has thus far been paid to the cultural and social implications of basic functions such as text messaging or phone calls: the traditional features associated with mobile phones. Within wealthy societies, ever more capable phones offering faster Internet connections and larger screens have recently become more serious competitors to desktop computers as sources of Internet access. The Pew Internet & American Life Project found that 19% of mobile phone-using Americans have ever accessed the Internet via their mobile phones "for news, weather, sports, or other information", while 7% do so on a typical day (Horrigan, 2008a). Although no comparative study exists, similar or even higher numbers can be expected in Japan and other countries (cf. Ito & Okabe, 2005; Rheingold, 2003; Teo & Pok, 2003).

Mobile phones are only beginning to be recognized in media studies as an important platform in the overall mass media and news media environment (May & Hearn, 2005). In an in-depth review of existing studies on media literacy in young people, Buckingham (2005) could not find any research focusing on media access through mobile phones. In other words, while we have detailed information about levels of mobile phone ownership and usage patterns regarding non-Internet applications in many countries, little is known about the growth of mobile media usage, and how this relates to news consumption via the Internet on traditional computers, as well as other mass media. This is especially true for developing countries such as South Africa.

The need for research into mobile media use in South Africa is arguably more pressing than in developed countries, given the very low and stagnant level of fixed line Internet access, and given the opportunities presented by near universal mobile phone access and the comparatively low price of mobile bandwidth in the region (Lewis, 2007).

Mobile Digital Media and User Creativity

One of the least observed phenomena has been the recent advent of accessing, producing, and sharing media content using mobile phones by the younger South African generation. While in the U.S. the

changing patterns of creative media usage are well documented (e.g. Pew Internet, 2006a; Jenkins, 2006a; Ito et al, 2008), particularly around the rise of social media and social networking sites, similar analysis has not been conducted concerning South Africa.

With certainty, intense usage of multimedia and other popular sites on the Web will engender an increasingly useful skill set. The possession of such skills, particularly in high-income countries, may soon be required by a growing number of employers. But as Jenkins (2006a) found in the United States, these new multimedia and Web-savvy skills learned by American youth – in particular through so-called 'social media' – depend heavily on their socio-economic status: Children from better-off families find themselves at the upper end of what he calls the 'participation gap' because of their higher exposure levels to computers and the Internet. Buckingham (2007) echoes similar findings in the UK, observing a new, growing *digital divide* between media-rich after-school activities found in wealthier schools, and the very limited use of information and communication technologies (ICT) in the average classroom. Despite a very different starting point, strong parallels can be drawn to the use of ICT in most South African schools. The persisting socioeconomic inequality between the majority of South Africans and the small wealthy elite (Bhorat & Kanbur, 2006) also translates into a two-tier education system, especially with regard to the transfer of media literacy skills. Whereas upper-class youth have dual exposure to rich media environments, both at home and in the school (cf. Reinking, 2003), the majority of students are often confronted with substandard 'drill-and-practice' ICT lessons (Prinsloo & Walton, 2008), if any at all, as well as extremely low levels of ICT access at home (AMPS, 2008). Despite some progress since the beginning of democratic rule in 1994, these class divisions still largely follow the formerly institutionalized race divisions, making low-standard education predominantly a problem of black South African youth. Although there has not been any comparative study on digital and online media literacy between different groups of youth in South Africa, new survey data and novel approaches (e.g. Schmid & Stork, forthcoming) might soon be able to further investigate these assumptions – provided that mobile phone usage is being considered as well. By focusing specifically on Cape Town's low-income youth (as defined in the methodology chapter), the study will deliberately exclude the small upper and middle class populations, and will thus allow for a more detailed focus on the practices of a marginalized group.

In the U.S., itself a highly diverse country, the abovementioned important conclusions were made possible by representative survey data on actual Internet, computer, and mobile phone usage, collected by the Pew Internet & American Life Project over the last three years. With regard to handheld devices, researchers were able to demonstrate the growing importance of non-voice applications and establish that Americans now view mobile phones as the hardest device to give up (Horrigan, 2008b). In addition, while findings also resonate with Jenkins's predictions (Jenkins, 2006a, 2006b) of unequal usage of technology and thus varying skill levels, Horrigan (2008a) could also show that certain minorities were

more likely to go online using their mobile phone than white English-speaking Americans – thus hinting to the development of an actual skill advantage over time in this arena. This finding might undermine the assumptions underlying the 'participation gap' or similar theories discussing e-skills, new media literacy, etc: Instead of a dichotomous idea of skills that simply follows the degree to which computers and certain Internet applications are used, we need to acknowledge a different set of skills, afforded through intense mobile phone usage, that cannot be neglected.

Such a shift to include media skills acquired through mobile phones would provide better understanding of the situation in the U.S., but in particular in countries such as South Africa, where it is not just deprived minorities, but rather the majority of the people who have begun developing an array of vastly different skills on mobile phones. Hence, with a limited informational value of a fixed set of computer-based Internet skills, a more inclusive, non-linear approach is needed that acknowledges the important skills learned by a new generation of mobile phone-only (or at least mostly mobile) Internet users. This study hopes to contribute to such a new model by for the first time assessing particular online and digital media skills learned on mobile phones by South African low-income youth.

Online and traditional media usage in South Africa

Until recently only a small privileged minority of youth in South Africa was able to access online news, and so it is necessary to contextualize mobile access to news in relation to the traditional analog sources. In the absence of any longitudinal study, anecdotal observations have pointed to a declining interest in the news by South Africa's youth (Claasen, 1996; Pepler, 2003) – observations which contradict a limited quantitative study indicating well-informed youths with high newspaper readership numbers (Strelitz, 2002). But as Ndlovu (2008) notes, there is a strong underrepresentation of poor and rural populations as many studies have focused on urban and university populations. So far, very little research is available on actual usage of online media in South Africa. One exception is the figures provided by the marketing research company Nielsen Online, some of which are regularly published by the South African Online Publishers Association (OPA). However, although OPA publishes some rough overall data from the country, the more specific statistics available only cover the websites of its member organizations and some selected other sites, and thus do not provide a full picture of the South African Web sphere, let alone data on who accessed which websites.[7] Other data with a similarly limited validity comes from usage statistics

[7] In addition, the reliability of this data is unclear, as Nielsen Online uses a mixed methodology of 'channel' users (individuals who have agreed to have their usage data transferred for analysis – a sample that is unlikely to represent people using mobile phones to access the Internet), as well as a number of other tools, such as unique browsers and page impressions (which may underrate communities where shared computer use is more common). While this data might be of value to advertisers to track worthy platforms, it should only be used

published by browser software Opera, whose product *Opera Mini* is used on many phones. While the latest numbers[8] provide a ranking of the 10 most accessed websites (lead by Facebook and Google), we do not know anything about these users' demographics, or number of users accessing these sites. (Opera has not responded to my request for more specific insight about their data collection methods)

Some recent data for usage of traditional media sources (broadcast and print media) in South Africa is provided by the annual All Media and Products Survey (AMPS), a household survey initiative which includes raw data on media usage (e.g. AMPS, 2007), as well as by Kaiser Family Foundation and South African Broadcasting Corporation (KFF/SABC, 2006). Both studies found TV and radio consumption among young people nationwide to be fairly high, while newspaper and magazine readership were significantly lower. The different findings are illustrated in Figure 1. Access to online media through computers or mobile phones is, however, not addressed by these studies' surveys. In order to draw the best approximate picture, we need to turn to studies that assess these technologies' availability and usage under a different pretext – often along lines of social exclusion and with patterns similar to the participation gap discussed earlier.

by social scientists with great caution. The latest numbers for the OPA's member organizations are found on http://www.opa.co.za/readership/

[8] See http://www.opera.com/smw/2008/12/ - 'Part 2: Country snapshots for December 2008'

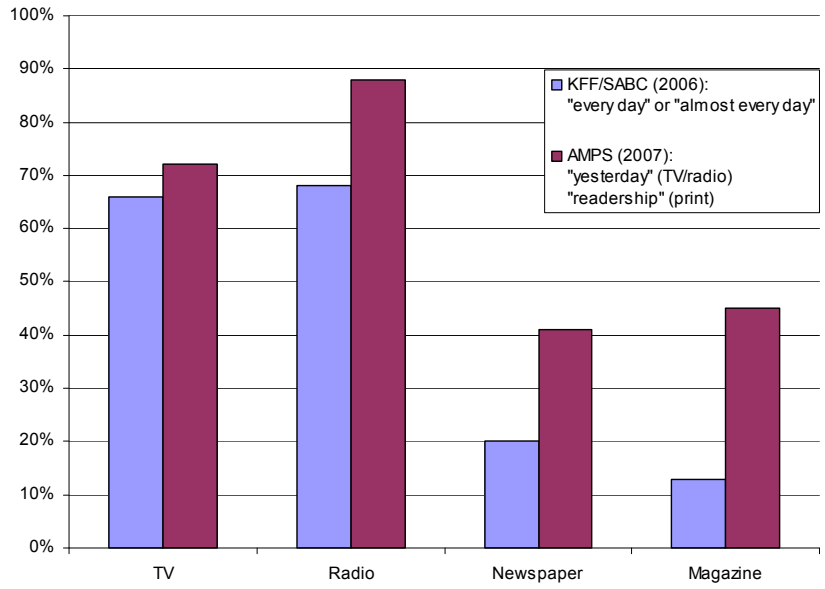


Figure 1
Media consumption by South African youth
According to AMPS (2007) and Kaiser Family Foundation and South African Broadcasting Corporation (2006)[9]

The Digital Divide(s) – and the need for usage-based data

Research focusing on measuring ownership or access to mobile phones often suggests a dichotomy based on haves and have-nots. The need for such statistics, however, stems from the underlying *digital divide* paradigm – a concept that has enjoyed widespread popularity among policymakers and activists. Since its first prominent appearance in 1996 (Clinton & Gore, 1996), the term has often been politicized and used to describe "the troubling gap between those who use computers and the internet and those who do not" (Mehra et al., 2004, p. 782), usually concentrating on population groups or countries with significantly lower access to such technologies. Further studies linking access to ICT to economic progress (Norris, 2001) have increasingly cemented the importance of binary access or ownership data. Over time, accounts of computer or Internet have-nots have by extension become an important measure of socioeconomic development, comparable to poverty or education indices. But the actual merit of such numbers and the digital divide concept is contested (e.g. Warschauer, 2003). Today more studies commonly acknowledge that there exist "multiple divides: for instance, within countries, between men and women, between the young and the elderly, different regions etc." (ITU, 2007, p. 21), which may be better suited to reflect the multiple reasons for an individual's abstinence from using a certain technology.

[9] Kaiser Family Foundation and South African Broadcasting Corporation (2006) asked for activities done "every day" or "almost every day" for all four items. AMPS (2007) asked for usage "yesterday" for the first two items whereas the latter two items just show "readership" in general. The figures are thus not directly comparable.

Although there has been no quantitative audience research on mobile online media usage in South Africa, a host of data is available regarding access to information and communication technologies (ICT) with varying scope and focus (e.g. AMPS, 2008; Gillwald & Stork, 2008; Esselaar, Gillwald, & Stork, 2007; KFF/SABC, 2006) – and often conflicting accounts. Such research has shown, for example, that 67% of South Africans 'own a cell phone' (AMPS, 2008) or that 62% 'own a mobile phone or an active SIM card' (RIA, 2009). Similarly, 72% of 15 to 24-year-olds reported to 'have a cell phone' (KFF/SABC, 2006), whereas Tlabela et al. (2007) found only 33% of South African households to be 'households with access to cell phones'. Research ICT Africa (2009) shows 15% of South African households have 'a computer at home', while 5% of households have 'a working Internet connection'.

Goldstuck (2007) published one of the first quantitative studies on mobile phone usage in South Africa, though it admits to have "excluded those who can be described as 'deep rural'" (Goldstuck, 2007, p131). Based on its findings, the study argues for six different user types, which are based on monthly expenditure and the share of those using a contract rather than a prepaid model. The results of this study, which are widely used by local media and technology industries, need to be used with caution though, as few details regarding its methodology have been disclosed[10]. However, the concept of a more differentiated segmentation based on different user patterns is still much needed, especially given the enormous inequality along different dimensions in South Africa.

It is important to emphasize that the abovementioned studies refer to the *access* to a certain technology – not its usage. Access in this case is defined by ownership and proximity – for example whether a subject owns a mobile phone, or at least whether one exists within their household. A similar approach is followed when quoting industry-reported data, such as the number of active SIM cards within the network – a practice that is highly unreliable (Sutherland, 2008)[11]. Therefore, while accounts of access or ownership provide a definite categorization (e.g. household with or without mobile phones, with or without a 'working Internet connection'), it leaves out the more differentiated question of actual *usage*.

For media studies, the concept of technological diffusion (e.g. the share of the population owning a television set or a radio) is an important one, but ultimately an insufficient measure of how citizens use media. This is particularly true for multi-potent technologies like the computer or the mobile phone, which can be used for a wide range of purposes – access to online media being only one of them. Hence,

[10] Results and studies are only available commercially on request, and the series has apparently been discontinued after the 2006 report (see http://www.mobileza.com).

[11] Such data is often referred to as 'teledensity' or 'mobile penetration'; it measures the number of active SIM cards or active subscriptions in a given country, usually divided by the number of the country's inhabitants. As Sutherland (2008) shows, such data includes inactive cards and users with multiple subscriptions, while not taking into account shared usage of the same handset and SIM card.

by measuring more detailed applications (e.g. websites and kinds of online news sources accessed, for example), we need to differentiate sheer *access* to technology from actual media *usage*. Even in this case, the question of *usage* is not a neutral one, as the mere availability of a certain feature (e.g. word processing or email) may be understood and used differently between users – or might not be used at all.

Figures of *ICT* access are often quoted as indicators for a country's development, often citing the digital divide as an impediment for the country's economic progress (discussed in e.g. Wilson, 2004; Hudson, 2006). However, the manner in which access or ownership data is collected, and whether it is an appropriate measurement of socioeconomic development, is rarely debated within studies of information and communication technologies and development (ICTD). In fact, especially in developing countries, ownership or access to a certain technology is a poor predictor of actual usage. It is often acknowledged that co-users may have access to a mobile phone in their immediate environ (e.g. Vodafone, 2005), as more friends, family members, or neighbors become owners of a personal handset. But the validity of such data is not always clear as respondents have varying definitions of whether or not they believe they have 'access' to a phone – and especially because there is no obvious correlation between access to and usage of any technology.

This crucial difference is often entirely neglected in academic literature, which continues to support the binary tale of haves and have-nots. But as humans, we use media and technology in varied intensities, which suggests a continuous scale as an analogy, rather than an on-off switch. As the above section on mobile digital media and user creativity has shown, this is particularly true if the usage of a new technology (in this case the mobile phone) is not even factored in when measuring 'Internet access'. This study will approach this question with a carefully adjusted methodology, and will compare detailed self-reported usage data with the respective ownership of mobile phones. Hopefully, the potential merits of a detailed usage index will succeed in replacing the notion that usage can be measured through binary access statistics.

The research and concepts discussed so far were predominantly interested in describing the overall picture, such as online media usage or mobile phone access, possibly including external factors that were conducive or prohibitive to the increased access. Other studies, however, are interested in the possible influence such technologies might have on society or on individuals. The following section approaches this issue from different angles: While some researchers are interested in measuring whether mobile phones or the Internet have (had) an 'impact' on society (e.g. on civic participation), the other camp largely assumes a positive trajectory of certain technologies (especially in developing countries), and aims to find new ways of implementing their deployment.

Impact of Mobile Phones and Internet on Society

In the view of some activists and researchers in both camps, improving political and social development would follow the idea of technological determinism, by which the correct deployment and availability of information and communication technologies will ultimately lead to a certain result (positive or negative). Like all technologies, mobile phones can have many unintended trajectories on various scales that require a closer look to understand (cf. Brey, 2004), leading some to criticize the merit of trying to measure any such 'impact' (e.g. Warschauer, 2003). Hence, we should be cautioned about uncurbed enthusiasm over utopian goals. Critics of technological determinism have long shunned using such concepts, deemed unrealistic ideas (Heidegger, 1977; Smith & Marx, 1994), warning that the sheer availability of advanced technology can never predict its usage or possible benefits thereof. Although a statistical relationship can sometimes be established between two factors, this does not equal a causal relationship.

With the growing availability and usage of computers and the Internet, there have also been numerous studies trying to measure the societal impact of these technologies. The approaches often originate in sociology and social psychology, and most are focused on the United States. Katz and Rice (2002) conducted multiple surveys in the U.S. between 1994 and 2000, aiming to measure civic and community involvement as well as social interaction and expression. Early on, they set out to 'demystify' some of the theorized effects increased technology usage would have on societal issues like civic engagement and social capital (e.g. Putnam, 2001; Castells, 2000) by using detailed quantitative data. As a more recent technology, the mobile phone's effect on society currently remains subject to theoretical discussions as opposed to affirmations based on empirical evidence (Ling, 2004; Ling & Pedersen (Eds.), 2005). This is further complicated by the ongoing rapid changes of user preferences, technical capabilities, and overall adoption rates in many countries. Rheingold (2003) lists several examples of how mobile phones seem to have brought about societal change by enabling collective action in various countries and contexts, while mobile phones were shown to play an important role in bypassing the media in Kenya's post-election violence (Mäkinen & Kuira, 2008). In South Africa, where since the end of apartheid rule the political system has been dominated by the African National Congress party, there may certainly be some hopes among opposition parties that citizens can be mobilized through mobile phones for election campaigns and other issues. But as Donner (2008) notes, there is a strong ongoing debate over the actual influence of mobile phones on topics like political action.

Mobile phones are also increasingly regarded as a potential tool for economic and social development in emerging economies (e.g. Waverman et al., 2005), which has further reinforced the previously discussed notion of the digital divide. The discourse over using information and communication technologies for development (ICTD) is only just beginning a fundamentally new chapter: Mobile phones are penetrating even the remotest and poorest communities (Jones & Marsden, 2006), leading various activists and

politicians to regard this technology as an extremely potent solution to many social and economic problems in developing countries – sometimes with inflated hopes (Heeks & Jagun, 2007). Project descriptions often portray an endless array of possible mobile phone applications supposed to make life easier, more efficient, or to provide new opportunities altogether (cf. Donner, 2008). There are a growing number of development projects specifically using mobile phones as their main engine of operation. The Grameen Village Phone (Aminuzzaman, Baldersheim, & Jamil, 2003) – an initiative to bring about improved sources of income to villagers in remote parts of Bangladesh – is only one of a growing host of similar mobile for development (M4D) projects. Mobile learning, or m-learning, has been one of the most discussed ways in which mobile phones are sought to pose as better tools to reach youth (Colley & Stead, 2003; Attewell & Savill-Smith, 2005; van der Merwe & Brown, 2005; Norman & Pearce, 2007). Similarly, there has been plenty of attention around buzzwords like m-banking (e.g. Ivatury & Pickens, 2006; Donner & Tellez, 2008) or m-health (e.g. Seo, Su, Erlinger & Ozcan, 2008).

From a media perspective, we have to differentiate between projects aimed at reaching the general public (which should be subject to investigations in mass communication studies), and others aimed at providing advanced interactive tools to a small number of professionals, such as medical personnel (Donner et al, 2008, p. 4). Indeed, a large portion of projects in the abovementioned categories aim to reach a large share of the population for development purposes, often to promote health or social awareness campaigns, and hoping to achieve behavioral change. Such strategies are sometimes referred to as 'social marketing', as the main aim of such projects is one of gaining more direct access to people (e.g. Kotler, Roberto, & Lee, 2002). Similarly, though without the noble goals, many South African companies are showing a heightened interest in the spread of mobile phones to compete over the collectively large purchasing power of low-income citizens, using SMS and instant messaging programs to promote their products and services.

Despite the increase in hopes and plans regarding the potential benefit for organizations and companies alike, there is very little established academic knowledge over the exact usage patterns of mobile phones among the targeted audiences. Subsequently, we simply don't know yet how (social) marketing received via mobile phones is being perceived – and whether this channel is a superior message carrier to other forms of mass media.

Poverty and ICT Usage

A growing host of studies investigate technology usage and user preferences under the increasingly used economic concept known as the Base (or Bottom) of the Pyramid (BOP) – gearing businesses towards the share of the global population living in moderate and extreme poverty (Prahalad, 2005; Hart, 2005). At

the heart of this pursuit is the aim to provide products and services that will bring about significant profits to companies through these people's potentially massive (combined) purchasing power (Hammond, Kramer, Tran, Katz, & Walker, 2007) – a model that seems to function particularly well in the area of ICT, as the phenomenal growth of mobile phones in developing countries continues to show. At the same time, BOP research is also focused on the underlying assumption that such business expansion also coincides with concrete benefits in economic development and poverty reduction, as the world's poorest are considered to benefit directly from mobile phone usage (e.g. Waverman et al., 2005). While the BOP argument has also drawn criticism, being accused of oversimplifying complex realities that cannot be explained through technological determinism (Landrum, 2007), it does explain a continued rush by large corporations and investors into poorer regions and countries, which will increase the speed of mobile phone adoption in these regions. This development also helps explain certain strands of research that aim to help handset manufacturers, software producers, and network companies better understand how mobile phones are used by some of the world's poorest people (e.g. Chipchase, 2006; Donner, 2007; Bhagat, 2007).

Poverty has given way to certain practices and techniques that today are found mostly in developing countries, where users search for innovative ways to cut costs while getting their message across. In South Africa, there have been several recent studies around use of the very popular mobile instant messaging application MXit, which allows users to communicate at only a fraction of standard text message costs. As an alternative to costly text messaging (usually averaging at about R0.50 (USD 0.05), which are limited to just 160 characters, MXit emerged as a much cheaper alternative (Francke and Weideman, 2007). As users only pay for the text transmitted via the Internet according to actual data volume (charged at R2.00 or USD 0.20 per 1MB), the price is only a fraction of SMS costs. However, it appears that MXit and several similar mobile instant messengers are used intensely for social networking, as chat rooms, and other purposes, thereby not being a mere cheaper alternative technology to SMS text messages. Recent academic studies have focused on MXit's role in the lives of adolescent girls (Bosch, 2008), its relevance for university students (Dourando et al., 2007), and the prospects of using MXit for mobile education (Butgereit, 2007; Ford & Botha, 2007).

The practice of giving missed calls (also known as *beeping*, *buzzing*, *flashing*, among many other names), has long been a cost-reducing measure in many countries, including South Africa, and is well documented by Donner (2007) and Zainudeen et al. (2006). It follows socially pre-agreed rules by which the caller hangs up after a few rings, thereby not paying any charges. The meaning of such a 'missed call' is often-context specific and can range from 'call me back' to 'I'm thinking of you' or 'come pick me up'. As such messages can be quite unambiguous in certain contexts, this practice signifies communication without the sender actually paying for anything. Sending a 'please call me' message is an option offered by many

mobile phone networks across developing countries that allows the sender to send a message similar to a normal SMS with a codified callback request to a receiver of their choice. In South Africa, subscribers in most networks can assign a short name that should be sent along with their number to the receiver, allowing for immediate recognition even if the sender's number is not in the receiver's address book. This function is fairly similar in its use compared to intentional missed calls, and is said to have been introduced by network providers to curb excessive beeping, which would put a higher burden on the infrastructure. The pilot study confirmed the popularity of both phenomena, finding that one-in-three respondents give 'missed calls' to other people, while more than half sent 'please call me' messages on a typical day (Kreutzer, 2008).

Network providers have recognized early on that the millions of messages circulating as a result could be used as a new advertising channel, while organizations promoting health awareness have also begun tapping this resource for social marketing[12] that particularly reaches low-income parts of the population. However, as the pilot study has shown, students have so far only received very few marketing SMS (apart from messages included in 'please call me' texts), while those received were almost exclusively promoting the respective network operator.

Detailed quantitative analysis of low-income mobile phone usage patterns has also been published on five South and South-East Asian countries by LIRNE Asia (Zainudeen et al., 2007), who concentrated largely on the accessibility of handsets and basic services for people in the Base of the Pyramid. This study includes some analysis on the prevalence of these practices among low-income urban youth, which hopefully will help us to formulate theories based on common usage patterns across the developing world.

Understanding Mobile Phones within Youth Culture

Whereas research on mobile phone usage is often centered on the ICTD and BOP approaches, studies focusing specifically (or predominantly) on young people's adoption of mobile phones tend to be concentrated largely in high-income countries. The reason for this bias may seem obvious – young people in these countries have adopted the mobile phone heavily into everyday use, often necessitating it as a crucial part of their life. This multi-level integration led to a number of studies investigating the interrelationship between users and technology – and the lasting impact this link might have created

[12] The South African Praekelt Foundation started in 2007 with its *socialtxt* project, which allows non-governmental organizations with vested interest in tackling social development issues to communicate brief messages to millions of mobile phone users (e.g. promoting an HIV hotline)

within their generation. Despite the very important role mobile phones arguably play in the lives of young people in developing countries, similar research has not yet been conducted in this part of the world.

One of the main features that can be identified within youth culture studies is the mobile phone's role in emancipation and the symbolic distinctions from the 'older generation' (Ling, 2007; Rheingold, 2003). Cutting through the stringent reality of their society, young Japanese have created new freedoms or 'personal spaces' with their mobile phones (Ito & Okabe, 2005), a quasi-escapism from an otherwise perceived lack of privacy or personal intimacy. This phenomenon is expressed in extreme use of text messaging and social networking portals, among other particular phenomena (Ito et al., 2005). Basing their observations on long-term ethnographic observations, Ito and Okabe (2005) caution that this development needs to be understood as the ongoing generational struggles in this country and should not be flat-out attributed to the technology itself. In South African townships where extreme proximity between siblings and different generations provide an arguably even more extreme lack of privacy than what Ito observed in Japanese cities, some signs already signal that mobile phones might play a similar role in providing urban low-income youth with such 'personal spaces' (Bosch, 2008).

The elevated societal status of early adopters of mobile phones has led to the proud display by many of the handsets' owners (Katz & Sugiyama, 2006; Ling & Yttri, 2002). While users of such phones are often seen as more modern or more affluent people *per se* (Katz & Sugiyama, 2006, p. 65), this distinction has been further exaggerated by choosing to display phones prominently, or selecting models with a more appealing appearance. The relevant question that this study will seek to answer is whether such early adaptor behavior (i.e. individuals using mobile phones earlier than other peers) has any impact on usage patterns when compared to 'late adopters', or those students who only began using mobile phones much more recently.

In the following chapter, I will explain how the different approaches of assessing detailed mobile phone usage have been translated into the survey methodology in order to obtain the data that will allow us some more specific conclusions on the topics discussed in this chapter.

3. Methodological Approach

The main purpose of this study is to be able to describe mobile phone usage among a specific group of South African youth (grade 11 students attending schools in low income areas of Cape Town), by obtaining valid and reliable **quantitative data from a questionnaire survey**. A clustered convenience sample of 441 grade 11 students from the 50 most deprived wards in the Cape Town metropolitan area was chosen to receive the survey. A piloting process was used to design and test the questionnaire. To contextualize and improve the understanding of the quantitative findings, cultural probes and unstructured interviews conducted for another study of the same target group were used to gain a richer sense of the contextualized meanings of mobile phone use. These were also helpful in testing our research assumptions and the questionnaire design, and in gaining understanding of potential sources of bias in the survey results.

A random cluster sampling design informed the selection of nine schools in pre-selected low-income areas, while convenience samples dictated the particular choice of the 13 grade 11 classes at those schools. Consequently, this cannot be considered a representative sample of secondary school students in low-income areas or in Cape Town and certainly not of South Africa. Instead, the study aimed to provide a reliable snapshot of a specific smaller target group, and represent their use of mobile phones while also clearly documenting the ways in which they might differ from the broader population of young people - who are extremely difficult and expensive to reach with more rigorous randomized sampling methods.

Early adopters – at the crossroads?

The community work described in chapter one had led me to identify many senior secondary school students as influential and enthusiastic 'early adopters' (cf. Katz & Sugiyama, 2006) of the mobile Internet, which then led to the specific focus of this study on this important stratum of the South African school-going population.

The choice was also motivated by the fact that a number of NGOs, political, government and educational organizations are interested in finding ways to communicate their 'social marketing' messages to this group (cf. Kotler, Roberto, & Lee, 2002; Donner et al., 2008). This interest can be attributed to the fact that students in their final years at secondary school are important target audiences for development and education initiatives in South Africa. They are at the crossroads between school and adult life, a time where many key life choices are made, such as whether they will remain at school to complete their secondary education, how they will perform in the final two years at school, what sort of role they will assume in their family as a potential breadwinner, and how they will go about selecting further training or

tertiary studies for their career. This age group is also making many complex decisions regarding sexual health, reproduction, and sexual orientation – decisions fraught with particular difficulty given the prevalence of HIV/AIDS in the region[13]. Finally, as they move from the relative protection of the home and school environment into adult society, many in most deprived neighborhoods are also confronted more directly with poverty-related social problems, including violence, crime, and drug-abuse, which characterize South African society and urban environments in particular. It is important to understand that many peers in the same age group (roughly 17-19) have already dropped out of or deliberately left school STATSSA, 2008 (or are about to), sometimes to work in manual labor, or due to pregnancies. This holds especially true for low-income families (Lam, Ardington & Leibbrandt, 2008).

As teens who often participate enthusiastically in a vibrant local and global youth culture, individuals in this group are also beginning to make their own choices about media usage, including sources of information and entertainment. This adds further interest to a study of this age and demographic group as an index of possible future trends in South Africa. For ethical reasons, grade 11 students were chosen rather than students in their final year of school, who spend the year preparing for their school-leaving examination.

Pilot study

A complete pilot study was conducted in April 2008 in order to develop and evaluate the survey instrument and methods in a secondary school[14] in Samora Machel township in Cape Town. The school was chosen as a purposive sample, without implying any specific expectations regarding its representativeness, but rather to test the survey design in an environment similar to a large number of low-performance urban South African schools. The characteristics of this school include high dropout rates, basic school infrastructure, large class sizes, and low levels of English literacy as the language of instruction. The immediate neighborhood of the school includes informal housing (known locally as "shacks"), but also increasingly small brick houses. Like many other South African townships, the area, is marred by extreme poverty, high unemployment and crime, as well as very high rates of HIV and TB infection. By selecting this school (rather than one from a medium-income neighborhood) it was possible to identify and tackle the challenges of conducting a large survey among students in low-income schools.

[13] In 2008, the rate of adults aged 15 to 49 who were living with HIV in South Africa was estimated between 15-21%. (WHO/UNAIDS latest figures: http://www.unaids.org/en/CountryResponses/Countries/south_africa.asp)
[14] In accordance with regulations by the Western Cape Education Department, no school's name is identified together with its individual results.

This school was chosen as a purposive convenience sample for the study because of my previous involvement there, as well as in other schools, where I worked until 2006, teaching several media skills classes. Although by 2008 all of the grade 11 students, key teachers, or the principal had changed, I knew from my experience with schools in other townships that this specific institution provided a particularly challenging environment, especially due to low levels of literacy in English.

Initial versions of the questionnaire had been tested in April 2008 with three 18-year-old students at Nazeema Isaacs Public library in Khayelitsha, who volunteered to take preliminary versions of the questionnaire. Their detailed feedback and individual remarks helped design the original survey questionnaire used in the pilot stage.

The pilot study survey consisted of a 10-page questionnaire distributed to all students from two grade 11 classes (*N = 66*) at the abovementioned secondary school on April 29, 2008. The findings contradicted some popular assumptions about mobile phone usage among low income black South African youth, showing very high usage patterns and expenditures despite very low income levels. Detailed activity-based questions indicated that virtually all respondents (97%) were found to have used a mobile phone on the previous day for at least one communication, information-seeking, gaming or entertainment activity. While only three-quarters were found to own a personal handset, there was no significant difference in usage patterns between owners and co-users.

The pilot study was first published on the Web in June and presented at the e/merge conference in 2008, July 7 - 18, 2008 in Cape Town, and at MobileActive 2008, October 13 - 15, 2008 in Johannesburg, South Africa. The feedback from these presentations provided many helpful suggestions, but also showed a high level of interest for the data to be generated by this current study. In particular, development organizations seeking improved access for the promotion of health and social issues expressed surprise at the high levels of (mobile) Internet usage found (which were widely believed to be close to zero), thus confirming the decision to focus the survey on this specific demographic group.

Based on the results of the pilot study, the questionnaire was redesigned to incorporate insights gained from the pilot study and to answer additional questions which would allow for comparisons between the mobile phone data and students' use of computers and other mass media.

Specifically, while the overall design remained the same, several sets of questions were modified substantially to simplify the response process. Analysis of the pilot study had identified certain weaknesses of original questions that needed to be made clearer for respondents, or that simply had to be improved. For example, all questions probing Internet usage in the current version of the

questionnaire are repeated for computer or mobile phone access; the pilot study's questionnaire put less emphasis on computer-based Internet usage, thereby losing out potential levels of comparison. In addition, several questions have been converted into Likert scale responses to obtain greater differentiation, e.g. question 3, asking about different locations and modes of accessing the Internet (see appendix). As another example, the share of "don't know" responses for the question on prepaid or contract subscriptions was minimized from 22% to just 2% by using more practical phrasing. (E.g. the revised survey used "need to buy airtime" instead of "prepaid".) Another major challenge was to identify questions that needed to be omitted from the final version as new priority questions (mostly on mass media usage) had pushed the overall length beyond the maximum response time of 45 minutes.

Qualitative insights: cultural probe, and informal conversations

To counter the general methodological limitations of strict survey research, the study also drew on qualitative insights. It is obvious that a white researcher from Germany who does not speak Xhosa could never fully understand the cultural significance of mobile phone use to these students from an insider's perspective. Thus, the survey was redesigned with additional open-ended questions, which allowed students to express their own ideas and perceptions about mobile media and technology usage. While this allowed for individual non-prompted answers, this approach still suffers the obvious drawback that no answers will be received where no questions were asked.

During the course of this project, many valuable insights were gained from qualitative methods. These insights informed the design and revision of the questionnaire and helped in the evaluation and interpretation of participants' responses to the interview questions. The qualitative methods were employed for another study (Kreutzer & Walton, forthcoming) which approached questions of mobile media and early adoption from a purely qualitative perspective. They included a 'cultural probe' and interviews and observations of mobile phone use with 16 grade 11 students who participated in a computer literacy project in Makhaza, Khayelitsha, and which were conducted in September 2008.[15] These students also completed the questionnaire developed for the current study, while their contributions to the cultural probe included a digital photography project where they used small digital cameras to record mobile phone use in their homes, neighborhoods and schools. The results of this study will be published separately and are not discussed as part of this report. However, the contextual understanding acquired through this process can certainly help an outsider develop something closer to

[15] Cultural probes were first conceived in 1999 as "a strategy of pursuing experimental design in a responsive way," to address "a common dilemma in developing projects for unfamiliar groups." (Gaver et al, 1999, p. 22) This method has since been adapted and refined to serve specific research needs, including working with children (Wyeth & Diercke, 2006).

an ‘insider understanding’ of mobile phone use as a situated practice for these students in Khayelitsha. I refer to the insights gained from these interviews, and to our observations of students using their mobile phones when they help to illuminate some contextual feature of mobile phone use arising from the survey.

These qualitative methods are referred to in this study as ‘conversations’, which includes the students’ discussions of survey questions, group discussion of the photographs and videos produced during the cultural probe, or to discussions that took place during video recording of students using their mobile phones.

The first key insights that arose from these conversations included the extent to which students shared phones with one another, and with family and friends. Another key insight was the amount of intense social pressure that students experienced around mobile phone use. This social pressure was apparent first in relation to the model and capabilities of their handset, with more recent and capable models being preferred to the older, cheaper and more basic versions. Finally, social pressure generated enjoyment as well as anxiety – students relished the status that went along with the display of their knowledge of applications such as MXit and Google.

Survey

A self-assessment questionnaire was distributed to complete classrooms of 13 grade 11 classes from 9 different schools (*N* = 441) in high-deprivation areas of Cape Town. The decision for obtaining detailed quantitative data came about due to the absence of any established numbers in this field in South Africa. While the Pew Internet & American Life Project in the United States has long been able to show detailed representative data on specific usage of different types of media and changing patterns for different demographic groups (e.g. Pew Internet, 2006b; Horrigan, 2008a), no such statement can be made for South Africa.

Sample and field access

This study concentrates on urban low-income South African youth for a variety of reasons, as outlined earlier. Choosing grade 11 students in the Cape Town metropolitan area was both a purposive and a convenience choice. Due to a limited funding and timeframe of this study, a multi-city approach or the inclusion of a larger age group was unfeasible. All possible schools were thus within a 90-minute driving radius from the University of Cape Town.

By using schools as sampling gateways, we need to take note of the share of youth no longer going to school. According to government data, 19% of 17-year-old South Africans are not attending any form of educational institution; in Cape Town, this rate is even higher at 23% (STATSSA, 2008; STATSSA, 2001).[16] Hence, this study's sample only includes school-going youth and excludes a sizable part of the population that has already left the education system. However, by using schools as a level of analysis, we are able to test for school-specific idiosyncrasies that allow for further studying of the schools' determining factors, such as school policies, infrastructure, or leadership.

Most deprived neighborhoods

Common knowledge about Cape Town – and South Africa in general – points to very stark socio-economic variation between different neighborhoods and schools, owing to the legacy of apartheid policies (Bhorat & Kanbur, 2006). But even when focusing only on low income schools, we can find significant differences. A large share of Capetonian school children live in exclusively black, Xhosa-speaking neighborhoods that range from shacks and informal settlements to small brick and mortar houses. Another dominant population group can be found in more built-up areas formerly designated for so-called "coloureds" (the apartheid term of racial classification for people of mixed race), who also faced oppression and discrimination, but who received preferential treatment for certain kinds of employment in the Western Cape. On the other hand, those suburbs formerly restricted to white South Africans, continue to be inhabited by South Africans of European descent, mostly a fairly affluent group, as well as a very small more mixed middle class. As a result, there remain stark differences in culture, language, and social networks even within the small geographical bounds of city of Cape Town that need to be considered for proper research design (cf. Lam et al, 2008).

[16] Cape Town is below the national average for school attendance rates / above the national average for those not attending any education form within all ages surveyed by the census, beginning with age 16. These numbers are to be used with caution as the census data, from 2001, is already fairly dated.

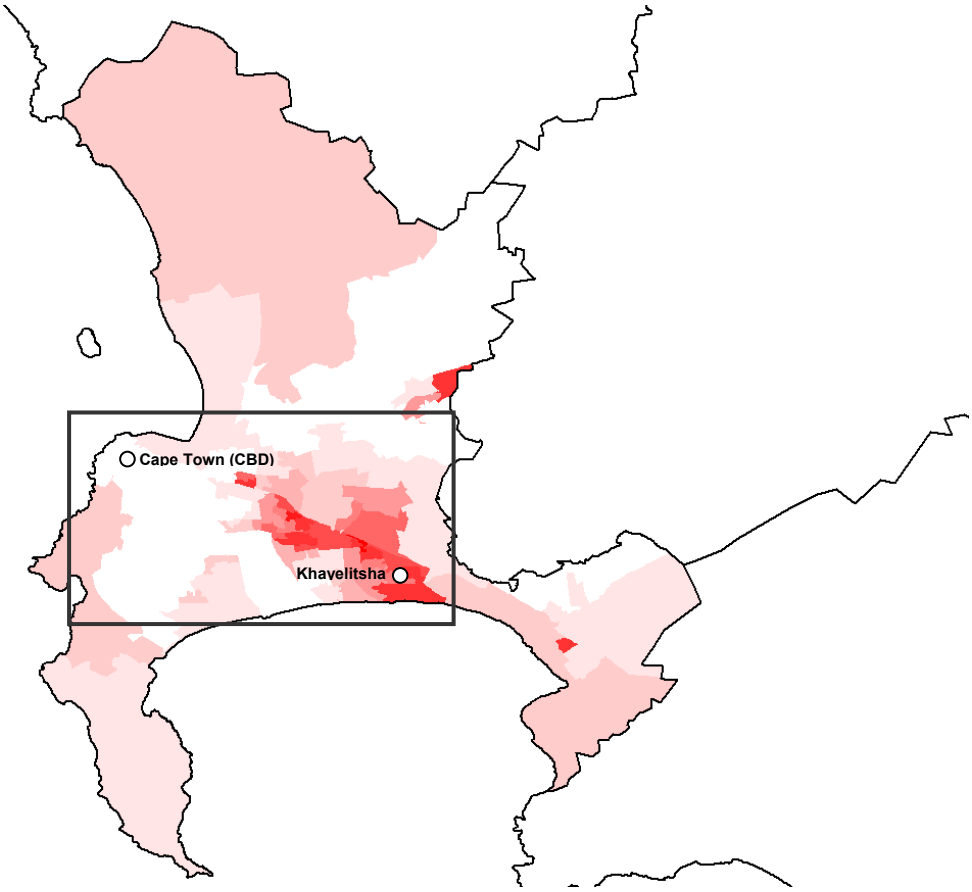


Figure 2
The Cape Town municipality as measured by the Provincial Indices of Multiple Deprivation (Noble et al., 2006) The image shows the prevalence of multiple deprivation, from white (low deprivation) to dark red (high deprivation). The black box indicates the frame visible in Figure 3.

In order to concentrate on 'low-income' youth for this study, a novel selection approach had been chosen. Rather than attempting to tackle the entire city which would bring about serious challenges of identifying individuals of low-income families, the delineation was drawn on geographic locations instead. Following the abovementioned reality of continued spatial inequality among Cape Town's neighborhoods, it seemed sensible to identify those areas with the highest rates of poverty, thereby excluding those above an arbitrary limit. In broader terms, the study focuses on low-income areas of Cape Town while leaving out middle and upper-income areas.

By using the selection factor of relative deprivation, I was able to account for a much broader and more reliable measure of poverty than by simply using average income levels. The selection is thus a more valid reflection of the vast societal differences found today in South Africa. Townsend (1979) defined people as *deprived* if "they lack the types of diet, clothing, housing, household facilities and fuel and environmental, educational, working and social conditions, activities and facilities which are customary, or at least widely encouraged or approved in the societies to which they belong" (Townsend, 1979, p. 31). By extension, social advantages (or disadvantages) in different geographical areas are the result of social processes,

economic change, policies and cost of living – and thus provide a similar level of comparison that allows us to assess deprivation in various neighborhoods or small regions.

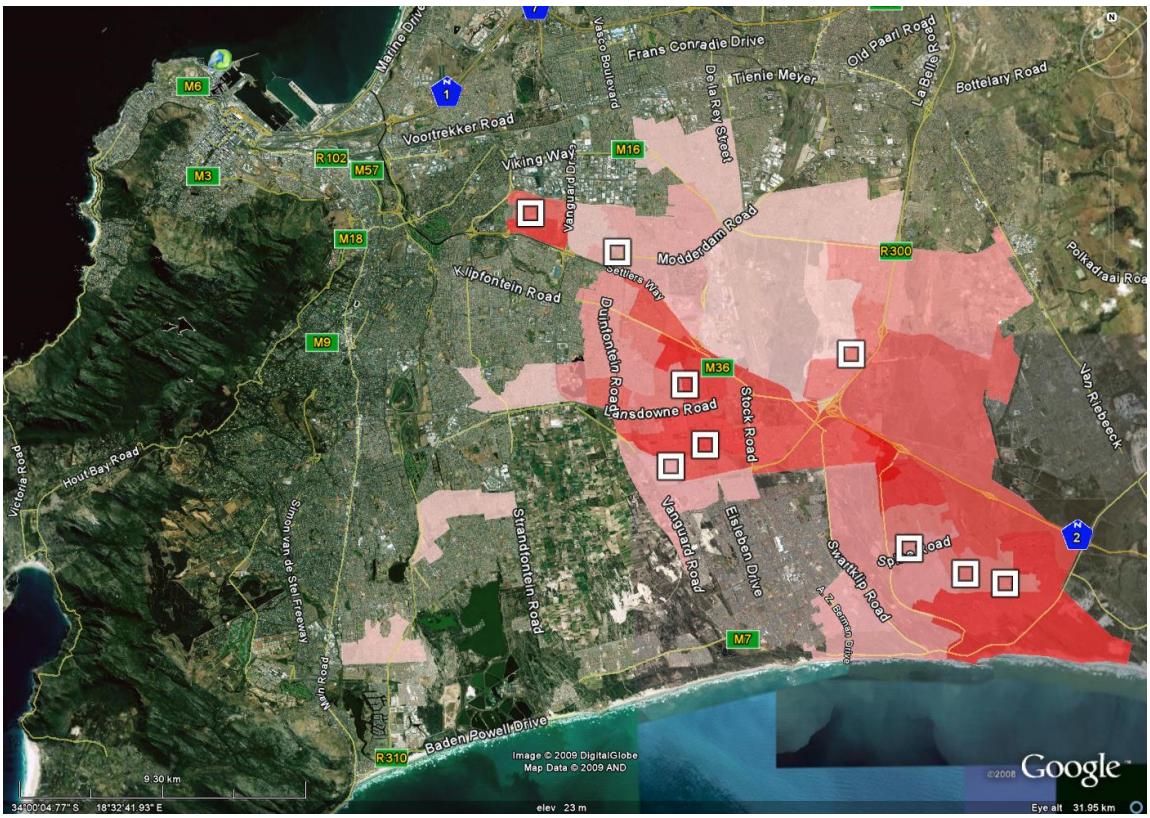


Figure 3
The locations of sampled schools and the 50 most deprived wards in urban Cape Town
The image shows a semi-transparent overlay of the areas targeted for their deprivation status (in various shades of red), with the randomly chosen schools based in the densely populated areas.

By randomly choosing schools from the 50% most deprived areas, the sample provides a snapshot of students who are faced with several levels of deprivation. Although this study refers to this sample as 'low-income', it is important to understand that average household income is only one of several factors. The study thus deliberately excludes Cape Town's more affluent areas which stand in sharp contrast with most of the country[17]. Not surprisingly, the area included in this study roughly mirrors the so-called Cape Flats, where, during apartheid rule until 1994, all 'non-white' populations were forced to live in government-built townships or informal settlements.

[17] There are currently no national indices of multiple deprivation for South Africa to compare the chosen wards with the rest of the country. Common knowledge as well as a number of economic and social indicators suggest, however, that Cape Town's areas with lower deprivation lie far above the average national income line – similar to some other urban and suburban areas in other major South African cities.

Selection of sample

The basis for selection in this research was drawn on the Provincial Indices of Multiple Deprivation for South Africa (Noble et al., 2006; Barnes, Wright, Noble, & Dawes, 2007), which weighted several measures of income and material deprivation, employment deprivation, health deprivation, education deprivation, and living environment deprivation for each of the country's nine provinces. The 100 electoral wards in the Cape Town municipal district were ranked according to their respective score in the Provincial Indices of Multiple Deprivation for the Western Cape province. Among this list, the bottom 50% (i.e. most deprived) of all electoral wards were included for the purpose of identifying low-income geographic areas.

Only schools located in these areas marked by highest deprivation were considered.[18] Using the official list of the Western Cape Education Department as a frame for cluster sampling, all public secondary schools located in the abovementioned areas were put into alphabetical order. In stage 1, each school to be contacted was chosen randomly through random sampling software, while every school once contacted and visited was taken off the list before the next one was going to be chosen. In each school, one or two full classrooms participated and were chosen as a convenience subset as the first general class(es) that would become available after arriving at the school, while the target was to include at least 30 students per school (stage 2). Only so-called *general* classes were considered for participation, as smaller specialized classes (science, accounting, etc) would have led to an uncontrollable pre-selection bias. This process was continued until a minimum sample size of 400 students was achieved.

By targeting 13 classrooms in nine schools we are able to control for class-, school- as well as neighborhood-specific idiosyncrasies. The comparable socio-economic background of students visiting the same school or living in the same area should eliminate variance attributable to their individual socio-economic status. On the other hand, variance between schools with different student populations was expected to indicate an aggregate-level effect of social and cultural norms and a better economic position in different neighborhoods.

Data was collected as clustered convenience or availability samples without the intention of making large generalizations about secondary school students or even South African youth as a whole. This method was chosen for economical reasons and to achieve a larger sample size than would otherwise have been

[18] Three electoral wards were excluded due to their very large size and very unequal population distributions. These include the Atlantic Seaboard area (Camps Bay to Hout Bay, which includes the Imizamu Yethu township), the Noordhoek-Fishhoek area (which includes the Masiphumelele township), and the widespread northern area (mostly rural, also includes the Witsrand and Vissershoek townships). For these areas it would not be possible to choose random schools as low-income areas are very small and are surrounded by far more affluent suburbs.

feasible through random sampling. As described earlier, the focus lies on low-income students in Cape Town, a city that itself may even be too unique to allow for generalizations for other urban areas in the country. Very heterogeneous population strata (including race, language, individual socio-economic status) make representative sampling very difficult – all of the city's schools would need to be included for complete random sampling. However, by using full classrooms, we can account for significant heterogeneity within a given school, and by extension, the neighborhood in which it is located.[19]

Of the total sample of 441 respondents, the average age was 17.8 (*SD* = 1.49), which may reflect the relatively late enrollment age for many South Africans (Lam et al, 2008). 79% mentioned Xhosa as one of their home languages, while 53% did so for English, and 17% for Afrikaans. Asked for their racial self-categorization, 78% considered themselves as *black* and 17% as *coloured* – which possibly correspond roughly to the Xhosa and Afrikaans language sub-groups. 60% of respondents were female. This gender imbalance, however, mirrors the census data, which showed that in 2001, 58% of 16 to 19-year-olds within the targeted most deprived electoral wards were female (STATSSA, 2001).[20] In addition, as noted above, the sample does not include about a quarter of the overall population in the targeted area who fall in this age bracket, as they no longer attend school.

Certain sources of bias may remain in the sample, notably the overrepresentation of Xhosa speakers (census data from 2001 indicates that 57% of the population in the targeted areas named this as their home language), although such self-reported data may be difficult to rely on. In addition, as survey respondents were able to name two of the most frequently spoken languages, it is difficult to compare to the census approach, which presumes a single language reality (cf. Dyers, 2008).

Survey weighting, as a statistical method to correct a randomly occurring misrepresentation of a given stratum in the population, is not used to adjust existing biases in this study. Due to the small number of cluster samples and the high level of uncertainty regarding the exact strata found in the overall population, such weights would only imply an inappropriate level of representativeness that is neither desired, nor warranted by this study's data. Post hoc weighting is not indicated, as the sample was drawn in a two-step approach. Random sampling was applied on the cluster level (classrooms), followed by a complete assessment of the cluster. The weight would have to be applied to the cluster, not the individual.

[19] Due to the relatively higher homogeneity of the most deprived areas, we can state that this sampling model is more adequate for this population than it would be for the least deprived areas. Since those contain a much larger spread of income, a larger subset of schools would be necessary to keep with the same model used in this study.

[20] The gender ratio of school attendance for the excluded 50 electoral wards in the same age group, according to census data, lies at 50 percent. The stronger imbalance for poorer neighborhoods indicates a stronger pressure (or willingness) for male students to drop out of school earlier.

This procedure would not guarantee a higher representativeness, as new biases would be created and variance would be undesirably restricted.

Procedure/Data Collection

In total, 16 schools had to be selected in the process to reach the desired sample size. Of those, two could not be reached due to invalid phone numbers, two declined due to time constraints, and three had to be dismissed because continued delaying would have jeopardized the project's time frame, which was limited to the pre-exam period. The survey took place as a planned classroom activity for the students, with the prior informed consent of the Western Cape Department of Education, the teacher, and the individual students themselves. The majority of principals were very quick to invite me to conduct research at their school after hearing about the purpose of the research. One principal cited an "acute lack of knowledge" with regard to mobile phone usage as the main reason for his enthusiasm. To incentivize the principals' consent, a moderated debriefing about the risks and potentials of mobile phone usage was offered to them to follow the completion of the survey. However, most principals had already agreed to their participation before this incentive had even been offered. In fact, the planned discussion round to follow the survey only took place at six schools, as students at the other schools were taking longer to respond, or were pressed for time to go to the next class. Where they did happen, these debriefing sessions were often received with great interest, characterized by a multitude of questions asked to the researcher about the research and the potential of mobile phones in general.

As many subjects were younger than 18, research outside the classroom would have required prior consent of their parents, guardians or caretakers – which can be difficult to obtain in the case of many low-income families. In addition, due to the immense costs connected with conducting a large number of intensive interviews, individual interviews were ruled out as unfeasible at this time. It was decided to distribute the questionnaires during regular lessons as a classroom activity, thereby receiving consent from the responsible teacher. Research permission for this method was granted by the Western Cape Education Department, with the limitations that data capturing was to take place during classes and before the beginning of the exam period.

Personal face-to-face interviews have the obvious advantage of being able to use conditional questions (or skip logic) and ensure that each question is well understood by the respondent (cf. Deacon, Pickering, Golding, & Murdock, 2007). This method was considered impractical and too time-consuming given the limited access to the students. In addition, due to the qualitative insights mentioned above, a face to face conversation might have increased the perceived social pressure on students to appear familiar with 'advanced' or 'glamorous' uses of mobile phones. Consequently, self-assessment paper-and-pencil surveys were chosen both for economical and ethical reasons.

The questionnaire booklet was handed out by the researcher in the presence of the teacher to all students of a particular class, thereby eliminating problems of sampling bias. The students were briefed that their answers are treated anonymously. The questionnaires were collected by the researcher. This personal procedure (rather than asking the teacher) was chosen as it enhances the response and retention rate and thereby minimizes self-selection sampling-bias. In fact, a 100% response rate and thus a complete picture of the surveyed classrooms could be achieved. As noted before, this is not true for youth no longer or irregularly attending school, which includes those who were absent on the day of the visit. On average across all classes, 9% of students were found to be absent.[21]

The questionnaire was in simplified English and has been piloted several times for optimal comprehension (Kreutzer, 2008). Translations or multilingual questionnaires were thoroughly considered but ultimately ruled out after interviews with respondents showed that such a move would be perceived as "patronizing" and might inflict a negative bias against the researcher, given that students in the eleventh grade are expected to be fluent in English. In addition, technical vocabulary describing technology or peripheral concepts are predominantly used in English only. Poor reading skills, regardless of the language, were considered the larger challenge for this population group, which already showed proved challenging during the pilot study. This was reflected in the large difference in time required to fill out the questionnaire: Fast readers and high-performing students were found to finish the survey after about 30 minutes while those with poorer reading skills sometimes needed up to 50 minutes.

Variables

The questionnaire consisted of 48 questions on 13 pages, and included predominantly closed-ended rating scale questions (Likert scales) or multiple choice items. Several open-ended questions offered the respondents the chance to provide answers in more detail. The survey resulted in 299 direct variables, of which several are grouped into multiple response sets or represent variations of the same theme question. Several additional variables have been recoded from the results to provide a broader measure of a given problem, including relative deprivation, technology ownership and usage, the different activity indices, and others.

Questions asking subjects about their use of certain technologies (or specific applications therein) were deliberately modeled after the Pew Internet & American Life surveys (Pew Internet, 2006a; Horrigan,

[21] Though this number may appear high to some standards, most teachers could not make out the names or the number of those absent in a given lesson. In addition, some classrooms did not have enough tables or chairs even to fit those present.

2008a) to allow for possible comparisons to the American findings. To avoid what is sometimes referred to as the "recall problem" (Deacon et al, 2007, p. 72), the authors of the Pew studies decided to obtain frequency replies through a two-stranded approach: Respondents are asked whether they have *ever* used a technology or application, and whether they have done so *yesterday* – an important technique also used in this study. The findings provide us with reliable figures for absolute usage by which we can single out people who have never used a certain feature before. The second number, however, gives us an idea of *a typical day* by asking about the most recent use on the previous day. The *recall problem* is thus diminished greatly: Since respondents do not estimate their average usage or approximate use frequency, we have numbers allowing us to state the share of students using a certain technology or application on a normal day. When conducting the survey on a Monday, respondents were asked to refer to Friday instead.

The absence of commonly accepted terminology is a major challenge for this study. *Online*, *Web*, *Internet* and similar terms have varying equivalents in respective cultures, or even on a personal level (Horst & Miller, 2006). This was confirmed by the pilot study. Questions using these terms have thus been largely excluded from the survey as their validity would be extremely limited.

As was demonstrated in the pilot study, outright questions, such as 'have you used a mobile phone yesterday'[22], have only a very limited validity: There were no differences between respondents answering 'yes' and 'no' to this question, as both groups had in fact done the same number of activities on a mobile phone on the previous day. This was revealed by asking detailed activity questions, some of which may not be associated by subjects with the phrase 'using a mobile phone'. The reason for the accuracy of this question type, as conversations have shown, is largely due to varying concepts of technology usage: 'Using a mobile phone' is sometimes considered as synonymous for using traditional phone applications, rather than referring to advanced uses such as browsing the Web or using instant messaging clients.

Limitations of survey research

The approach chosen for this study, to rely largely on questionnaires and survey data to explain very detailed usage patterns, has only rarely been used by other researchers in the past. Door-to-door household surveys are frequently employed to assess broader technology and media usage in South Africa (e.g. Esselaar et al, 2007; AMPS, 2007; Tlabela et al., 2007), but rarely so to tackle detailed usage patterns. Quantitative methods have the enormous drawback of using standardized question-answer

[22] In the questionnaire and in the pilot study, the term 'cell phone' rather than 'mobile phone' has been used, as this is the most widely used term in South Africa.

schemes for all respondents, thus discriminating against varying interpretations of certain concepts and norms (see discussion above regarding outright questions of usage). Even straightforward questions "are affected by broader social dynamics" (Deacon et al., 2007, p. 75) as a certain behavior may be deemed more acceptable by society.
For this reason, a heavy bias towards qualitative methods can be observed throughout the social sciences with regard to understanding technology usage. Instead of establishing large statistical evidence, qualitative research attempts to describe how technology is woven into the social fabric as one of many means to achieve a certain goal.

It is conceivably difficult to provide the same level of structural understanding Horst and Miller (2006) were able to provide in their in-depth ethnographic study on societal changes caused by mobile phone usage in Jamaica. In fact, ethnography has been used in various contexts to assess mobile phone usage. Ito, Okabe, and Matsuda (Eds., 2005) have shown us the ways in which mobile technology has become deeply entrenched in Japan's society by using detailed structural analysis. Nokia design researcher Jan Chipchase continuously publishes rich material on emerging mobile phone usage patterns on his ongoing blog *Future Perfect* (http://janchipchase.com), by using a "tour bus ethnography" approach (Chipchase, 2006). More recently, Ito et al. (2008) have reported on a large scale collaborative ethnographic study across the United States, describing the myriad of ways in which new media have become an important cornerstone of youth identity – as well as an essential skill set needed for the labor market. Skuse and Cousins (2005) have employed content analysis of 165 phone conversation and various other supporting methods to understand the potential impact information and communication technologies have on poverty in the Eastern Cape Province in South Africa. Bosch (2008) was able to describe the implications of the popular instant messaging software MXit by conducting in-depth interviews with a small number of young female respondents.

But as another study shows, deep structural insight is not irreconcilable with a large research audience. In a study with a focus on poverty reduction, Ivatury and Pickens (2006) conducted 515 survey interviews of low-income South Africans around the mobile phone banking service WIZZIT to assess the usage and potential for mobile phone banking in the country. By using sophisticated methodology and discussing its limitations, the study shows the potential of good survey design to find answers to complex questions, even for a very diverse and less accessible population.

The limitations of quantitative research have been taken into account when designing this study's methodology. Questions tackling respondents' beliefs and attitudes have been excluded almost entirely, while those that were featured in the questionnaire should be read with caution due to the problem of perceived social expectations (Sudman & Bradburn, 1983) and the social pressures so apparent in

conversations with participants. As could be seen in the pilot study and throughout all other piloting stages, language and varying terminology further exacerbate this problem.

In addition to field testing the survey over several instances, additional one-on-one conversations with secondary students at two schools in Philippi township were employed to ensure that even seemingly straightforward questions could not be misunderstood by the target group. But although significant effort was put into including only the clearest question design, a level of misunderstanding might always remain, a void between what the question intended and what some respondents made of it. For example, the questions pertaining to the respondent's use of a profile on Facebook or similar sites appears to be correctly answered by most (do you have such a profile, or not), but the following questions regarding the upload of information and media to respective profiles (meant to be skipped by non-profile owners) were subsequently filled out by many other users who did not understand the skipping instructions (these were filtered out by pre-selecting only profile owners). Other users have stated exorbitantly high amounts for their supposed mobile phone expenditures (which could be excluded by using normalized z-scores for this variable and filtering out statistical outliers). Wherever possible, these cases were identified as outliers or abnormal cases through statistical analysis – but for some questions an immeasurable level of incertitude needs to be taken into account.

4. Mapping Mobile Phone Ownership, Access, and Overall Usage

The survey conclusively supports very high, if not quite universal usage of mobile phones among respondents. Almost all targeted students reported having used a mobile phone on the previous day, while only 4% said they had used one in the past but not 'yesterday'. Fifty-two variables were used to create a detailed account of the activities for which respondents reported using a mobile phone. While no such list of variables can ever be complete, the final survey included several additions that respondents had suggested during the piloting stages, or which had been gleaned from the interviews and observations reported in chapter three. Overall, the results suggest the key role of online and digital media in comparison to other mobile phone applications, a preference which also emerges strongly when compared to traditional mass media use by respondents.

Personal ownership of a mobile phone, as well as the availability of particular phone features have both been found to have a significant relationship with students' actual usage patterns. The results show that, while a large majority can call a phone their own, both these phone owners and the 'co-users' rely on shared use of other people's phones that enable them to use a range of technically more sophisticated features (e.g. Internet access, video or picture recording, music player). In other words, simply because someone does not own a phone, or does not have direct access to a feature on their personal mobile, does not mean that they do not use that feature, although their usage may be less frequent than others who do own a suitable handset. This multiplier effect (a limited number of more capable phones being shared by a larger number of individuals) is kept in mind throughout the analysis. Consequently, as has been discussed throughout the previous chapters, mobile phone ownership should never be confused with access *or* actual usage. Ownership only defines the possession of the technology, whereas access tries to measure whether an information or communication technology can be found in the user's proximity, thereby implying a relationship between usage and proximity. We cannot rely on personal ownership of (or self-stated 'access' to) technology to tell us the story of whether and how they are being used. Instead, the findings in this chapter suggest several continua of usage levels for various practice categories (e.g. traditional personal communication, Internet usage, Web usage, digital media, etc.). Personal ownership of a handset is a key factor associated with higher reported levels of usage and the extent to which students report certain more technically sophisticated activities. At the same time, it is well understood that phones are not exclusively 'personal' devices in the South African context, and this survey establishes that they function as shared devices for this age-group.

Just as there are a range of ownership and usage patterns, there are also a number of cost-management strategies for dealing with network costs (conversations with students living in townships suggested that

these costs sometimes include the costs of electricity to charge batteries). Certain innovative cost-cutting measures that have previously been reported in other countries (Donner, 2007; Zainudeen et al., 2006), were assessed for this study's survey respondents as well. In addition to simply choosing a specific network operator (and possibly a special prepaid package), mobile phone users have adopted a wide range of communication practices to minimize costs. This features most prominently in traditional personal communication (phone calls and SMS text messages), as well as through instant messaging.

Ownership vs. Usage

More than three-quarters (77%) of respondents reported that they owned a personal handset rather than using or sharing someone else's phone (18%). A small minority uses someone else's phone but own a personal SIM card (4%). Less than 1% claimed not to use mobile phones, or said that their phone had been stolen recently. Nonetheless, even respondents in this group have all used several mobile phone applications in the past, as could be seen in their responses to the other usage-related questions in the survey. For this reason, all respondents can be termed 'mobile-phone users', although this group includes both mobile owners and 'co-users'[23]. It should be noted that practically all respondents were found to sometimes use other phones for access to more advanced technical features, even if they owned a personal handset. 'Co-users', however, is used to refer to only those individuals not owning a personal mobile phone.

There are no statistically significant demographic differences between owners and co-users, though ownership is slightly higher for self-declared *coloured* students at 83% (76% of self-declared *black* students said they own a mobile phone). However, there is a statistically significant difference in social comparison levels for economic status ($t(337) = 2.557$, $p = .011$) as well as academic standing ($t(333) = 2.581$, $p = .01$) within the classroom: Students who do not own their personal phone consider themselves as worse off economically *and* academically than their phone-owning classmates. This important perceived lower socioeconomic status would confirm theories of the digital divide (Mehra et al., 2004), whereby the absence of a technology (originally computers, later the Internet) leads to a marginalization within society. However, the data does not support actual marginalization, nor can it indicate any causal relationship; it merely refers to students' perception of being at an inferior scholastic and economic level than their peers.

[23] For the sake of comparison, this group includes those saying they own a SIM card, and the small number ($n = 3$) who said they do not use mobile phones, but responded positively about having used several features in the past or even on the previous day. The term 'co-users' is used to describe these respondents who do not own a personal handset, but have used a mobile phone for at least one application 'ever' or 'yesterday'.

Beyond these distinctions, ownership was found to have only a relatively limited relevance for other factors. When comparing the first cohort of phone owners (77%) with the latter two of co-users (23%), owning a handset correlates with a small but statistically significant increase in overall usage levels. In other words, students who need to share a phone end up using them less frequently.

To assess these activity levels, I calculated aggregate level indices by adding all variables in a given domain or theme. These indices offer a scale of usage levels, ranging from zero to the maximum number of activities included. Each activity is counted *1* if the respondent used it, and *0* if the respondent did not use it. Aggregates were calculated separately for activities the respondent had done 'yesterday', and those they had 'ever' done.

Although it may not surprise that owning a mobile phone leads to higher usage, it is important to note the scale of the differences encountered, which are displayed in Table 1. First, not all differences are statistically significant, meaning that we can only constitute significant differences based on ownership for some of the aggregate measures. But although these levels are lower for co-users, they can still be considered quite high. While 97% of owners use a mobile phone for at least one activity on a typical day, 94% of co-users did so as well. This shows that not owning a personal handset hardly decreases access to mobile phones, but merely limits the amount of activities done on a typical day. Most strikingly, the differences are most pronounced in personal communication (co-users use 31% fewer activities on a typical day) and instant messaging (42% less). The differences were least pronounced and in fact not statistically significant for Internet and Web access.

Ownership, we can thus conclude, correlates with a higher frequency of text messages, phone calls, and use of instant messaging clients. It does not, however, correlate with a significant increase in Internet and Web usage – co-users were almost equally active despite the lack of a personal handset.

	ever	**yesterday**
all activities	-08%*	-21%**
all Internet activities	-11%	-22%*
all Web activities	-08%	-12%
all local media activities	-05%	-14%
all personal communication	-11%***	-31%***
all instant messaging clients	-19%	-42%**

Significance (2-tailed) *p<.05, **p<.01, ***p<.001

Table 1
Difference between usage levels of owners and co-users

This table assesses the mean differences between both groups (*owner* minus *co-users*), meaning that e.g. co-users use 12% fewer Web activities than owners. Co-users are differentiated from owners as they used mobile phones, but reported not to own one. The differences are thus relative to each other and do not portray absolute differences between both groups.

Early and late adopters

As can be seen in Figure 4, about one third of all respondents (34%) reported having used mobile phones for at least three years, while only another third (30%) said to have started using mobile phones for one year or less. 14% could not recall the first time. The former group of long-term mobile phone users can be referred to as 'early adopters' (cf. Katz & Sugiyama, 2006), whereas the latter group can be regarded as 'late adopters'. These two groups – marked by the contrasting recency of their mobile phone uptake, shall serve as additional subgroups whose possibly varying behavior will be investigated in more depth. Although both groups were found to be demographically identical, there is a significant difference between the levels of how students in each group regard their academic standing: *late adopters* reported to have lower grades than their early adopter classmates ($t(220) = -4.005$, $p = .000$).

As some might expect, early adopters use mobile phones significantly more frequently than late adopters. Their higher usage is significant on most levels, including an aggregate of all measured mobile phone activities done on the previous day ($t(279) = -3.152$, $p = .002$). But whereas early adopters can be seen as more intense users of personal communication and instant messaging, the evidence points to no clear connection to the amount of Websites accessed on a typical day, or the amount of digital media produced or shared on a mobile phone. Late adopters, we might conclude, lag behind early adopters in use of personal communication applications, but they are just as likely to be using the mobile Web. However, whether any of those factors – or some underlying, overarching problem – might be responsible for early adopters' perceived higher academic standing, remains to be seen in further qualitative research.

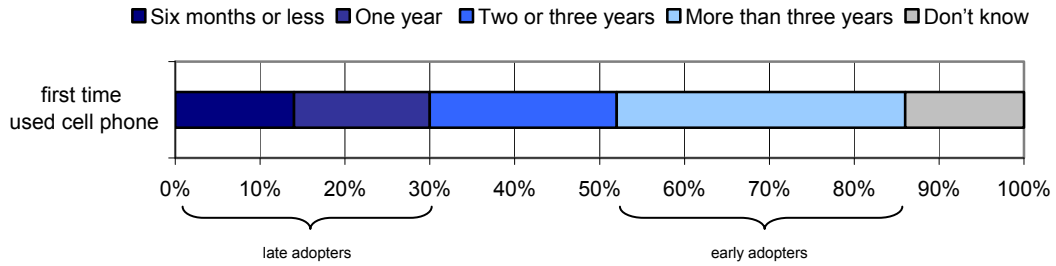


Figure 4
Recency of mobile phone usage

Characteristics of handsets used

The majority of phone owners have had their current handset for less than two years, with 32% having started using their handset 'six months [ago] or less'. Merely 10% have been using the same phone for more than three years, pointing to a fairly high turnover rate towards more recent models.

Whether or not students owned personal handsets, virtually all respondents were able to provide details about their phone, while co-users referred to the phone they used 'most often'. Three manufacturers dominate the market here, with Samsung (42%), Nokia (31%) and Motorola (19%) covering more than nine-in-ten phones of the entire sample. These findings are at odds with these companies' overall market shares in South Africa, which puts Samsung at just 17%, while Nokia enjoys leader status with 54% (see Figure 5).

The reasons for this reversal of the national average are unclear, but it provides an important clue that Nokia's assumed strong advantage in developing countries (Lindholm, Keinonen & Spencer (Eds.), 2003) may not hold forever as younger generations grow up with different preferences and brand loyalties.

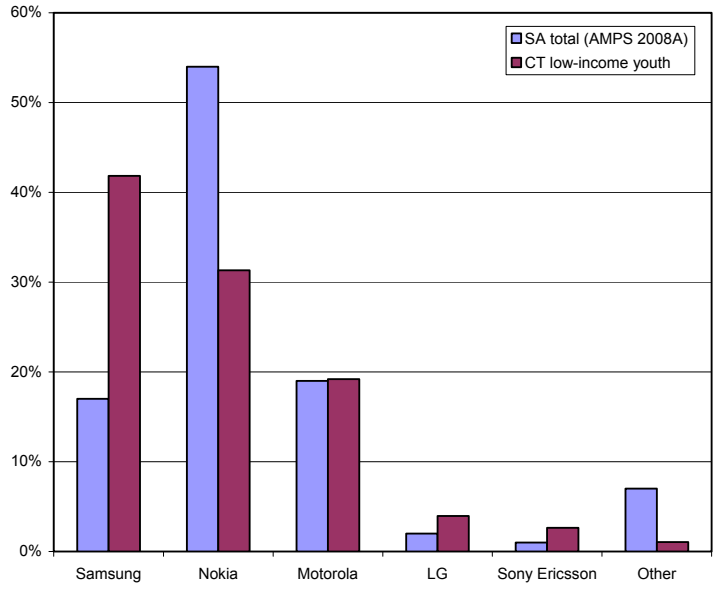


Figure 5
Handset manufacturers in South Africa and among low-income youth in Cape Town
(Source for SA figures: AMPS 2008A (2008))

The manufacturer brand, however, is just a broad proxy for the very complicated realm of technical capabilities. A quick look at the 10 phones most frequently mentioned reveals a striking pattern: Only three models (Nokia's 1100, 3310 and 1600) are not capable of accessing the Internet. Interestingly, those models have been developed by Nokia predominantly for developing countries as low-cost entry handsets, explaining their very limited technical capabilities. While those phones were to be expected within the top 10 list, it confirms the previous point about Nokia's possibly waning stronghold among low-income groups, as other far more capable models appear more popular among students.

		% of all models
Samsung	E250	20
Motorola	V360	9
Nokia	1100 *	4
Samsung	E370	4
Samsung	J750	3
Motorola	V3 Razr	2
Nokia	3310 *	2
Nokia	1600 *	2
Nokia	N70	2
Samsung	D900i	2
Other		52

Table 2
Top 10 most commonly used mobile phone models
(*n* = 366)
* Models do not support Internet access
Differences to 100% due to rounding.

Detailed phone capabilities

Most of the phones owned or used by respondents bring a myriad of technical options. Respondents were asked to say whether a given feature was available, or not. This measurement depends on subjects' understanding of their phones and their comprehension of the question as phrased by the questionnaire It nonetheless provides a very important assessment of the wide range of possibilities available. Not surprisingly, text messaging and games are the most widely available features, which can be found even in the most basic model, the Nokia 1100. About three quarters of all students use (though not necessarily own) technically more advanced phones with features such as an inbuilt camera for photographs and video, a music player, as well as the ability to share these files locally via Bluetooth or Infrared.

Whether or not a phone is Internet-enabled is harder to determine. Asked outright, just 63% said it was possible to access the Internet with their handset, while 65% said their phone supported the mobile instant messenger application MXit (which communicates via the Internet). Through conversations with students it became evident that many students do not associate MXit with "the Internet", which respondents often use synonymously with sites on the Web (cf. Rheingold, 2003, p. 6). Indeed, a sizable portion (16%) of respondents answered that their phone allowed them to use MXit, but not the Internet. But in reality, every MXit-enabled phone is also an Internet-capable phone, regardless of the user's preferences. Hence, as we need to take both responses as sufficient evidence, we can conclude that direct mobile-phone-based Internet access lies at 79% among urban low-income South African youth. The share of 'high-speed' Internet access through 3G-enabled phones is at 25%, indicating a subgroup that might possibly be suspected of higher Internet usage. As will be shown in the chapter on Internet and online

media, such ownership-based technical access needs to be differentiated from actual usage, which is more difficult to assess.

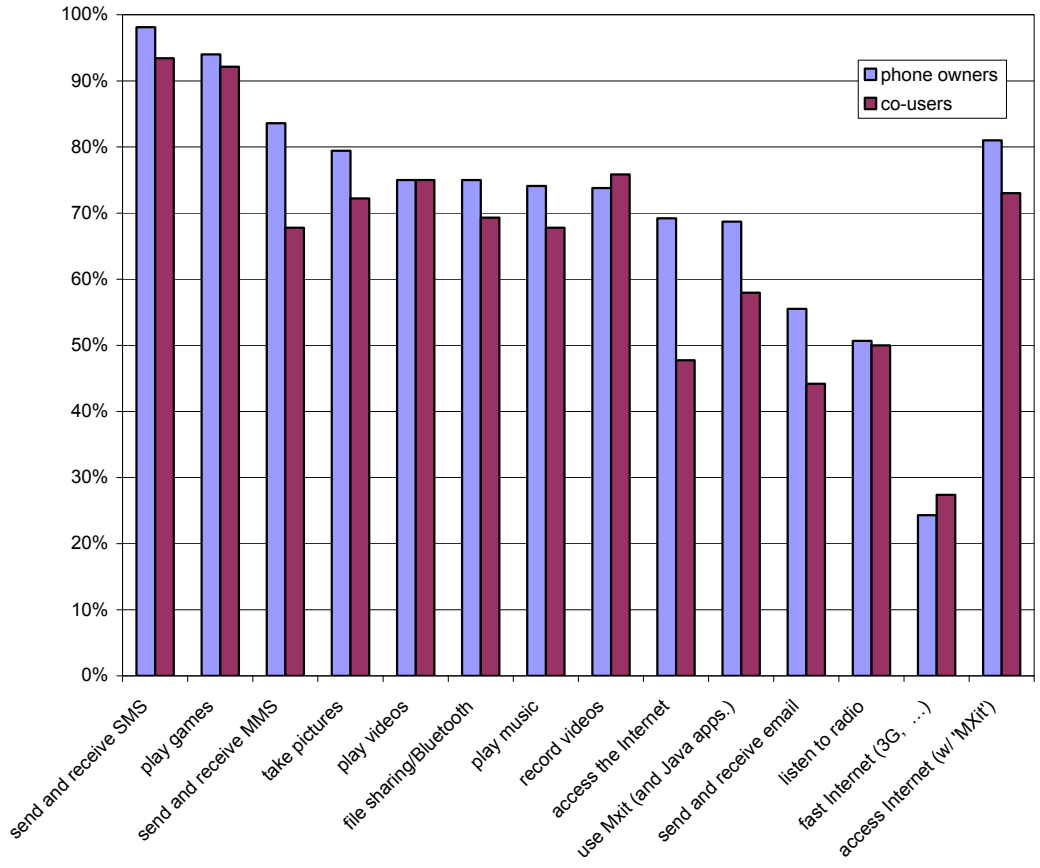


Figure 6
Self-reported capabilities of respondents' handset, by ownership status
The last measure includes all MXit-capable phones in the measurement of Internet access

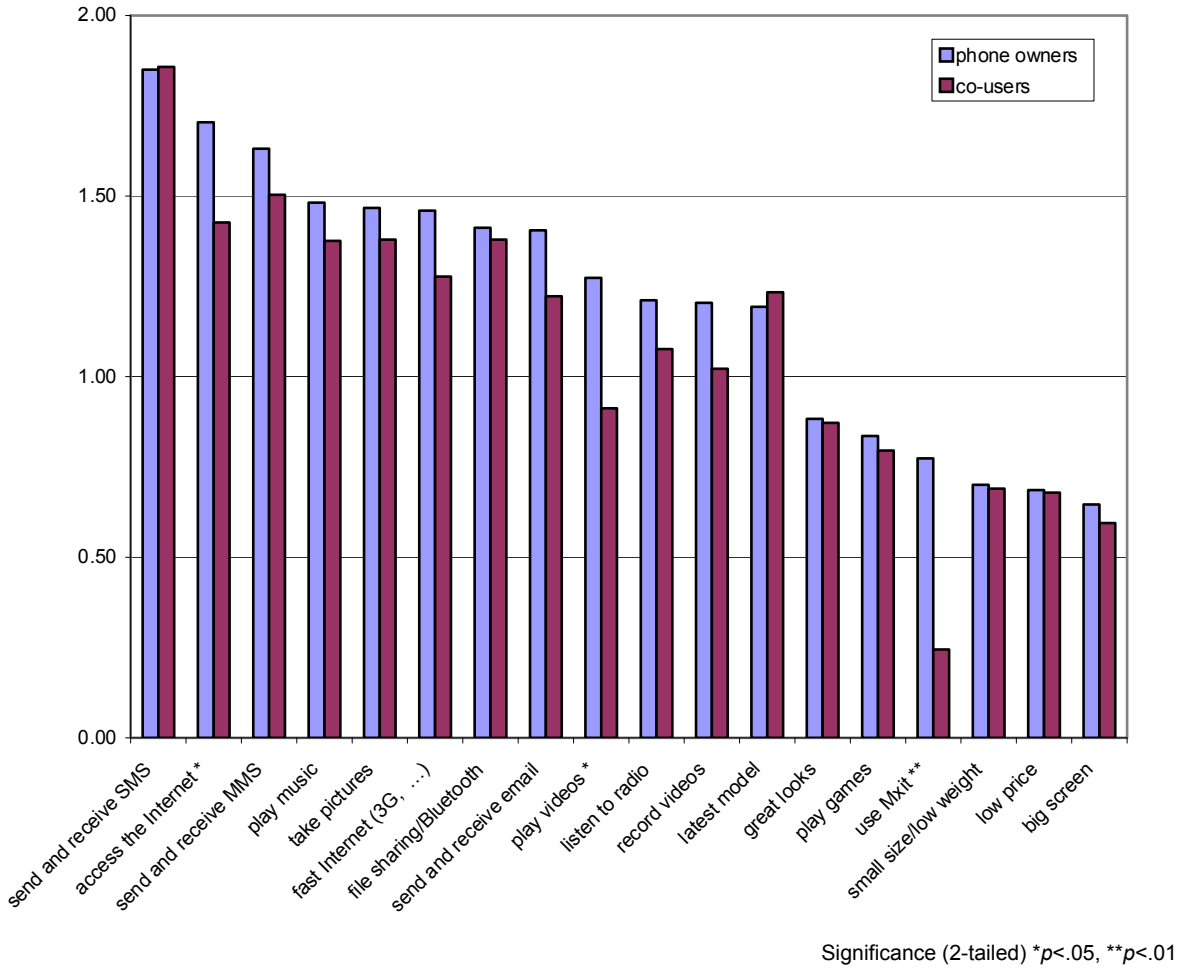
Those students who own their own personal handset generally seem to have a slight edge over their mobile phone-less peers: Although the latter group reported they had very similar features available to them on the phones they use, certain specific items were more common among owners. In fact, all data- or cost-related features (Internet, email, MXit, MMS) were less common among co-users, with at least 10% fewer students in this cohort not having access to these services. Using an aggregate index of all 13 possible features, we can attribute a concrete value for each respondent's phone, as reported, which can range from 0 (no feature available) to 13 (all features available). Comparing the means of this index between both groups, mobile phone ownership seems to give access to a significantly larger range of applications ($t(419) = 2.157$, $p = .032$), although a causal relationship cannot be derived from the data. The very small differences in the cost-free categories (pictures, videos, music, etc) suggest that, despite a generally lower level of access to more capable phones or features, co-users still retain access to a significant array of media and communication technologies through their peer's mobile phones.

Perhaps some 'co-user' students misunderstood the question, "With your mobile phone, is it *possible* to…" as asking whether they were *allowed* to use certain features on the phone that is temporarily provided by someone else. But whether these limitations are technical in nature or based on rules enacted by a phone's owner, the result is clear – handset owners have more direct access to non-free mobile phone services while co-users have almost equal access to all other features.

Desirability of certain features

Students are very aware of the different technical options available and put more emphasis on specific features than on general characteristics such as the phone's price or appearance. Respondents were asked about their preferences when it comes to choosing a hypothetical new phone (or for co-users, their first phone). Each item on the incomplete list could be rated from very important to not at all important. In general, co-users attributed lower or equal importance to all of the 18 technical or general features provided to them, possibly owning to the sentiment that co-users are somewhat less "picky" in their position (see Figure 7). However, only three differences were statistically significant – among them Internet access ($t(402) = 2.536$, $p = .012$) and in particular the instant messenger application MXit ($t(395) = 2.876$, $p = .004$), which scored as the least important feature among co-users. The reasons behind this difference remain unclear, though lower access to the Internet and by extension also to MXit (see above) may have some influence on this lesser importance. Whether owners accustomed to using MXit and the Internet become indeed less willing to give up this habit, requires additional academic inquiry.

Among both ownership groups, non-technical characteristics (including a low price, large screen or small size) are of lower importance. Through additional qualitative responses, the most frequently mentioned were video calling, more memory, long-lasting batteries, louder speakers, as well as the plain option to receive or make calls, which was mentioned mostly by co-users. No significant differences could be found between early and late adopters with respect to their desired features. This leads to believe that even more recent phone users expect the same capabilities as do their pioneering peers or early adopters.



Significance (2-tailed) *p<.05, **p<.01

Figure 7
Desirability of phone features for a hypothetical new handset, among owners and co-users
Responses were measured on a Likert scale from 2 (very important) to -2 (not at all important).

It is important to decipher and understand the technical implications of some of the technical capabilities (as shown in Figure 6 and Figure 7), as one item may be a proxy for several other options. The instant messenger MXit, for example, is a Java application that can be downloaded and installed on all phones running the Java cross-platform software environment. Because responses to direct technical questions may be highly unreliable, this question is also a more reliable informant about Java's availability. Hence, with 65% of respondents saying their phones support MXit, we can conclude that at least this many handsets also have one or another version of Java Platform available. Java is a broadly used system that makes it possible for software or games developers to produce a program that is usable by phones with the same version of the platform, regardless of their manufacturer. Though the technicalities of this portability are still challenging, Java-enabled phones mark an important difference to low-end handsets, which cannot practically be enhanced with additional software, such as the popular Google Mail application or the mobile phone browser Opera Mini.

Expenses and sources for funding

Almost all phone and/or SIM card owning respondents used prepaid airtime vouchers (95%), mirroring the strong attraction of prepaid subscriptions over long-term contracts for low-income South Africans (Hodge, 2005; Esselaar & Stork, 2005). By contrast, only 5% were contractual subscribers.

The median average weekly spending for airtime vouchers among prepaid users was at R20.00, or USD 2.00. This number includes both phone owners and co-users. Differences in weekly spending between these two groups are significant ($t(375) = 2.152$, $p = .032$), meaning that ownership of a handset indeed coincides with how much money is regularly spent on connection charges. But the relatively small difference confirms the aforementioned similarities between both groups: Whereas owners had a median weekly expenditure of R20.00, co-users spent a median R15.00. (The median was chosen as the most informative measurement of central tendency as a few very high outliers would have badly skewed the results; see Figure 8.)

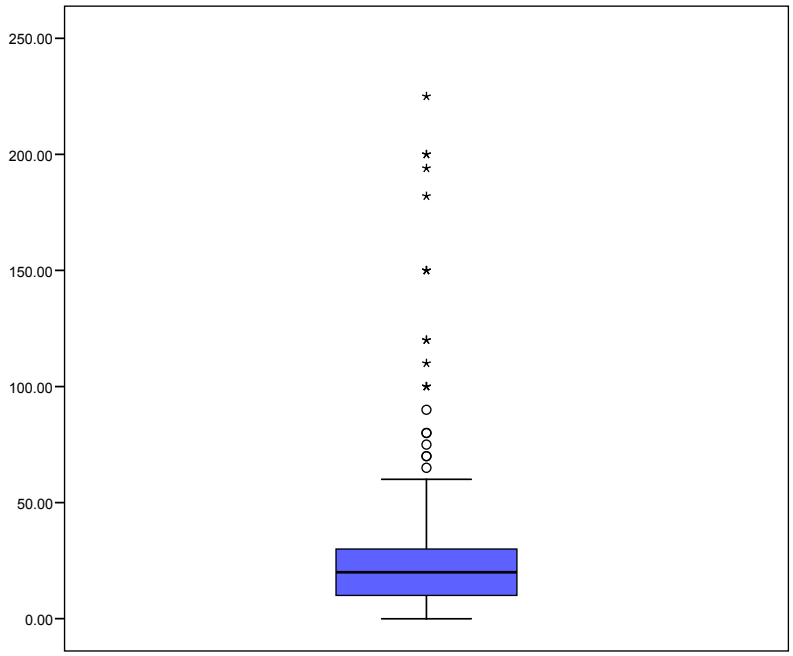


Figure 8
Boxplot showing the distribution of respondents' weekly prepaid voucher expenses

When measuring airtime expenses as a share of students' overall expenses ('money spent on food, clothing, going out', plus the respective airtime expense), prepaid users were found to spend on average about one fifth (19%; *SD* = .181) of their weekly disposable money on prepaid vouchers; there was, however, no significant difference in this share between the two ownership groups. This relatively high figure underscores the importance of *paid* mobile phone activities for low-income students, confirming findings found by Zainudeen et al. (2006) in India and Sri Lanka.

The majority of respondents (58%) were at least to some extent covering their own recurring expenses on prepaid cards or contract fees, by using allowances, salaries from jobs, or similar kinds of income. However, one-in-two of these students also had additional sources to defray their mobile phone costs. Parents were close seconds in the overall ranking with 48%, though it is not possible to make larger assumptions about the amounts sourced from either party as pocket money might be counted as either personal or parental financing. Among all students, 35% had multiple sources of funding. Also frequently mentioned were secondary family members, respective boy or girlfriends, or personal friends. There were several noticeable differences between male and female respondents. Most strikingly, male respondents reported to rely more on their own funding, whereas females showed higher reliance on their parents or boyfriends. This observed self-reported difference could, however, also depend on different perceptions between the sexes, e.g. the question of whether pocket money is considered under 'myself' rather than the source of this fund.

	%
My parents or legal guardians	48
My family members other than my parents	17
Myself	58
Boyfriend or Girlfriend	17
I don't spend any money on airtime	4
Friends	6
Other	5
Only 1 source	63
More than 1 source	35
	[*N* = 441]

Table 3
Sources of funding for all respondents
(Multiple responses possible)

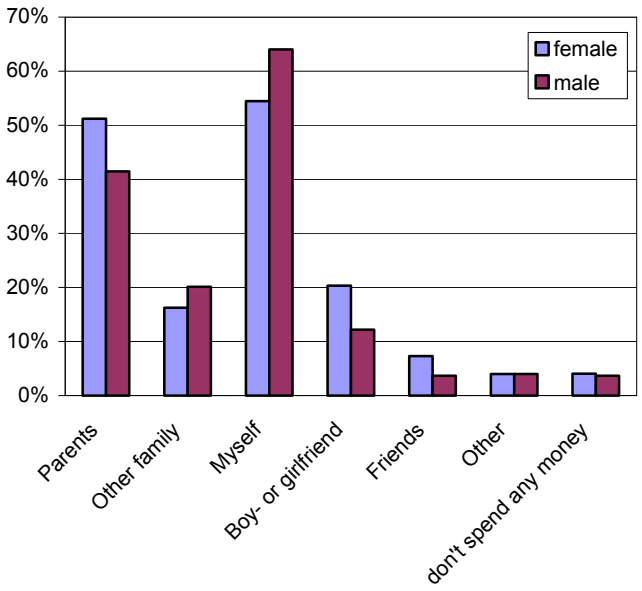


Figure 9
Sources of funding compared by respondents' gender

Cost-cutting practices

Continuing the trend found during the pilot stages of the study, a large majority of students were MTN customers (78%), whereas only one-in-three students used Vodacom (22%) and Mobile C (15%). The relatively new network operator Virgin Mobile was used by 1% of respondents in this group. These numbers, which add up to more than 100% due to multiple responses, reflect one of the most important

cost-cutting measures: 15% of students use more than one network, while 2% even use three SIM cards from different networks to get the best rates, depending on the counterpart to be called.

MTN's reign over among low-income youth in Cape Town shows a trend that is vastly different from the national picture: in 2008, MTN claimed 42% of all mobile phone users, compared to 49% Vodacom and 8% Cell C (AMPS 2008A, 2008). Whether MTN's stronghold will later actually translate into an equally large share of loyal (and better paying) customers over the next years – or whether this current allegiance will shift as prices restructure (cf. Goldstuck, 2007, p. 133) remains to be seen in further research.

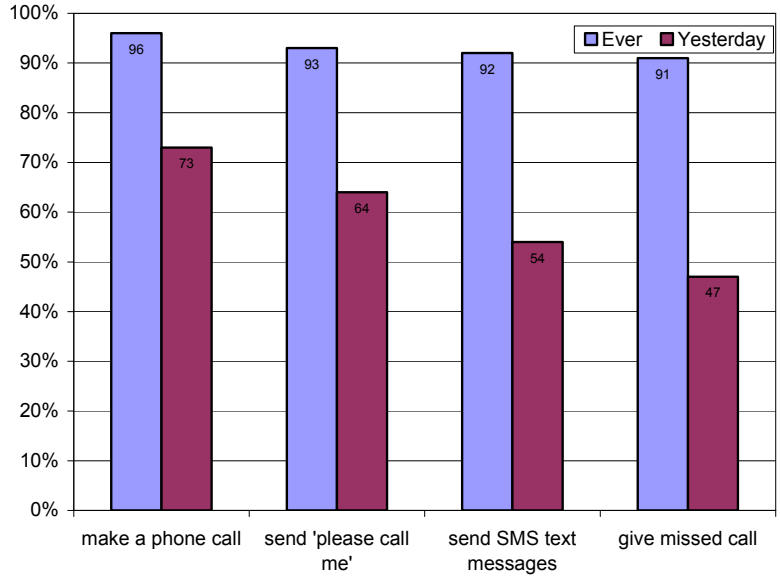


Figure 10
Traditional personal communication applications, by usage *ever* and *yesterday*

Specific cost-cutting communication practices were found to be widespread – especially when using mobile phones' more 'old fashioned' applications. Traditional personal communication was assessed by the survey on four different activities: phone calls, sending SMS text messages, sending 'please call me' requests, and giving 'missed calls'. Taken together, at least one of these functions is used by 87% of respondents on a typical day, making it by far the most used activity theme overall. But even taken on its own, more respondents said that to 'make a phone call' is more commonly done on a mobile phone than any other individual activities assessed in this study – 73% reported doing so on a typical day.

Giving missed calls, or buzzing, was found to be popular among students: 91% of respondents in this study have ever used this practice (which requires both sides to know the shared codes of each such call's meaning (cf. Donner, 2007), though just under half (47%) do so on a typical day. 'Please call me' messages are far more popular among students in this study than 'buzzing': 64% send at least one such a

message on a typical day, while only 7% say they have never done this. While these practices do not require advanced handsets and still utilize the same technologies as mobile phones have for many years, they showcase a very conscious strive for cost-effectiveness among respondents, who aim to achieve a high level of personal communication despite very limited budgets.

As a result, mobile instant messaging has become very common among South Africa's youth over past years, in particular due to the rise of MXit (see chapter two). Respondents showed particularly strong usage of MXit, with 47% of students using it on a typical day; the median average amount of time these students used it was 60 minutes. As Table 4 shows, none of the other surveyed instant messaging applications can match MXit's popularity. Usage of this much-used instant messenger seems to have played a key role in driving students' Internet usage (see chapter five).

	Ever	Yesterday	time used yesterday (median in minutes)
MXit	67	47	60
méèp	22	5	4
noknok	28	9	5
2go	23	5	3

Table 4
Usage of mobile instant messengers, *ever* and *yesterday*, with average time used

5. Characterizing Online Media Use and Digital Media Production Practices

The low-income urban youth targeted for this survey have shown considerable use of both traditional and online media, including the news media. 68% of respondents were found to use the Internet on a mobile phone on a typical day, including 49% who do so to access the Web. By comparison, just 39% use the Internet on a computer on a typical day, almost all of which also use the Web (37%). One of the major reason for the high Internet usage on mobile phones are instant messenger applications, which were used by 49% of students on the previous day. The survey findings show the apparent 'dedication' for mobile phones and computers with regard to Web usage: mobile phones are used for almost all information and entertainment seeking purposes, whereas computers only have a slight advantage in a small number of Web categories, most notably school research and retrieval of health information.

Regardless of the platform, Google was found to be by far the most dominant Web gateway to all forms of information surveyed, followed at a considerable distance by WAP mobile media portals. The foreign search and media giant trumps any other resource with an enormous margin as it makes up 35% of all mentioned websites. Mobile media portals such as Waptrick and Nabster make up the largest share of directly accessed sites, with 35% of respondents downloading digital media (music, videos, pictures, etc) from such a site on a typical day.

Television, radio, newspapers, and magazines were found to be the primary ways in which students access information about current events. Even so, 28% of students were found to access the news on a mobile phone once a day or more frequently; 18% said they do so using a computer. These online news channels add to an overall complex picture of news consumption among students, who reported accessing an average of more than two news sources 'several times daily'.

Different kinds of media downloaded from WAP mobile phone portals are often used side by side with locally produced digital media. Using a mobile phone, 56% listen to music, 50% take pictures, 49% play games, 37% record and 35% play videos on a typical day, making media usage on mobile phones far more prominent among respondents than on computers. Besides their own production and download from the Internet, 35% or students were also found to send or receive such media files on a typical day via Bluetooth or Infrared. Mobile phone games, one of the prime content to be shared this way, were played by 49% of respondents on the previous day. An enormous number of 'favorite' games named by students showed the impressive demand for this kind of entertainment. Interestingly, respondents maintaining a profile on a social networking site (such as Facebook or MySpace), were also found to be heavier users of

traditional communication functions (phone calls and SMS), as well as being more intense overall Internet users. However, this group does not show any demographic or socioeconomic difference compared to their peers, making them a very interesting group of high-intensity usage to investigate in further studies.

Measuring Internet and Web Usage

> "Our informants like to download new ringtones or query an i-mode site to find out if the boy they just met was astrologically compatible—but none thought of what they were doing as 'using the Internet.'" (Rheingold, 2003, p. 6)

Similar to Rheingold's observations in Japan, my interviews with students have shown widespread confusion between the terms Internet and Web (see chapter three). Since many respondents would have had divergent concepts of the 'Internet', outright questions are unlikely to provide reliable answers to questions such as 'what is the share of people using online media' (cf. Schmid & Stork, forthcoming).

A reliable measure of Internet usage was obtained by aggregating thirteen Internet-related variables which were calculated both for mobile phone and computer usage. Given the varying levels of understanding and definitions of these terms, the survey employed multiple variables to assess Internet usage, and to be able to distinguish usage of the Web as measurement of online media consumption. The variables used include:

Web

- Download songs, videos, games or ringtones
- Go online for no particular reason, to 'Google' or browse for fun
- Use the Internet to get news or information about current events
- Go to websites about movies, TV shows, music groups, or sports stars
- Research information for school on the Internet
- Go to Facebook, MySpace, Hi5 or similar websites
- Watch a video on video-sharing website like YouTube
- Look for health or medical information on the Internet

Instant messaging clients

- MXIT
- Noknok
- Meep
- 2go

Email

These variables cover a range of important purposes of Internet usage. Together they can serve as an aggregate measure of Internet usage to provide a detailed picture of the range of actual applications used. An aggregate of the first category alone, which includes different kinds of websites, is used to assess usage of the World Wide Web[24]. All of the above variables have been assessed for both mobile phone and computer access, as well as for their use 'ever' and 'yesterday', as displayed in Figure 12.

According to these measures, 93% of all respondents have ever used the Internet on a mobile phone, while 83% have ever done so on a computer. Computer-based Internet usage is far less frequent than mobile use: 39% use the Internet on a typical day on a computer, whereas 68% do so using a mobile phone.

More students use the Internet on a typical day through a mobile phone (68% do), than use the Web (49% of all students). This difference in popularity is owing to a group of students – one fifth of all respondents – who are ardent users of mobile instant messaging applications, but who do not access any sites on the mobile Web. Respondents thus can be grouped into four groups based their mobile Internet usage: Those only accessing websites, those who go online solely to use Instant messengers, another group who accesses the Internet to use both IM and the Web, and finally those do not go online at all. (See Figure 11 for graphic model and results.) This marked difference between Internet and Web usage among respondents is unique to mobile phones, as computer usage does not display a similar pattern. Instant messaging is largely a mobile phone based phenomenon: 49% of students use it on a phone on a typical day, while only 13% use 'IM' programs on a computer on such a regular basis.

[24] See distinction between the Internet and the Web in Footnote 2 on page 2.

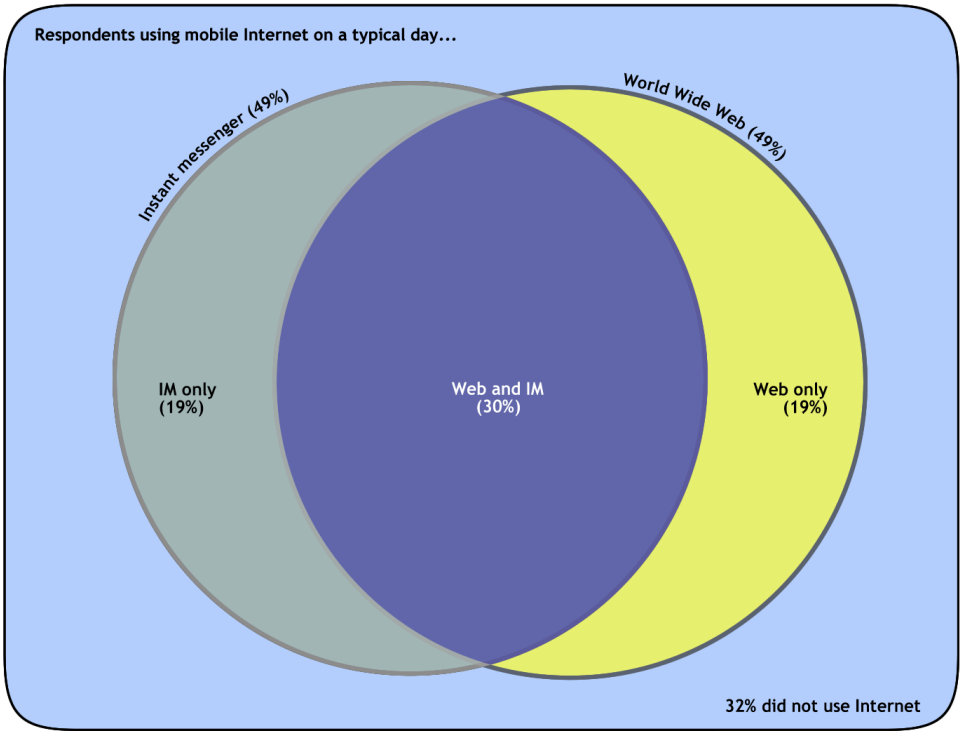


Figure 11
Model showing Groups of mobile Internet users, including usage rates for a typical day

Combined usage indexes for both mobile phone and computer access were used to assess the overall level of Web and Internet usage among respondents. By using all available variables for both types of access, we can determine that a total of 95% of respondents have ever accessed the Web while 56% do so on a typical day. By comparison, 73% of respondents use the Internet on a typical day through either access type. The significantly higher number of Internet usage is again due to a considerable portion of students who only use the Internet for (mostly mobile) instant messaging.

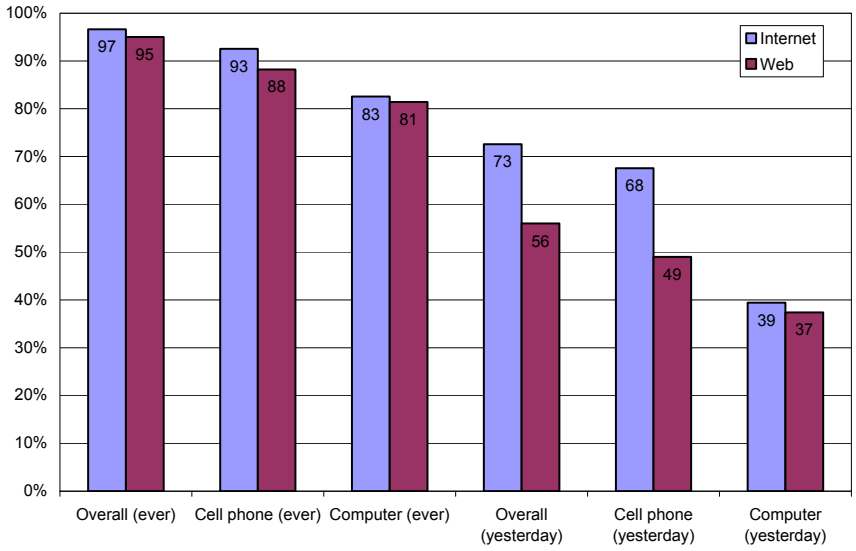


Figure 12
Internet and Web usage for mobile phones and computers, used *ever* and *yesterday*
Internet counts include all Web activities, as well as instant messaging and email

Sources of Internet Usage

A considerable overlap exists between mobile phone and computer Internet users, making up four distinct groups: 33% of respondents only use mobile phones, 5% only use computers, while 34% use both sources, while a fourth group (27%) does not access the Internet on a typical day. In other words, the vast majority of students using computers to access the Internet does not do so exclusively, but complement their computer-based Internet experience through mobile phones. This important finding (see Figure 13) already suggests what the following section will further investigate: The nature of usage of the two platforms differs quite substantially, suggesting a 'dedicated use' of each platform for certain applications.

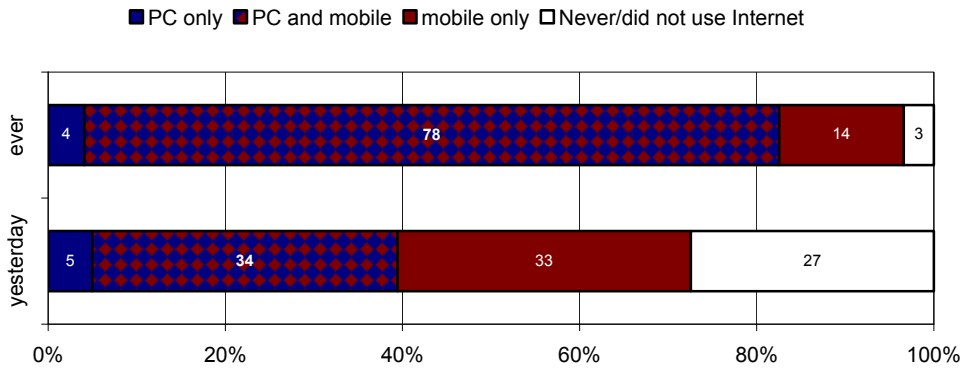


Figure 13
Groups of Internet users, based on mobile and PC access, for 'yesterday' and 'ever'

A direct question asking students about their Internet usage via six different possibilities (e.g. 'on a computer at school') further explains the strong dominance of mobile phones as the number one Internet platform for respondents: 51% say they use a mobile phone to access the Internet on a daily basis, while just 24% say that they use a school computer to do so. Half of all respondents have gone online in the past by using computers in the library or at a friend's house, though only 18% do this on a daily basis. Public Internet cafés, which are very rare in Cape Town's townships, are only frequented daily by a small minority (see Figure 14).

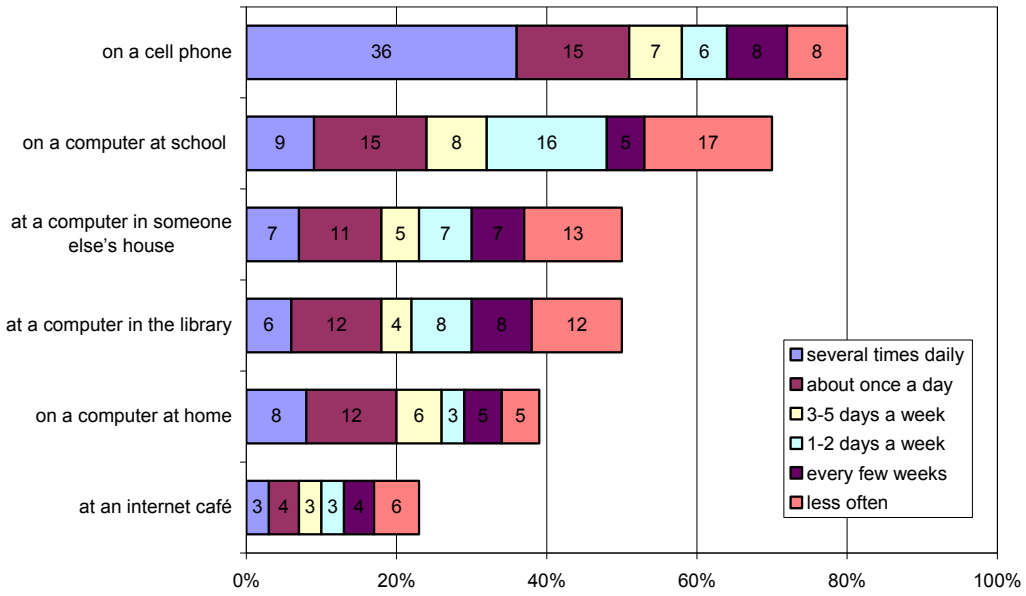


Figure 14
Frequency of Internet access by source
("When you use the Internet, how often do you do so…") Values missing to 100%: "Never" or "Don't know"

Mobile phones are the dominant platform for Internet usage among students in this group, providing the most popular source of Internet access by a considerable margin. Actual usage may be even higher than these figures suggest, since the phrasing of the question may have led to an interpretation based on a narrow understanding of the term 'Internet' (as discussed in chapter three).

This study's sample displays very high levels of Internet usage as compared to the national averages reported by other South African studies. There are several possible explanations for this discrepancy. First, urban Internet access is likely to be considerably higher, while most *national* figures are averages between cities with higher usage and rural areas with far lower technology uptake (cf. Tlabela et al., 2007). Secondly, young people are generally more likely to use the Internet (AMPS 2008A, 2008). The All Media and Product Survey (AMPS) has found only 4% of South Africans aged 16-19 to have 'accessed the Internet 'yesterday', while 11% were found to do so 'in the past 12 months'. Research ICT Africa (RIA), in its latest household survey, shows that the share of South Africans using the Internet who 'ever use the

Internet' is 15% (RIA, 2009), though the sample was not obtained for further breakdown to our specific age and location group. Thirdly, given the speed of growth, research is dated by the time it is published. Hence, while this study's sample is not nationally representative, it certainly points to a stark departure by low-income urban youth *vis-à-vis* average national levels of use.

That said, the discrepancy may also suggest some problems with the larger national surveys in relation to the accurate measurement of Internet access. An important difference in methodologies may be playing a role. The AMPS questionnaire asks subjects directly "Have you PERSONALLY accessed the Internet/World Wide Web in the PAST 12 MONTHS [or YESTERDAY]?" (emphasis in original), while RIA asks "Do you ever use the Internet?". As discussed in chapter two and above, the term 'Internet' is commonly misunderstood, and is often not considered to include instant messaging use. Consequently, it is possible that these national surveys may be underestimating levels of Internet usage at least with regard to the current practices of younger urban respondents.

Mobile phones dominate Web usage – in most categories

Web content for mobile phones has for long been a neglected aspect of Web design, and many sites have not been formatted for the much smaller screen. With the recent growing popularity of mobile phones and the mobile Internet in the United States (Horrigan, 2008a) and in other countries, a growing number of websites are becoming more accessible to users of the very small screens and limited bandwidth which characterizes mobile phone use.[25]

Not surprisingly maybe, companies providing media content for mobile phones are the most frequently accessed websites by mobile phone users. On a typical day, 35% of respondents visited mobile phone media content sites to download wallpaper photos, songs or ringtones, Java games, and small-sized videos files to their mobile phone – representing a majority of all students who use the Web. 93% of the surveyed student population have accessed the Internet from a mobile phone in the past. Of these, almost all (82% of all respondents) have already downloaded content from one of the abovementioned WAP mobile media sites (most of which do not charge fees for downloads), an experience shared by even more students than have ever used the instant messenger MXit. (By comparison, MXit has been tried by "only" 67% of respondents, though 47% still use it on a typical day, making it the most frequently used Internet application.)

[25] Although it is beyond the scope of this study, limited research on South African youth-targeting or governmental websites has shown that almost none have been designed to also be usable on mobile phones.

	Mobile phone		Computer	
	Ever	Yesterday	Ever	Yesterday
Download songs, videos, games or ringtones	**82**	**35**	55	20
Instant messaging *	**67**	**49**	38	13
Browse or 'Google' for no reason	**67**	**20**	61	19
School research	61	16	**72**	**21**
Movie, TV show, music, or sports fan site	**60**	**17**	55	17
Online news	**59**	**18**	54	15
Send and receive email *	**53**	**20**	47	16
Facebook or other SN site	**43**	**16**	37	11
YouTube or other video site	41	11	**42**	**15**
Health or medical information	38	9	**45**	**13**

Table 5
Internet variables for mobile phones and computers, used *ever* and *yesterday*
* IM and email are not included in the aggregate calculation of Web usage

Other Web categories that were queried in the survey include random browsing, school research, personal interest or online news; among others (see Table 5). All of the above have been used by more than half of all respondents in the past, both on a mobile phone or on a computer. Between 15 and 20% of respondents reported to access sites within each of those categories on a typical day. Mobile phone access trumps computers within all but three categories: When accessing video streaming sites like YouTube, conducting research for school, or looking for medical information, traditional computers remain with a slight edge over their small screen competitors.

This difference highlights two important themes. The reason for choosing computers to access high-bandwidth video websites is obvious: most of the handsets used by respondents do not support high-speed connections via 3G (only 25% do), which would make such streaming possible; while at the same time prepaid fees for bandwidth make this experience quite an expensive one.[26] The choice of computers to conduct research on school and health topics, however, is more difficult to explain. One rationale may be the easier conduct to quickly retrieve information on a larger screen as most such websites are not yet formatted for small mobile phone screens (as opposed to online newspapers or ringtone sites). Another explanation is the assumption that mobile phones are associated with casual use and leisure, whereas computers are promoted as 'serious' work tools by the school and the job market, thereby priming students to choose them over mobile phones on certain occasions. Individual conversations with students have shown some support for both hypotheses, indicating a variety of individual reasons. Either way, the

[26] Most pay-as-you go users pay R2 (USD 0.20) per MB; a three-minute clip on YouTube is about 7MB in size.

relatively small difference between computer and mobile phone usage between most of the Web categories suggests that students simply use whatever technology is available to them.

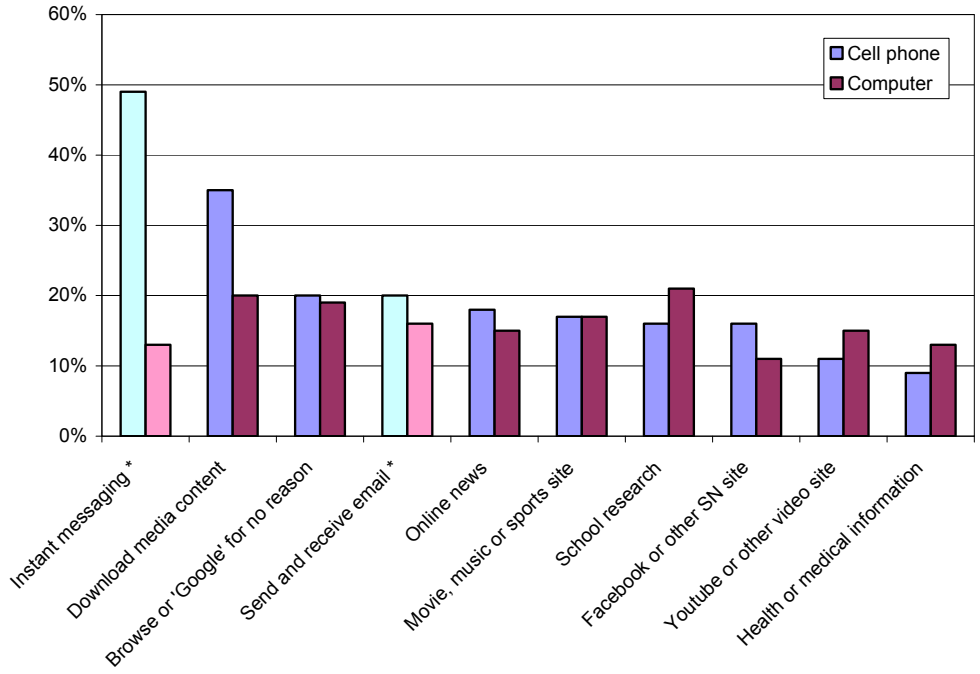


Figure 15
List of Internet variables for mobile phones and computers, used *yesterday*
* IM and email are not included in the aggregate calculation of Web usage

Google and a long tail

Respondents were asked to provide examples of their most frequently accessed websites along several categories (news, school, health, and leisure), as well as their favorite websites overall. Within each category there was separate spacing for sites accessed from a computer, and from a mobile phone. In total, respondents provided 2115 valid website addresses or identifiable titles. The most striking occurrence is Google – the search giant was mentioned in 37% of all instances, making it the most popular website in each category and regardless whether a mobile phone or computer was used. No other site enjoys anywhere near the same popularity. The next three sites, each enjoying about 6% of all responses, are waptrick.com, nabster.wen.ru (both very basic WAP-formatted sites with media content of all kinds), and Yahoo. The two WAP mobile media portals are exclusively made and designed for mobile phones, and can be regarded as more of a portal with their own content, but also providing a host of links to very similar-looking sites.[27] The abovementioned four websites make up for 57% of all websites listed, with the

[27] Several respondents named 'napster.wen.ru' or 'napstar' instead of the original site http://nabster.wen.ru/. But these sites, which obviously profit from their similar names, do exist – and offer almost the same content as the original. WAP media portals are often very

remainder being made up of a larger number of sites each mentioned less than 2%, respectively (including Facebook or Wikipedia). This indicates a "long tail" of websites among students, though Google is really the only item that dominates all lists as the "head" (cf. Anderson, 2006).

Reflecting the overall dominance of mobile Web usage, the majority of all listed websites were listed as being access from a mobile phone rather than a computer. The categories *school* and *health* are the exception again; the larger number of sites mentioned for computer access again confirms the earlier finding of computers' dominance in these areas. Because of the large diversity of sites mentioned and the very small overlap between individual listings, it is hard to perform further reliable analysis on the kind of sites used by users. Indeed, the high prominence of Google as a universal multi-purpose point of entry for most topics (including *news*) leads to believe that the 'long tail' is in fact a lot longer, as search results are used in lieu of favorite sites.

WAP media portals mentioned by respondents make up at least 15% (not all addresses have been tested, so the actual number could be slightly higher), which indicates a significant and unique form of online media access that will require additional in-depth research to further our understanding of these sources. MTN's portal MTN Loaded[28], a 'walled garden' portal offering limited news for free, as well as some media content at significant additional costs to subscribers, enjoys fifth rank of all mentioned sites – but that at just 2% of all sites listed. The importance here is hence the absence of walled garden portals among students' web usage, which depicts an obvious departure from the early years of WAP mobile phone Internet access (as personal experience in Europe suggests), when walled garden portals were or still are the dominant Web resource whereby other websites were either disabled, or charged at a higher cost.

Comparing online and traditional media usage

As is visible in Figure 16, television sets appear to be the device owned by most families according to respondents, with 87% of students reporting that they have one at home.[29] According to the survey, most other technologies – including computers, game consoles, MP3 players, or digital cameras – constitute luxury goods and are only found in a minority of households. This relative scarcity of media-related

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similar in their design (also due to technical limitations), as well as in their organization of offered content. "Sexy videos" are often among the top categories, between MP3, wallpaper, or lyrics downloads.

[28] http://mtnloaded.mtn.co.za

[29] It should be kept in mind that very close proximity to neighbors and other family members within densely populated townships makes household ownership more difficult to assess since close and distant family members can occupy several houses or shacks, thereby stretching the concept of what is found in an 'individual household'.

technologies emphasizes the importance of more sophisticated mobile phones among low-income youth (Horrigan, 2008a).

As shown in the previous chapter, students not owning their personal mobile phone still have almost as much access to mobile phones – and spend almost as much money on them – as do their owners. For all technologies assessed in this survey, the number of youths ever having used them dramatically exceeds the number of owners – which becomes most obvious in the case of desktop computers: 90% of respondents have used one in the past, but only 20% said to have one at home. The special status of computers is likely to be related to many schools' recently installed computer labs. Interviews with students and school principles showed, however, that these labs are not always accessible for a number of reasons (access is prioritized for 12 graders or teachers, teachers often have insufficient technical knowledge, and technical problems are frequent) (cf. Prinsloo & Walton, 2009). As a result, less than half of the students surveyed have used a computer on the previous day.

As described in chapter three, this study uses the assessment of usage on the previous day as a higher-level reliability measure for frequency of use, which thereby informs us of students' overall usage "on a typical day." Through this measure, we find a steep decline in frequent use from mobile phones through TV and radio. Almost all students use a mobile phone on a typical day (96%), whereas TV (81%) and radio (67%) are part of a typical day for a significantly smaller portion.

This is unsurprising, since mobile phones, like traditional computers, are not dedicated media technologies like television or radio, while a significant percentage of time spent using mobile phones is devoted to interpersonal communication, just as computers might be used for other activities, such as emailing or word processing. The extent to which students use online media (as defined in chapter one), was thus explored in more detail in more focused questions.

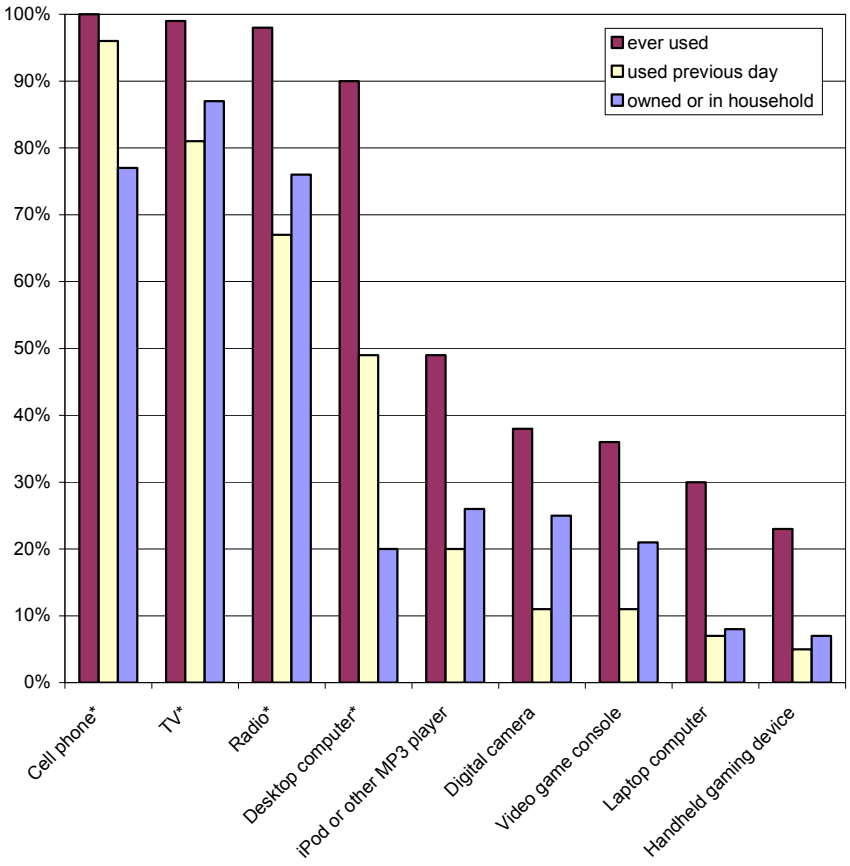

Figure 16
Combined graph of ownership and usage (ever and yesterday) of media technology
* Usage-related figures for these items are based on more reliable multiple variable aggregates

It is important to understand Web usage in the context of overall media usage, as displayed in Figure 17. Besides the abovementioned relatively high values of TV and radio consumption, just half of the students read magazines or newspapers on the previous day (50% and 49%, respectively). When counting both computer and mobile phone-based access, the share of respondents using the Web on a typical day (56%) is slightly above that of newspaper and magazines, but remains behind TV and radio consumption. The share of respondents reading newspapers is thus the same as those accessing websites through mobile phones on a typical day. Of course, the intention for using these sources, the kind of content retrieved, and the civic value attached to either of those media sources varies from case to case, given the rather specific nature of newspapers, and the broader realm of the Web. Computer-based Web access is lowest in this list with 37% accessing any website on a typical day. When including MXit and other instant messaging applications (which qualifies under the Internet, though not Web tally), we find that about the same number of students use the Internet on a typical day (68%) as listen to the radio (67%).

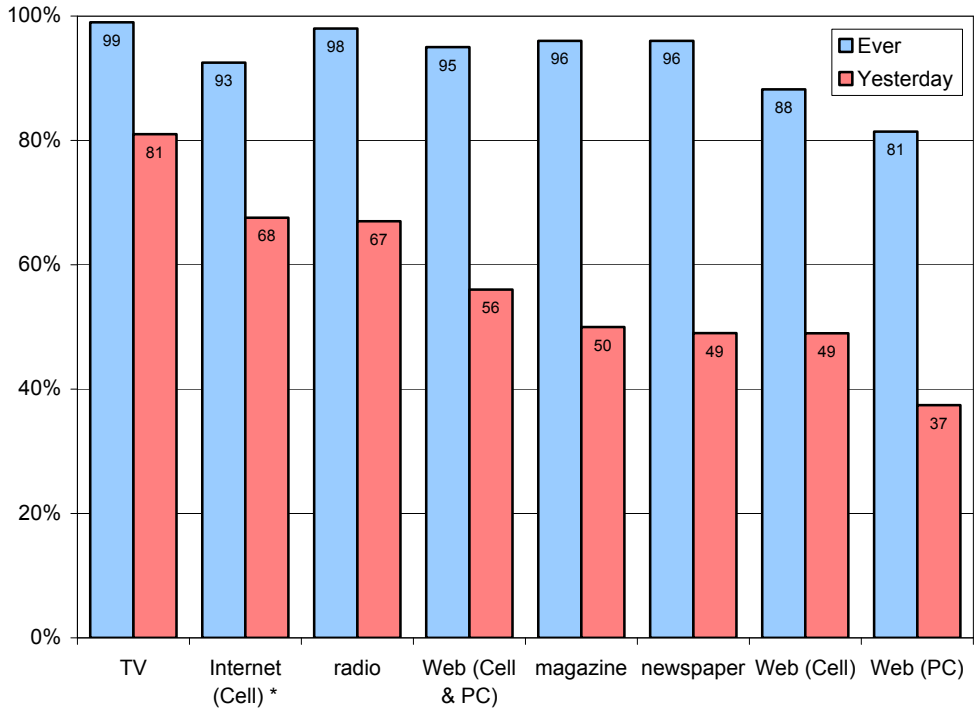

Figure 17
Comparison between different types of mass media and Web access by different sources
* this count contains non-Web usage (instant messaging, email)**, thus cannot be directly compared to other media types**

News consumption across media sources

News media consumption by South African youth has traditionally received little academic scrutiny (Ndlovu, 2008), though this absence is particularly clear with regard to online news media access. According to self-reported data, respondents blend a variety of news sources on a typical day, with TV news (watched by 80% 'about once a day' or 'several times daily') and radio news (69%) being the most prominent sources, with students accessing them several times daily. Newspaper and news magazine readership are on a comparative level, but are used more as 'once a day' sources (see Figure 18). By contrast, online news sources are consumed by a lower magnitude. 28% of respondents use their mobile phone to check the news on an almost daily basis, while only 18% do so using a computer. However, regardless of the technology used to access online news, 23% access online news sources 'several times daily', which equals the level of newspaper readership on the same frequency level (24%).

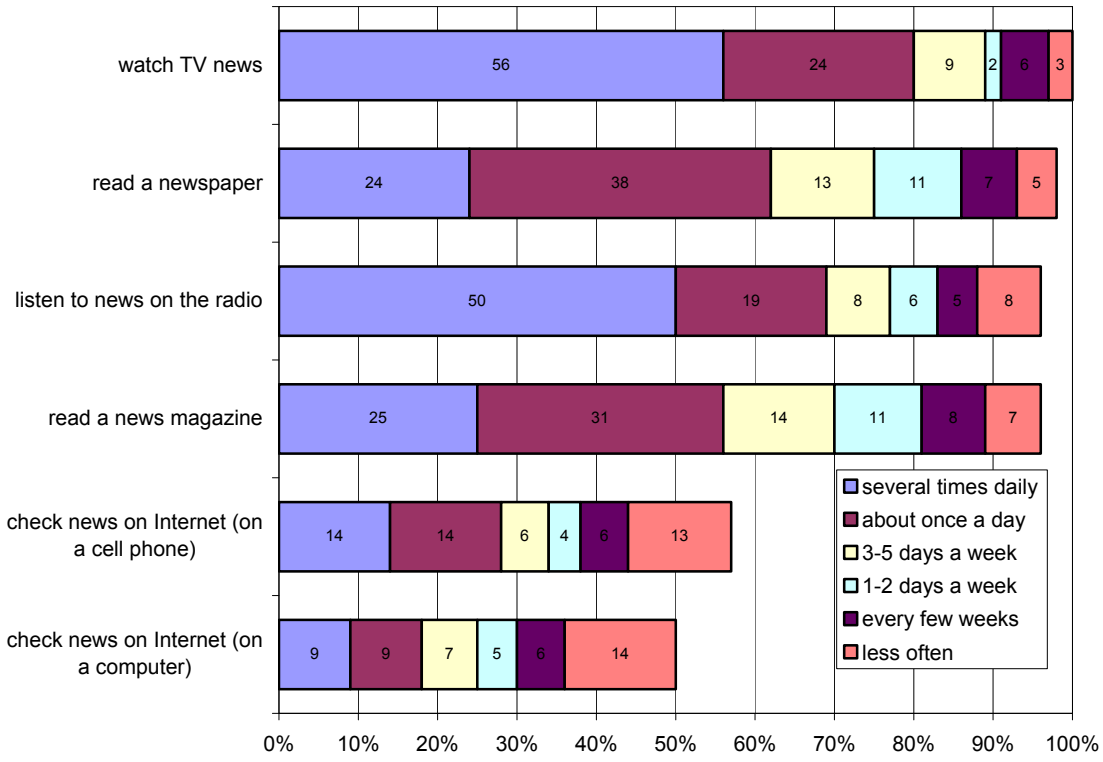

Figure 18
Comparison between different news sources by frequency
Values missing to 100%: "Never" or "Don't know"
System-missing responses were excluded

By using a Likert scale with grouping response options (rather than a continuous scale of adjacent time periods), we can group users into clearer categories of usage intensities – respondents choosing the 'several times daily' label will arguably be more ardent users than those choosing 'about once a day'. The difference in this method allows us to control earlier findings: 18% said they use a mobile phone to access the news on a typical day, thus covering the 'several times daily' categories, as well as the lower end of 'about once a day'. This confirms the validity of questions asking concretely for 'yesterday' as it features only those actually using a feature (in this case online news) on a given day, but not all of those who might call themselves 'daily' users. Furthermore, by segmenting users according to the usage intensity groups, we can differentiate and compare users as part of a group, for example for the purpose of identifying significant differences between low and high intensity groups.

Among all respondents, the mean average number of news sources that are frequented 'several times daily' is 2.29 (*SD* = 1.32), indicating the high number of news consumption for the majority of students (26% do not access any news source within this category). A comparison between different subgroups (see Table 6) shows only very small differences based on ownership or gender. No significant differences could be found between early and late adopters. However, respondents whose phone featured 3G were

found to be the highest news users, with 81% accessing at least one news source several times daily. 3G phone users also accessed a larger number of news sources, coupled with a significantly stronger usage of online news – accessed both from mobile phones and computers.

The two dominant and self-reported racial groups of 'blacks' and 'coloureds' show an important difference between the number of sources consulted: *Coloured* students showed a significantly *(t*(419) = 3.135, *p* = .002) lower mean average of news sources accessed, at 1.76 (*SD* = .89). This is derived from a comparatively higher fixation on broadcast news sources (which are equal to black students' levels), while computer-based online news and news magazines are much less used. Whether this difference signifies a lower interest in the news by this group remains to be seen in further research.

"several times daily"	Total	owners	co-users	female	male	'black'*	'coloured'*	no 3G	have 3G
Any news	**74**	**74**	**71**	**76**	**70**	**73**	**74**	**73**	**81**
Watch TV news	54	55	46	53	54	56	45	55	51
Newspaper	23	22	24	21	26	23	22	23	31
News magazine	23	25	19	25	22	26	9	22	28
Radio news	48	49	45	48	46	47	45	48	49
Online news (mobile)	13	11	16	11	13	13	9	10	23
Online news (computer)	9	8	9	7	10	10	1	7	18
# of sources									
One source	24	25	24	28	20	22	36	23	26
Two sources or more	49	49	46	48	51	51	38	50	55
Mean average of sources[†]	**2.29**	**2.29**	**2.27**	**2.18**	**2.46**	**2.39**	**1.76**	**2.26**	**2.48**
SD	1.32	1.33	1.34	1.24	1.40	1.37	0.89	1.26	1.46
N	441	326	95	246	164	320	69	215	18

Table 6
News sources used 'several times daily', by ownership, gender, and race subgroups
[†] Based on respondents using at least one source
* Race classifications based on self-identification; other racial groups too small for analysis
The shaded areas highlight the statistically significant difference between both racial groups, as described above.

However, some raw data for South Africa is provided by the annual All Media and Products Survey. AMPS found 16-to-19-year-olds to be heavy consumers of television and radio, with 72 and 88% having used either one on the previous day. Newspapers and magazine readership were significantly lower, with 41 and 45% of this age group having read at least one in either category on the previous day (AMPS, 2007). Starkly lower figures were found by Kaiser Family Foundation and South African Broadcasting Corporation (2006): Here as a daily or almost daily activity, 66% watched TV while 68% listened to the radio. Figures for newspapers and magazines were 20 and 13%, respectively.

Personal perceptions of the Internet

Thorough qualitative analysis of students' personal definition and meaning of the Internet within the survey, whose responses cumulated in about 10,000, provides us with some important insight. As has been noted before, definitions of the Internet often vary widely between students, as well as in the general public. For many respondents, the answer to this question is mostly shaped by those applications most commonly used by the respective student, frequently including the download of games, music, or videos. The most frequently named theme throughout was the improved access to information and research, which many emphasized as a resource helping them along in specific school subjects. Students portrayed it for example as a helper "when I need to do my school research work" and something "where you can research or find the information you need about something, jobs, opportunities, or even bursaries from the government". Despite the very high frequent use of the mobile instant messenger application MXit, only three respondents noted the Internet as a necessity "to mxit", which confirms the initial assumption of 'the Internet' being considered largely a Web resource, synonymous for many with websites as a supply of information and media content.

A second, more removed level of personal meaning was expressed by many students. One wrote: "Internet to me means the use of advanced technology that goes hand in hand with knowledge and a useful knowledge for us as youth. Most of all internet made our lives more meaningful.", while others wrote lofty statements like "It means seeing the world widely". Many respondents started their explanation with statements like "It means a lot to me because…", underlining the enormously positive view of the technology, even while usage of the same remains limited as the previous section has shown. Such enthusiasm can be explained by the recency of Internet usage (some noted the difference between information access before and after using the Internet), while some declared non-users said their optimism relied on other people's passion for the Web. Surprisingly few listed any negative connotations, of which only downloaded porn was named explicitly.

The overarching enthusiasm for the Internet, which remains under- or unexplored for many students, gives us a sense for where this generation's usage might be headed over the next years. As access to better mobile phones, or even computers, are likely to increase in the near future, so might these youths' tendency to integrate the Internet more fully into everyday life – and the struggle to escape poverty.

Digital and Participatory Media

Media studies cannot afford to simply look at consumption and access, thereby implying a wholly passive usage structure. Given the enormous prominence of downloading media content from the Web, the data suggests a high prevalence of such files saved on those users' mobile phones that allow for it. At the

same time, one-in-three respondents (35%) say that they use Bluetooth or infrared on a typical day to copy such media content between phones. This practice (which several respondents confusingly also referred to as 'downloading') further accelerates the distribution of popular content, be it videos, mp3 music files, ringtones, games, or pictures.

As has been described before, ownership is not the deciding factor for usage of mobile phones or these media files, as both owners and co-users said to have equally high access to phones with these capabilities. As has been shown earlier in Figure 6, the shares of all respondents using phones that can take pictures and videos, play music, and support access to the Internet, are between 72 and 78%. However, only a minority (33%) has access to phones with significant memory (either internal or on a flash card)[30], a phenomenon that , according to conversations with respondents, leads to the regular deletion of older content in order to make room for new material.

The mobile phone could be considered the new boom box low-income urban youth: fully 56% turn to their phone to listen to music on a typical day – just 11% below the share of respondents who listen to the radio, and 7% above the number of students reading a newspaper in the same period. But even 28% of those, whose own or primary phone does not support music playback use someone else's handset to listen to music – which again shows the high prevalence of multi-phone usage among respondents.

To use the same example for comparison, newspaper readership is on par with mobile phone gaming: 49% play on their handset on a typical day. Within this group of regular gamers, a strong majority (62%) retrieves new games from the Internet, while one quarter (27%) of respondents get new games directly from other phones whose users pass them on. 28%, on the other hand, say they only play those games installed on their phone. Male respondents were found to be more frequent game players: 57% played on the previous day, compared to just 40% for girls. Analysis of the most frequently played games showed an enormous variety, both along on complexity and themes (up to three open-ended responses per student were coded). Not surprisingly, Nokia's standard-bearer Snake (in different versions) is by far the most popular game, mentioned by 43%. But among the long tail of other games (almost 200 were mentioned), all but the top ten games were named by fewer than 4% of all students – a variety that points to a seemingly enormous demand for new games. Additional analysis and categorization of the games named by respondents is needed to provide better understanding of the skills required and acquired by playing these kinds of games.

[30] 44% said their phone does not have any memory for file storage. By definition, this number is not reconcilable with the media features listed above, as any recording or playback capability also requires at least some memory. Conversations with respondents indicated that not having a (large) memory card is sometimes seen as not having any memory, so this measure should be used with caution.

Pictures and videos are not only downloaded from the Web, many respondents also take or record their own and share them with their peers. 54% of respondents do at least one or the other on a typical day, though picture taking (45%) remains more widely used than video recording (31%).
Pictures, video, and music are consumed directly from the mobile phone, often also produced on a mobile, and almost always shared between mobile phones (peer-to-peer, or P2P). The mean average number of pictures taken on a typical day lies at 4.2 (*SD* = 5.57), whereas hobby filming students record on average 3.2 videos (*SD* = 7.57).

	Mobile phone		Computer	
	Ever	Yesterday	Ever	Yesterday
Play games	94	49	82	29
Play music	87	56	83	33
take pictures	86	45	-	-
Download songs, videos, games or ringtones	82	35	-	-
Play videos	81	35	72	27
record video	80	31	-	-
Direct file transfer (e.g. Bluetooth)	77	35	47	15
send MMS	74	26	-	-

Table 7
Personal media variables for mobile phones and computers, used *ever* and *yesterday*

The significant event taking place with many students is the convergence between different kinds of digital media which are consumed and produced on the same device. A video that was recorded of a classmate earlier in the day will be saved on the same limited memory space as the clip of Rihanna's latest music video that was downloaded from a WAP portal – and might be deleted in the evening when a friend offers to send a new racing game via Bluetooth. Limited space does not offer the luxury attached to modern 'smart phones' or iPhones that come with vast amount of memory and allow for wide accumulation of media content. Given the importance of music and taking pictures, this 'rivalry for memory space' is a constant deliberation factor that determines what may be kept – and what can be sacrificed for a new file. Conversations with students confirmed this trend, explaining why many pictures are often taken for the mere fun at the moment, but are ultimately deleted again.

A small group of students (20%) reported to sustain a personal profile on a social networking site, such as Facebook or MySpace. 16% of respondents access such websites on a typical day from a mobile phone; 11% do so from a computer. Profile holders represent a very distinct group, with a large range of statistically significant differences to those without such profiles: They are stronger users of both computers and mobile phones, use the Internet and the Web more frequently and more intensely, and use a larger number of news sources 'several times a day'. They send more SMS, make more phone calls,

and spend more money on airtime. 84% within this group access the Internet on a typical day. This group is particularly interesting due to their sharing of media content on the Web. Three-quarters of such profile owners have posted a picture of themselves or their friends (76% and 77%, respectively). Almost two-in-three in this group have already posted videos on their profile, while large majorities also present their full name, phone number, relationship status, and other personal information. Despite this group's strong distinction on several levels, there are no significant differences in perceived social comparison with their classmates or social deprivation among the city's student population. Hence, although the stronger usage of technology is channeled towards a higher usage of networking and communication applications, this has not lead to a perceived status symbol change, as has been found for early adopters and mobile phone owners – at least not yet.

6. Conclusion

This study set out to explore the usage of mobile online and digital media among low-income urban South African youth as a contribution to a variety of related fields, but foremost to the discipline of media studies. Media research has largely ignored the phenomenon of mobile phone based media access, and particularly so in South Africa, where increasingly widespread access to more capable phones has provided low-income urban youth with a personal and highly accessible gateway to access the Web and other services on the Internet. By using a quantitative approach, this study was able to provide detailed data on the targeted population, as well as highlight statistically significant relationships between different factors, such as mobile phone ownership which correlates with a perceived better academic performance. In particular, the detailed, thoroughly field-tested survey was of key importance as it provided a better methodological approach to answer questions about the actual *usage* of technologies, rather than *adoption*, *access* or *ownership.* By sampling youth from nine schools in Cape Town's most deprived neighborhoods (*N* = 441), this study did not intend to provide statistical representativeness of low-income urban youth in South Africa. Rather, it set out to describe the emerging phenomenon of intense usage of online and digital media on mobile phones among this volatile demographic group.

Owing to the enormous social significance of young people's mobile phone use, particularly in developing countries, there are many important implications and suggestions that can be derived from this study. By concluding some of the main points made in the previous chapters, I will highlight a number of important themes that the study's findings suggest for some possible new directions.

South African News media

The availability of other mobile phone features, such as Bluetooth or an internal camera define a handset's predefined support for a range of other applications, including certain development and health projects (Donner et al., 2008; Seo et al, 2008), or citizen journalism (e.g. Gilmore, 2004). As recent forays by news organizations have shown (e.g. CNN, Al Jazeera, The New York Times), mobile phones can be used to both provide more interactive means of telling the news from various angles, but also to enlarge the range of potential readers and viewers. Although South African newspapers occasionally encourage readers to send in pictures taken with mobile phones (often to be published only in the print edition), there are many more interactive ways for citizens to become more involved with the news stories they access through the media. The considerable popularity of downloading (free) media content, coupled with the high interest in the news by a majority of urban low-income youth, should encourage the print media to engage this important demographic group

At the same time, the findings do not confirm studies showing low interest in the news by South African youth (Claasen, 1996; Pepler, 2003), but resonate somewhat with Strelitz (2002), who found that newspaper readership was particularly popular among African working class students. Although low-income urban youth in this study were found to be ardent consumers of daily news from a variety of channels, especially public television and local radio stations, these established media institutions have so far not able to connect with the online world of urban low-income South Africans. Understanding the enormous demand students have expressed in the survey for media content (especially music and videos), may be crucial to future success in engaging this audience: Currently, not one of the major online newspapers (MG, IOL, News24) offer such free downloadable mobile phone content; only News24 offers a limited choice of songs that can be purchased for R10 (USD 1.00) per song – an extraordinary sum for most students in the country. But while the importance of free or affordable content is crucial, South African news publishers would benefit from providing a moderated portal of their own that provides downloadable materials, e.g. videos or photos accompanying news stories, that will make their sites not only informative, but also more 'infotaining'. Just as most 'normal' versions of news websites include videos and other features, it is an incorrect conclusion that the current technical and bandwidth-related limitations of mobile phones do not warrant an investment in multimedia. Further research is needed to explore news preferences among South African youth and how this might relate to their participation in online and mobile media use.

Methodological challenges

Previous quantitative studies addressing mobile phone usage or ownership in South Africa (e.g. AMPS, 2008; KFF/SABC, 2006; Esselaar et al., 2007) have largely chosen a broad access approach, categorizing users into dichotomous groups of mobile phone users and non-users. As the results of this study show, assessment of mobile phone usage, and in particular questions of mobile Internet usage, may require a more differentiated methodological approach. This is particularly true owing to the absence of a commonly shared terminology and concepts, which is a significant challenge when conducting research among urban low-income students.

By using several detailed activity-based questions rather than outright or direct ones, this study has found use of mobile phones (and computers) to appear more like a complex continuum of usage intensity. This suggests the need for better measures in quantitative research to explain levels of technology usage than the existing binary model of users and non-users. This applies in particular to Internet and Web access, which were found to differ very significantly among respondents. It is my hope that this study will contribute to the ongoing drive to improve quantitative technology and media research in order to better address the challenging research environment found in South Africa and other developing countries.

Design problems

This study's data might also provide handset manufacturers and software designers with important clues on what these potential customers themselves would like to see. Nokia's famous (and successful) strides for better understanding of how mobile phones are used and viewed in the developing world (e.g. Chipchase, 2006) appears to have left a gap between its two dominant strategies: South African urban low-income youth have little sympathy for the simple-as-can be models developed for poorer nations (e.g. Nokia 1100), while they are not able to (or not interested in) going for the much more capable product lines developed for the upper market segments (e.g. Nokia's N series). Although Nokia leads markets worldwide and even across South Africa, these students' preference for Samsung handsets may be an indication of a gap in the Nokia range that is now filled by competitors. More specifically, future devices and software targeting the developed world should move away from the idea that poorer users will be less demanding or not require technically more sophisticated features. At the same time, the high prevalence of sharing phones – often on a regular basis with established agreements – has not been taken into consideration by designers, as phones and airtime contracts (unlike all modern computer operating systems) are designed for a single user. Support for different user logins and multiple SIM cards, for example, which would facilitate sharing while separating and protecting each person's contacts, media content, and valuable airtime would be an enormous contribution to the usability of phones for this age and demographic group.

(Social) Marketing

As the use of 'please call me' message for health awareness programs illustrates, current 'mobiles for development' (M4D) approaches in South Africa generally adopt text messaging as the most accessible communication channel for their purposes (Donner et al., 2008). However, given the widespread usage of the mobile Internet among urban low-income youth, as well as their curiosity, enthusiasm, and willingness to spend their resources on Internet resources, it would seem unwise not to investigate other platforms for social marketing access to this group. As well-designed websites can provide a much richer and more interactive user experience than unidirectional 120-character messages, I believe there is an enormous potential for organizations with interest in social and health development to explore and invest in the mobile Internet in the near future. Businesses aiming for increased sales among the resource-scarce but large majority of South Africans should probably consider a similar change in marketing tactics. This, of course, includes the network providers themselves, who will remain vigilant about this very active user group (cf. Goldstuck, 2007, p. 133), which in the future might no longer be bucking the national trend, but in fact redefine it – in spite of their low economic status.

One determining factor for the success of (social) marketing organizations seems certain: Institutions that do not have a version of their website specially designed for small-screened mobile phones will simply

remain invisible to the majority of urban young people. This is true in particular with respect to organizations that do not have the budget for long-term television or radio campaigns. Effective and innovative web design with strong emphasis on the appearance on small mobile phone browsers are a certain necessity for any organization or company that counts urban youth among their target group. Here, similar implications are valid as has been discussed for media publishers: It cannot be sufficient to simply 'have a mobile website' to attract young visitors. Rather, content could include *optional* media content that will enable students to not just read about sensitive issues themselves, but rather download a crisp and well-made short video that includes the main talking points, but that can also be spread virally between peers. Such content surely cannot seek to compete with music clips of popular artists. However, by better understanding the way urban South Africans increasingly use such forms of media, organizations involved in M4D will have a richer, more interactive, and more meaningful chance of spreading their well-intentioned messages.

Digital media / participation gap

Finally, this study suggests a possible interpretation of the theory of new media literacy promoted by Jenkins (2006a) in the South African context. Jenkins' concept of a 'participation gap' emphasizes the need for young people to engage in social media via computers and broadband Internet connections. This ignores alternative forms of participation, and suggests as a global norm a very specific resource-intensive set of practices. In the South African context, we should not make the mistake of assuming that the absence of the very same technologies and applications among the country's poor majority excludes them from participatory use of online and digital media.

Rather, the line of the *digital divide* in online and digital media usage (cf. Buckingham, 2007), if it must be drawn at all, can be seen differently in South Africa, based on the findings of this study. By considering the consumption, production, and sharing of digital media on mobile phones as well as computers, a 'mobile divide' or 'mobile participation gap' can be drawn along two possible lines. One follows the overall usage of digital media, including the regular downloading and sharing of content, picture taking and video recording. The majority of low-income urban youth has been found by this study to have access to these practices, and could, by these criteria be referred to as 'mobile media literate'. Another, more exclusive definition, would concentrate on the small group of social networking profile holders, who have shared content on the Web, and are more involved in the production and consumption of digital and online media overall. This group, one-in-five of this study's overall population, constitute a mobile 'digerati' and could possibly stand as participants in a South African version of what Jenkins (2006a) refers to as 'participatory culture'. More specific research will be needed to further investigate the exact characterizations and validity of both proposed categories.

As has been emphasized throughout the study, there remain countless questions about the still largely unknown patterns of media usage through mobile phones among South African urban low-income youth. This study may even have raised more questions than it has answered. But I am hopeful that the methodological approaches proposed in this report will enable us to conduct a more fact-based discussion about the role of mobile phones in the media landscape, and that the insights of this study could spark additional research which to explore the many facets of this fascinating, fast-evolving field.

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9. Appendix

Label	Mobile phones Ever %	Mobile phones Yest %	PCs Ever %	PCs Yest %	*Difference Ever %*	*Difference Yest %*
Aggregate: all activities	100	96	90	49	*10*	*47*
Aggregate: all personal communication activities	99	87				
watch TV	99	81				
Aggregate: all local media activities	93	78	83	40	*10*	*38*
make a phone call	96	73				
Aggregate: all Internet activities	93	68	83	39	*10*	*29*
listen to the radio	98	67				
send 'please call me'	93	64				
Play music	87	56	83	33	*4*	*23*
send SMS text messages	92	54				
read a magazine	96	50				
take pictures	86	50				
read a newspaper	96	49				
Play games	94	49	82	29	*12*	*20*
Aggregate: all Web activities	88	49	81	37	*7*	*12*
Send instant messages *	67	49	38	13	*29*	*36*
give missed call	91	47				
MXIT	67	47				
Use calculator	91	37				
record video	80	37				
Use alarm function	74	37				
Download songs, videos, games or ringtones	82	35	55	20	*27*	*15*
Play videos	81	35	72	27	*9*	*8*
transfer files (Bluetooth, etc)	77	35	47	15	*30*	*20*
send MMS message	75	34				
Go online for no particular reason, to 'Google' or browse for fun	67	20	61	19	*6*	*1*
Send and receive email	53	20	47	16	*6*	*4*
Use the Internet to get news or information about current events	59	18	54	15	*5*	*3*
Go to websites about movies, TV shows, music groups, or sports stars	60	17	55	17	*5*	*0*
Research information for school on the Internet	61	16	72	21	*-11*	*-5*
go to Facebook, MySpace, Hi5 or similar websites	43	16	37	11	*6*	*5*
Watch a video on video-sharing website like YouTube	41	11	42	15	*-1*	*-4*
Look for health or medical information on the Internet	38	9	45	13	*-7*	*-4*

***for mobile phones the measure is deducted from an aggregate of all four instant messenger applications**

Table 8
Overview of most usage-related variables, for mobile phones and computer access

UNIVERSITY OF CAPE TOWN
IYUNIVESITHI YASEKAPA • UNIVERSITEIT VAN KAAPSTAD

Generation Mobile: Online and Digital Media Usage on Mobile Phones among Low-Income Urban Youth in South Africa

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Final Survey Topline

Sample: *N* = 441 grade 11 students from most deprived neighborhoods in Cape Town, South Africa
Data capturing dates: October 6 – November 3, 2008
All numbers are percentages. The percentages less than .5 % are replaced by an asterisk (*).
Columns/rows may not total 100% due to rounding.

Complete results, survey topline, questionnaire and dataset are available on tinokreutzer.org/mobile

Cape Town, February 2009

1. Please tell us about some technological devices –
Which of the following have you ever used before, which did you use yesterday, and which ones do you have at home?

Multiple choice – you can tick several items for each question.

	Which one have you **EVER** used? ❶	Which ones did you use **YESTERDAY**? ❷	Which ones do you have **AT HOME**? ❸
Normal / 'Desktop' computer *	47 (90)	(49)	20
Laptop computer	30	7	8
Cell phone *	(100)	(96)	72
iPod or other MP3 player	49	20	26
TV *	(99)	(81)	87
Radio *	(98)	(67)	76
Digital camera	38	11	25
Video game console (e.g. PlayStation, Xbox, Wii, …)	36	11	21
Handheld gaming device (e.g. DS, PSP, …)	23	5	7

[N=441]

* usage data is parentheses is more reliable, multi-variable aggregate data

	yes	no	Don't know
2. Have you ever used the **Internet**? [N=424]	69	29	1
↳ Did you use the Internet **yesterday**? [N=405]	17	83	

3. *When* you use the **Internet**, how often do you do so…

	several times daily	about once a day	3-5 days a week	1-2 days a week	every few weeks	less often	never	Don't know
on a computer at school [N=353]	9	15	8	16	5	17	28	2
on a computer at home [N=291]	8	12	6	3	5	5	57	4
on a cell phone [N=359]	36	15	7	6	8	8	20	1
at a computer in the library [N=326]	6	12	4	8	8	12	46	3
at an internet café [N=300]	3	4	3	3	4	6	74	4
at a computer in someone else's house [N=299]	7	11	5	7	7	13	42	6

Where else do you use the Internet?
(qualitative question to test for additional responses, not coded)

4. Do you own or use a cell phone?

I own a cell phone with SIM card	77	[N=422]
I own a SIM card, but not a phone	4	
I use a cell phone, but don't have my own phone or SIM	18	
I never use a cell phone	1	
Other	0	

⇨ **For all of the following questions, please talk about your <u>OWN cell phone</u>, or the one you <u>USE most often</u> (even if you don't own a personal phone).**

5. What is the <u>brand and model name</u>/number of your phone?
(e.g. "Nokia 1166", "Samsung B910" …)

Manufacturer/brand	
Samsung	42
Nokia	31
Motorola	19
LG	4
Sony Ericsson	3
Sagem	1
Sharp	*
	[N=380]

Models (top 10 only)	
Samsung E250	20
Motorola V360	9
Nokia 1100	4
Samsung E370	4
Samsung J750	3
Motorola V3 Razr	2
Nokia 3310	2
Nokia 1600	2
Nokia N70	2
Samsung D900i	2
	[N=366]

How much memory for storing pictures, music and other files do you have? (in Mega Bytes [MB])

Median: 506 MB [N=132]

> 0 MB (have some memory)	33	
0 MB (no memory)	44	
Don't know	23	[N=401]

6. With your cell phone, is it **possible** to…?

	yes	no	Don't know
take pictures [N=424]	77	22	*
play music or MP3 files [N=421]	72	28	1
send and receive text messages or SMS [N=427]	96	3	*
send and receive MMS [N=418]	80	19	2
access the Internet [N=407]	63	30	7
receive or 'download' files (music or video) from other phones (through Bluetooth or Infrared) [N=415]	73	27	1
send and receive email [N=402]	53	35	12
record videos [N=417]	73	26	*
play videos [N=417]	74	25	1
play games [N=422]	93	6	*
use MXit [N=414]	65	32	3
receive radio programmes [N=402]	50	45	5
use fast internet (3G or HSDPA) [N=387]	25	56	19

What else:
(qualitative question to test for additional responses, not coded)

7. If you had to buy a new phone today, **how important** are the following factors to you? Is it important that your NEXT phone…	**very important**	**somewhat important**	**< >**	**not very important**	**not at all important**	Don't know	Mean
can take pictures [N=431]	71	16	2	11	1	*	1.46
plays music or MP3 files [N=431]	75	11	1	11	2	*	1.47
can send and receive text messages or SMS [N=429]	91	5	*	2	1	1	1.85
can send and receive MMS [N=429]	80	10	1	5	3	1	1.61
can access the Internet [N=428]	80	11	*	4	3	2	1.65
can receive or 'download' files (music or video) from other phones (through Bluetooth or Infrared) [N=426]	72	13	1	10	3	1	1.42
can send and receive email [N=425]	67	16	2	8	4	2	1.37
can record videos [N=426]	61	18	2	14	4	*	1.18
can play videos [N=428]	64	15	2	16	3	*	1.22
can play games [N=428]	51	18	2	22	7	*	0.84
can use MXit [N=429]	45	18	3	18	13	3	0.67
can receive radio programmes [N=426]	59	21	2	12	4	1	1.19
can also use fast internet (3G or HSDPA) [N=421]	66	16	3	5	4	5	1.43
impresses with its great looks [N=419]	50	19	2	18	8	3	0.89
has a big screen [N=423]	43	20	3	23	10	1	0.64
is the latest model or newest technology [N=421]	62	14	2	13	6	4	1.19
has a low price [N=425]	43	19	5	18	10	5	0.70
has a small size or light weight [N=426]	43	19	4	19	10	5	0.71

Responses were measured on a Likert scale from 1 (very important) to 5 (not at all important).

What else is important?:
(qualitative question to test for additional responses, not coded)

	very happy	happy	neither happy nor unhappy	unhappy	very unhappy	Don't know
8. How happy or satisfied are you with your current cell phone? [N=437]	3	35	34	16	8	4

	Vodacom	Cell C	MTN	Virgin Mobile
9. Which **mobile provider** do you use normally? *If you use more than one phone or SIM card you can tick several.* [N=343; based on cell phone and SIM card owners. Total exceeds 100% due to multiple responses.]	22	15	78	1

	Need to buy **airtime**	Pay monthly through a **contract**	Don't know
10. Do you need to buy airtime in advance or do you pay monthly through a contract? [N=339; based on cell phone and SIM card owners]	95	4	1

11. **Who pays** for your cell phone airtime or contract? [N=441]

My parents or legal guardians	48
My family members other than my parents	17
Myself	58
Boyfriend or Girlfriend	17
I don't spend any money on airtime	4
Friends	6
Other	5

12. **How much** airtime, in Rand, did you use **last week**?

If you don't know the exact amount, please guess or give a rough estimate.

Median: R 20.00
5% Trimmed mean: R 23.82
Based on prepaid users only [N=394]

13. **How much money did you spend** on OTHER things for yourself **last week,** EXCLUDING airtime for cell phones? (money spent on food, clothing, going out, …)

If you don't know the exact amount, please guess or give a rough estimate.

Median: R 145.00
5% Trimmed mean: R 196.41
Based on prepaid users only [N=391]

Individual spending on airtime as part of total budget:

Median: 14.29%
Mean: 19.20%
5% Trimmed mean: 17.13%
Based on prepaid users only [N=382]; calculated from individual responses.

	Six months or less	One year	Two or three years	More than three years	Don't know
14. How long ago was the **first time** you used a **cell phone**? [N=437]	14	16	22	34	14
15. How long have you had your **current cell phone**? (based on cell phone owners [N=307])	32	33	21	10	5

16. What are the three activities you do **most often** on a CELL PHONE?
[open-ended responses, up to three responses were coded]

	Combined [N=418]	Most often I … [N=416]	Second [N=410]	Third [N=398]
Calls	54	27	16	17
Music	52	17	22	17
SMS / text messages	44	11	21	14
Games	43	15	13	17
Chat / MXit	38	20	10	9
Internet	15	4	5	7
Pictures / photos	14	1	5	9
Videos	6	1	1	4
'Please call me'	6	1	4	1
Radio	4	1	1	2
Alarm	2	*	*	1
MMS	1	*	*	*
Check time	1	0	*	1
Check weather	1	0	*	*
Give missed calls	0	*	*	*
Store information	0	0	0	1
Send/receive email	0	0	*	0
Check or buy airtime	0	*	0	0
Use calculator	0	*	0	0
Other	3	1	1	1

17. What are the three activities you do **most often** on a COMPUTER?
[open-ended responses, up to three responses were coded]

	Combined [N=360]	Most often I … [N=355]	Second [N=347]	Third [N=323]
Games	63	22	22	23
Music	50	17	20	17
Internet	49	25	16	14
School	32	12	11	12
Information	19	9	5	7
Typing	19	5	9	7
Movies/videos	12	2	5	6
Emails	11	4	3	5
Pictures	4	0	2	2
Drawing	3	1	1	1
Burn CDs	3	1	1	1
Cell phone-related tasks	3	1	1	1
Printing	2	1	1	0
Instant Messaging	2	1	1	1
File storage (save or sort files)	2	*	*	4
Learning PC skills	1	*	1	*
Other	4	1	1	2

18. **How much**, if at all, has your cell phone helped you to do any of the following things?	**a lot**	**some**	**only a little**	**not at all**	I don't know	Mean
Keep in touch with my family [Z=438]	84	11	3	1	1	1.21
Keep in touch with friends [Z=433]	62	29	6	3	0	1.50
Do well in school [Z=425]	14	29	20	35	2	2.78
Learn new things [Z=432]	56	29	11	3	0	1.61
Share your ideas and creations with others [Z=434]	49	32	13	6	0	1.77
Find important information [Z=434]	56	26	11	6	1	1.67
Work with others in your community or in groups you belong to [Z=426]	24	31	21	22	2	2.42
Follow your hobbies or interests [Z=425]	41	26	16	14	3	2.03

What else is important?:
(qualitative question to test for additional responses, not coded)

	yes	no	Don't know
19. Do you **ever** "buzz" or give a missed call to other people? [N=435]	91	9	*
↳ Did you do this **yesterday**? [N=428]	47	52	
20. Do you **ever** send "Please call me" messages? [N=435]	93	7	*
↳ Did you do this **yesterday**? [N=421]	64	36	

21. Have you **EVER** used a cell phone to …
↳ If yes, did you do this **YESTERDAY**?
↳ If yes, **HOW MANY**?

	have EVER done this	did YESTERDAY		*if you did it yesterday,* HOW MANY yesterday? *(MEAN)*	have NEVER done this
make a phone call [N=434]	96	73	⇨	3.12 (*SD* = 3.22)	4
take pictures [N=412]	86	50	⇨	4.18 (*SD* = 5.57)	14
send SMS text messages [N=411]	92	54	⇨	2.48 (*SD* = 3.29)	8
record video [N=398]	80	37	⇨	3.15 (*SD* = 7.57)	20
send MMS messages [N=397]	75	34	⇨	3.06 (*SD* = 6.41)	25

The first value depicts the exact responses.

22. Which of the following programmes have you **EVER** used?
↳ Which did you use **YESTERDAY**?
↳ **HOW MUCH TIME** did you spend on them yesterday?

	have EVER done this	did YESTERDAY		*if you used it yesterday,* HOW MUCH TIME yesterday? *(mean /median in minutes)*	have NEVER done this
MXit [N=413]	67	47	⇨	100.20 / 60 (*SD* = 152.56)	33
méèp [N=335]	22	5	⇨	12.50 /4 (*SD* = 18.73)	78
noknok [N=347]	28	9	⇨	20.95 /5 (*SD* = 29.99)	72
2go [N=332]	23	5	⇨	9.23 /3 (*SD* = 16.00)	77

The first value depicts the exact responses.

23. What are the three games you play **most often** on a cell phone?

[open-ended responses, up to three responses were coded]

	Mentioned (3 variables combined) [N=397]
Snake (all versions)	43
Soccer / football (no specific mention of game)	25
MXit	19
Pacman	14
Space impact	10
Car racing	9
Sudoku	6
FIFA (all versions)	6
Puzzle	5
Bubble Bobble	4
Pin Ball	4
Streetfight	4
Bounce	4
Tetris	3
Real Football	3
Need for Speed	3
Card games	3
Golf	2
Spiderman	2
Snowball	2
Cricket	2
Forgotten Warrior	2
Asphalt (all versions)	2
Other	66

24. **How** or **Where** do you usually get games for your cell phone?

I download from the Internet	52
I get games from other cell phones	25
I ONLY play the games installed on my phone	31
I don't play any games	3

Percentages exceed 100% due to multiple responses. [N=413]

Other:
(qualitative question to test for additional responses, not coded)

25. How would you describe the Internet? What does it mean to you?

(qualitative question, not coded)

26. We're interested in what you do when you use a **CELL PHONE**. Please tell us whether you **EVER** do these activities, and whether you've done them yesterday. Please also tell us if you **NEVER** do these things.

	have EVER done this before	did YESTERDAY	have NEVER done this
Play games [N=426]	94	49	6
Play videos [N=418]	81	35	19
Play music [N=425]	87	56	13
transfer or 'download' files (music or video) to your phone (using Bluetooth or Infrared) [N=420]	77	35	23
Use the Internet to get news or information about current events [N=408]	59	18	41
Research information for school on the Internet [N=418]	61	16	39
Look for health or medical information on the Internet [N=411]	38	9	62
go to Facebook, MySpace, Hi5 or similar websites [N=409]	43	16	57
Go to websites about movies, TV shows, music groups, or sports stars [N=411]	60	17	40
Go online for no particular reason, to 'Google' or browse for fun [N=411]	67	20	33
Watch a video on video-sharing website like YouTube [N=401]	41	11	59
Use alarm function [N=414]	74	37	26
Use calculator [N=423]	91	37	9
Download songs, videos, games or ringtones [N=417]	82	35	18
Send and receive email [N=412]	53	20	47

27. Some people also use computers to do some of these things. Have you **EVER** used a **COMPUTER** to do any of the following things, and did you do this **YESTERDAY**? Please also tell us if you **NEVER** do these things.	have EVER done this	did YESTERDAY	have NEVER done this
Play games [N=426]	82	29	18
Play videos [N=419]	72	27	28
Play music [N=423]	83	33	17
transfer files (music or video) to or from other computers [N=403]	47	15	53
Go online to get news or information about current events [N=405]	54	15	46
Research information for school on the Internet [N=414]	72	21	28
Look for health or medical information on the Internet [N=409]	45	13	55
go to Facebook, MySpace, Hi5 or similar websites [N=400]	37	11	63
Go to websites about movies, TV shows, music groups, or sports stars you are interested in [N=408]	55	17	45
Go online for no particular reason, to 'Google' or browse for fun [N=409]	61	19	39
Watch a video on video-sharing website like YouTube [N=402]	42	15	58
Send instant messages (e.g. with Windows Live, ICQ, Google Talk, or Skype) [N=408]	38	13	62
Download songs, videos, games or ringtones [N=405]	55	20	45
Send and receive email [N=406]	47	16	53

	yes	no	Don't know
28. Do you have a PROFILE on Facebook, MySpace, or a similar website? [N=416]	20	66	13

↳ WHICH is the profile you update most often?

(Qualitative question, not coded due to insufficient responses.) Most frequently mentioned: Facebook

29. We'd like to know if the following kinds of information are **posted to your profile**, or not.

Based on those who own a profile [N=84].

	yes	no	doesn't apply to me
A photo of yourself [N=79]	76	23	1
Photos of your friends [N=75]	77	19	4
Videos [N=75]	60	33	7
Your name [N=80]	95	5	0
Your school name [N=77]	61	38	1
Your cell phone number [N=78]	78	22	0
Your relationship status [N=78]	58	37	5
Your email address [N=76]	66	29	5
The city or town where you live [N=77]	75	17	8
Audio or MP3 files [N=78]	58	35	8

About HOW MANY friends do you have, or how many people have you 'friended' with your profile?
Based on those who own a profile [N=84].

Median: 9
Mean: 39.31

30. Which of the following things have you ever done, and which have you done yesterday?

	have done this before	did YESTERDAY	have NEVER done this
watch TV [N=423]	99	81	1
read a newspaper [N=417]	96	49	4
read a magazine [N=417]	96	50	4
listen to the radio [N=421]	98	67	2

31. What is the NAME of your FAVOURITE…

	…TV channel [N=394]
SABC 1	63
eTV	22
SABC 2	7
SABC 3	5
CTV	1
MTV	1
Disney Channel	1
Learning Channel	*
M-Net	*

	…newspaper [N=377]
Vukani	19
Daily Voice	17
Daily Sun	15
Cape Argus	14
City Vision	14
Sunday Times	5
Sunday Sun	5
Soccer Laduma	3
City Press	2
Son	1
Free for All	1
Die Burger	1
Bontebeuwel News	1
Cape Times	*
Mail & Guardian	*
Sowetan	*
Athlone News	*
Tygerburg	*
Cape Ads	*
Ishibobo	*
Izindaba	*
People's Post	*
Sport	*

	…TV programme (>1%) [N=270]
Generations	43
7 De Laan	10
Rhythm City	4
America's Next Top Model	3
Days of our lives	1
Isidingo	1
MTN SoccerZone	1
Mzansi fo sho	1
Laduma	1
Oprah	1
Real Goboza	1
Scandal	1
Take 5	1
WWE	1
Zola 7	1

	…magazine (>1%) [N=379]
You	20
Bona	12
Move	12
Drum	9
TV Plus	9
Heat	5
Kick Off	5
Club	4
Drama	4
People	4
Teen Zone	2
Teen Magazine	1
Car	1
Huis Genooit	1

	… radio channel (>1%) [N=407]
Umhlobo Wenene FM	28
KFM	23
Metro FM	16
Radio Zibonele	6
Good Hope FM	5
Heart 104.9	5
Bush Radio	4
5FM	3
UCT Radio	2

32. We want to know how and where you get news.
HOW OFTEN do you do the following things to get NEWS or information about current events?
(for example about sports, politics, celebrities, the weather, etc)

	several times daily	about once a day	3-5 days a week	1-2 days a week	every few weeks	less often	never	Don't know
watch TV news [N=427]	56	24	9	2	6	3	0	0
read a newspaper [N=420]	24	38	13	11	7	5	1	1
read a news magazine [N=418]	25	31	14	11	8	7	3	1
listen to news on the radio [N=420]	50	19	8	6	5	8	2	2
check news on Internet (on a cell phone) [N=410]	14	14	6	4	6	13	39	4
check news on Internet (on a computer) [N=404]	9	9	7	5	6	14	44	6

Where else do you get information about current events?:

(qualitative question to test for additional responses, not coded)

Questions 33-38 assess websites used and are for qualitative analysis only.

39. What is the language you use most often at home? If two languages are used equally, list both.

Language	first mentioned	second mentioned
isiXhosa	74	5
English	17	36
Afrikaans	6	11
SeSotho	3	2
isiZulu	0	1
Setswana	0	*
siSwati	0	*
Tshivenda	0	*

[N=395]

Questions 40 assesses where respondents were born (not coded)

Questions 41 and 43 assess social deprivation and are used to compare subgroup performance.

43. Are you female or male?	female	male
	60	40

45. (In which year were you born?) Age MEAN [N=360]	17.8

44. After your matric, what do you plan to do next?

Go to university, technikon or other further education	82
Start working immediately	12
Other (qualitative question to test for additional responses, not coded)	1
Don't know	5

46. Do you think of yourself as… [N=412]

Black	78
White	1
Coloured	17
Asian	*
Indian	0
Other (qualitative question to test for additional responses, not coded)	4

47. How do you usually get to school?

Walking	75
School bus	3
My parents bring me by car	3
Public transport or taxi	14
Other (qualitative question to test for additional responses, not coded)	75

48. How long do you walk / drive to school?

Mean: 24.24 minutes