Assessing cell phone usage in a South African township school

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ABSTRACT

This paper reports on a pilot study, which surveyed two grade 11 classes (*N* = 66) at a secondary school located in a very low-income area in Cape Town, South Africa. Detailed activity-based questions indicate that virtually all respondents (97%) were found to have used a cell phone on the previous day for at least one of the measured activities. This study suggests the possibility that the majority of urban South Africans in this age group can and do access the Internet via their phones since 83% of the respondents were found to so on a typical day. This finding has significant implications for mobile media and Internet applications, as well as for future research on technology usage in similar settings. Despite the limitations of the sample size for this pilot study, the results nonetheless provide an illuminating snapshot of school-going youth at a bleak urban township school bordering an informal settlement.

Keywords: mobile, cell phone, media, Internet, Web, South Africa, youth, media studies, communication, development, technology

INTRODUCTION

When they were first introduced to the market in the late 1980s, cell phones were touted as luxury technology items of the rich, and as indispensable gadgets of the metropolitan and trendy who needed instant communication on the move. However since network operators and phone manufacturers started targeting the large demand for affordable communication by the world's phoneless majority, cell phones have become a social phenomenon the world over. Especially in Africa, home to the majority of so-called Least Developed Countries, the widespread access to this communication device has sparked keen debate about the impact and possibilities for social and economic development.

Across Africa, there is currently one active phone per every three inhabitants (GSMA, 2008). In South Africa, a country often regarded in many ways as a pioneer for the rest of the continent, there are as many active subscriptions as inhabitants (Wireless Intelligence, 2008)[1]. While this industry data includes multiple phones used by the same person (cf. Sutherland, 2008), the actual level of access to cell phones is quite uncertain: reports for South Africa range in between 56% and 72% in 2007, depending on the source[2].

Whether cell phones can be regarded as panacea for Sub-Saharan Africa's development needs (cf. Waverman et al., 2005) remains debatable. Early attempts to draw on existing mobile technology to improve education results in South African schools have been documented by Butgereit (2007) and Oelofse et al. (2006), showing how widespread use of cell phones was capitalized by these projects. Unfortunately detailed and reliable information on South African cell phone usage remains absent. The purpose of this paper is thus to make a first step towards the goal of obtaining such data.

This paper reports on the findings from a pilot study conducted in May 2008 among grade 11 students from an urban township school in Cape Town. An improved follow-up study was conducted in the following months (*N* = 441) to obtain a greater sample for different demographs among youth (Kreutzer, 2009) and to provide a more reliable level of detail of specific types of uses. The present study sets out to answer the following questions:

1) **What are the current cell phone usage and ownership patterns among youth at a South African township school?**
2) **How prevalent is mobile Internet usage *vis-à-vis* traditional computer usage?**
3) **Can we find significant differences along gender and socioeconomic divisions?**

UNDERSTANDING PAST APPROACHES TO ASSESS CELL PHONE USAGE

Industry data is often analyzed and used to show large scale trends, such as the number of subscribers, SMS sent, or similar information. Prominent applications can be found in Castells et al. (2006) on a global networked society, enabled by cell phones, or Mendes et al. (2007) who analyzed numerous reports to explain the boom of mobile communication in the Philippines and its implications for Africa. In the U.S., itself a highly diverse country, academics were able to extract representative survey data on Internet and cell phone usage, collected by Pew Internet Project between 2006 and 2008. With regard to handheld devices, the surveys were able to demonstrate the growing importance of non-voice applications and establish that Americans now view cell phones as the hardest device to give up (Horrigan, 2008a, 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 cell phone than white Americans – thus hinting to the development of an actual skill advantage over time in this arena. (Jenkins and Buckingham focused predominantly on computer usage, so these findings are not necessarily contradictory.)

Aside from the landmark example posed by the Pew Internet Project in this field over recent years, similar representative studies have been rare in other nations, and practically absent in the African case. A large-scale study conducted by Zainudeen et al. (2006) on telecommunication usage in India and Sri Lanka serves as one of the most thorough examples on large survey studies in developing countries. But in lieu of such research projects in Africa, smaller exploratory surveys have been conducted instead.

In a study with a focus on poverty reduction, Ivatury and Pickens (2006) conducted 515 survey interviews of low-income South Africans around the cell phone banking service WIZZIT to access the usage or potential for cell phone banking in the country. By using sophisticated methodology and acknowledging its limitations, the study shows the potential of good survey design to find answers to complex questions, even for a very diverse and inaccessible population. Dourando et al. (2007) have used survey interviews to assess the possible use of mobile technologies at the Cape Peninsula University of Technology in Cape Town. However, their methodology fails to acknowledge the existing socio-economic diversity as it did not seek to identify possible differences in technology usage among students from different ethnic and societal groups. A similar flaw can be found in Francke and Weidemann (2007) who analyzed the use of mobile instant messaging by using questionnaire data gathered at a South African high school.

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 may have on poverty in the Eastern Cape Province in South Africa. This method was also utilized by Butgereit (2007) to analyze instant messages sent over cell phones during a pilot tutoring project in a South African school. In a more in-depth approach,

Bosch (2008, forthcoming) used personal interviews with South African teenage girls to explore the self-perceived impact of mobile instant messaging and general cell phone usage within this specific group.

METHODOLOGY

The intention of this current study was to pilot a test questionnaire and provide detailed analysis of the findings. After refining the survey design based on the results, a broader study with a more diverse sample will be conducted, with the goal of providing data that could be generalized for certain parts of the South African youth.

Material and procedure

A paper-and-pencil self-assessment questionnaire was distributed on April 30, 2008 to all students in two grade 11 classes (*N* = 66) at a high school located in Samora Machel, a black urban township east of Cape Town. The questionnaire consisted of 31 question sets on nine pages in English, and includes predominantly closed-ended or rating scale questions (Likert scales), as well as multiple-choice items. Some open-ended questions offer the respondents the chance to provide answers in more detail. The decoded survey data consists of 203 variables, many of which were recoded into additional aggregate indexes.

The questionnaire booklet was handed out by the researcher in the presence of the teacher to all students of each class, thereby eliminating problems of sampling bias. The students were briefed that their answers are treated anonymously; the questionnaires were personally collected by the researcher. This procedure was chosen as it enhances the response and retention rate and thereby minimizes self-selection sampling-bias.

Self-assessment paper-and-pencil surveys were chosen both for economical and ethical reasons. Personal face to face interviews have the obvious advantage of being able to use conditional questions (or skip logic) while the potential for such a questionnaire design is rather limited for a paper-based survey (cf. Deacon et al, 2007). However due to limited resources and a limited time frame for this research, interviews were ruled out as unfeasible.

Hence, it was decided to distribute the questionnaires during regular lessons as a classroom activity, thereby receiving consent from the responsible teacher, as well as by the Western Cape Education Department. Teachers were offered a moderated debriefing for their students about the risks and potentials of cell phone usage after the approximately 30 minutes needed for completion of the survey. The debriefing may have also encouraged educators to consent to this research.

Participants

Classrooms were taken as clustered convenience - or availability-samples, without implying any representativeness. However, the sample was chosen as an extreme-group sample, allowing for the questionnaire to be vetted by respondents with slightly lower levels in English literacy. Instead of questions determining the exact economic status of respondents, questions of relative deprivation were asked. Relative deprivation is a powerful tool to show how respondents view themselves relative to their peers, and whether they believe they and their family are deprived of some standards they believe they deserve. A practical application of this measure is shown in the later section on correlating these relative deprivation scores with cell phone ownership.

Another subtle measure was to ask respondents about how they traveled to school. 95% of respondents walked to school, while the remainder used public transport, or were given a lift their parents. However only one person in each class enjoyed the luxury of a lift.

Aside from these relative measures on socio-economic standing, distinctions of race or home language have long been used in South Africa. But 14 years after the end of Apartheid, the measures need to be revisited as formerly institutionalized discrimination softens boundaries between racial groups. In preparation for the upcoming larger study, these factors were included. 90.6% of respondents identified themselves as 'black', while the remaining survey participants took issue with the pre-categorized question. Given the emotional issue of such questions for some participants, languages spoken in the household might become an alternative, possibly even more powerful distinction tool, as it allows for differentiation among the country's 80% black population. In this pilot study however, questions of language and race were of little importance given the very homogenous background of the school and its surrounding neighborhood. Xhosa was mentioned as one of the languages spoken at home by 98% of respondents, followed by English (mostly mentioned second) by 47% of respondents.

56% of respondents were females, an exact match of the school's overall gender ratio. The mean age was 17.9 years, while extreme cases reached from 15 to 22 years. 12% of respondents were aged 20 to 22. The advanced age of some respondents and the high average age confirm the findings by Lam et al. (2008) who could show educational divides along racial lines, particularly greater grade repetition rates and higher school entrance ages among black students.

Measures

Questions asking subjects about their use of certain technologies (or specific applications therein) were deliberately modeled after the Pew Internet Project surveys (Pew, 2006; Horrigan, 2008a). 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: subjects are asked whether they have *ever* used a technology or application, and whether they have done so *yesterday*. The findings thus show a reliable figure for absolute usage by which we can single out people who have never used a certain feature before. The second number however will give us an idea *for a typical day* by asking about the most recent usage on the previous day. The recall problem is thus diminished greatly: Since respondents do not estimate their average usage or approximate use frequency, we were able to get numbers allowing us to state what share of respondents is using which technology or application on an normal day. Given the limited sample of this pilot study, computer usage might have been influenced by a certain research project or a certain event. A larger study would thus have to ensure that samples are taken over a certain period, with equality of selection for all dates and weekdays in this period.

In the absence of commonly accepted terminology, alternative question design has been chosen. "Online", "the Web", "Internet" and similar terms have varying equivalents in respective cultures, or even on a personal level (Horst and Miller, 2006). Questions using these terms have thus been excluded from the survey as their validity would be extremely limited.
Instead, aggregates from the above variables have been calculated for 'personal communication' (four variables), 'entertainment' (5), instant messenger use (4) Internet usage (15) and Web usage (9).

Although English is language of instruction in most subjects, most students do not use English as their first or home language, thereby potentially having a lower literacy level in English than students whose mother tongue is English. The questionnaire has thus been written in simple and plain English, hence using limited vocabulary and straightforward grammar, respectively (e.g. Ogden, 1937). Preliminary testing of the questionnaire among 18-year-old volunteers from

Nazeema Isaacs library in Khayelitsha (conducted April 19, 2008) have helped to identify problems of understanding of certain questions.

RESEARCH RESULTS AND DISCUSSION

Assessing Ownership and Usage Levels

It is difficult to assess ownership of cell phones among low income youth since there are varying concepts of what 'to own a cell phone' means to different individuals. To increase the reliability of this measure, two separate sets of questions were included. One offered a list of technological gadgets in which respondents could tick those they owned, while another asked explicitly whether respondents used, or actually owned a cell phone. The first measure was set at 85%, while the second, more differentiated, found that 75% of respondents said they personally own a handset with SIM card, while the remainder said they used a phone, but didn't own one. Both variables' correlation was found to be significant on the 0.01 level, as measured through a Pearson Correlation and an independent samples T-Test. We can thus assume that for the greater number of detail available, the second measure can be trusted, setting the ownership/co-user ratio at 3-to-1. But while not all respondents could call a phone their own, there were no statistically significant differences between the features generally available to phone owners and those using someone else's phone (cf. Table 1).

Respondents appeared to be very confident for most answers regarding their phone's capabilities. The reliability of responses can be measured by correlating individual features requiring memory for storage (pictures, playing/recording video, music) with the stated availability of memory: all four variables showed a significant correlation on the 0.05 level with the availability of phone memory. We can hence conclude that respondents' statements about these features are reliable.

Table 1: Phone capabilities

With your cell phone, is it possible to...	All respondents		Cell owners (A)		Non-owners (B)		Difference
	N	% yes	N	% yes	N	% yes	**B-A**
send and receive text messages	57	89.10%	44	89.80%	11	84.60%	-5.20%
play games	52	86.70%	40	85.10%	11	100.00%	**14.90%**
take pictures	41	67.20%	33	68.80%	6	54.50%	**-14.30%**
play music or MP3 files	41	66.10%	32	65.30%	8	72.70%	7.40%
play videos	36	60.00%	28	59.60%	7	63.60%	4.00%
record videos	37	59.70%	29	59.20%	7	63.60%	4.40%
access the internet or websites	31	50.80%	25	52.10%	6	54.50%	2.40%
send and receive email	28	45.90%	20	41.70%	7	63.60%	**21.90%**
send instant messages	25	41.70%	19	39.60%	6	60.00%	**20.40%**
receive Radio programmes	20	32.80%	15	31.30%	5	45.50%	**14.20%**
receive TV programmes	15	24.60%	12	25.00%	3	27.30%	2.30%

Almost one-in-four current cell phone owners (24%) have had their current handset for less than nine months, while one-in-six owners (15%) have had their phone for more than three years. So as the cell phone life cycle in South Africa leads us to predict, many more capable phones will

soon enter the second-hand market, thus continuously raising the technical capabilities of phones used or owned by youth.

It is important to note that access to many cell phone applications was found to be more ubiquitous than the availability of given features on the personal phone. This reminds us that even cell phone owners are most likely using more than one phone.
While the above information gives us valuable information about respondents' primary phone, the follow study should take this multi-phone usage factor into account.

96% of respondents used a prepaid or pay-as-you-go model while 4% said they were on a monthly billed contract. Here, no differences were found between cell phone owners and co-users. These numbers are very similar compared to the previously used subgroup of 16-19-year-old black South Africans, which found a ratio of 99/1 (AMPS, 2007). Respondents said to spend a mean average of 29.74 South African Rand, or roughly USD 3.00. Only 3% said they didn't spend any money on credit while 8% said they didn't know the amount.

When combining all 27 variables that assess detailed cell phone applications into two sets of aggregates, all of the respondents said that they had used at least one of the features on a cell phone in the past, while 97% said to have used at least one feature on the previous day. It is important to compare these findings with responses given to an outright question at the beginning of the questionnaire: Have you ever used a cell phone? Did you do so yesterday? There, only 74% of respondents said they had used a cell phone on the previous day. However, when comparing the mean aggregate numbers between those who reported to have used a cell phone on the previous day, and those who said they did not, the ambivalence of the outright question becomes clear: The latter group reported to have used significantly fewer activities on a cell phone 'yesterday', but yet reported to have used just 19% fewer activities than the former group. Hence, dismissing self-declared non-users early on would have significantly compromised the overall potential of the survey. The number of students who responded that they had not used a cell phone on a previous day, despite reporting to have done several activities, can be explained by the subjectivity of the phrase 'using a cell phone' – some activities may not be considered 'proper' use of the device, e.g. listening to music rather than making a phone call. The usage of outright questions to identify or eliminate non-users should thus be discredited.

Social deprivation

Three scales were included in the questionnaire, asking respondents to rate their personal economic position, the standing of their classmates, and what they thought they deserved. This measure of relative deprivation provides a far more reliable measure than outright questions regarding their family's socio-economic standing. Cell phone ownership was found to be a statistically significant determinant for feelings of relative deprivation. By testing variables with an independent sample T-test, the following results were found:
- Owning a cell phone leads to an average perception of the self in comparison to the rest of the class, while non-owners saw themselves significantly lower. (Sig. 0.062 on a 95% confidence interval)
- Not owning a cell phone leads to higher levels of perceived deprivation (Sig. 0.022) – note that both groups feel quite deprived)
- Cell phone ownership leads to higher ratings in 'how are you and your family doing (Sig. 0.06)

While cell phone ownership is significantly tied to one's perceived social status in this sample, it also has an impact on more subtle issues. Respondents were asked to rate eight difference issues with regard to whether using a cell phone has helped in these cases, or not. After ranking

them on a Likert scale from 2 (a lot) to -2 (not at all), some turned out quite positive while others remained rather neutral.

Comparison to computers and other devices

Compared to a traditional desktop or laptop computer, cell phones enjoy much more familiarity and popularity among respondents. For 14 variables, survey participants were asked to share not only if they used these activities on a cell phone, but also whether they had done so on a traditional computer. The results show that computer access is generally very limited among respondents, especially when comparing the same activities between cell phone and computer usage. Twenty-nine per cent of all respondents have performed at least one of these activities on a computer on the previous day (compared to 82% of respondents via cell phones).

Table 2: *Comparison of usage*

Have you done these activities on you cell or PC?	ever		yesterday	
	Cell	**PC**	**Cell**	**PC**
	%	**%**	**%**	**%**
play games	92.4%	**25.8%**	53.0%	**15.2%**
download songs, videos or ringtones	87.9%	**18.2%**	40.9%	**4.5%**
play music	81.8%	**25.8%**	43.9%	**6.1%**
get news or weather online	80.3%	**25.8%**	40.9%	**9.1%**
send and receive email	62.1%	**28.8%**	25.8%	**10.6%**
play video	62.1%	**30.3%**	27.3%	**13.6%**
go online for no particular reason	62.1%	**27.3%**	30.3%	**12.1%**
use an instant messaging client	60.6%	**16.7%**	19.7%	**4.5%**
look for information for school	59.1%	**34.8%**	12.1%	**12.1%**
information about a hobby or interest	59.1%	**33.3%**	24.2%	**12.1%**
hunt for a particular fact	57.6%	**22.7%**	21.2%	**10.6%**
look for health or medical information	54.5%	**27.3%**	16.7%	**9.1%**
information on further education	53.0%	**34.8%**	13.6%	**13.6%**
information about movies, books or other leisure activities	50.0%	**27.3%**	16.7%	**7.6%**
N = 66				

None of the proposed usage examples have been performed by more than a third of the respondents using a PC. By contrast, all of these activities have been performed by at least half of the sample population using a cell phone. In fact, the share of respondents having ever done an activity using a cell phone outperforms the shares by PC users with leads ranging from 18% to 70%. On a typical day, these differences persist, albeit in lesser extremes with cell phones outperforming PCs by no more than 38%. Some categories even share the same user group size on a typical day: Seeking information on further education and looking for information for school are both done by 14% and 12%, respectively – by cell phone and PC users alike.

Playing games was found to be the most popular usage on traditional computers (15% on the previous day). This mirrors the importance of games as the popular use of cell phones (53% on the previous day). Accessing the Internet, by comparison, is largely a cell phone activity: just 18%

have ever downloaded media content from the Web on a computer – while 88% of respondents said they had done so using a cell phone.

Personal communication

100% of respondents have used a cell phone in the past to actively initiate at least one intra-personal communication application, which includes making a phone call, sending an SMS, giving a missed call, and sending a free 'please call me' message. Nine-in-ten respondents (91%) do at least one of these activities on a typical day. The practice of giving deliberate 'missed calls' to other cell phone users has for long been a cost reducing measure, well documented by Donner (2007), and is sometimes also referred to as beeping, flashing, or buzzing.

The most frequently used applications are making phone calls and sending text messages, with six out of ten students doing so on a typical day (65% and 62%, respectively). Practically all respondents have performed either of those two activities (99% calls and 97% SMS). As shown in , boys were found to be more active in making phone calls and sending messages than girls: While 75% of male respondents sent SMS on the previous day, only 56% of girls did so. There is also a pronounced difference between both genders, whereby 68% of boys and 58% of girls made a call on the previous day.

Table3: Personal communication

Personal Communication Variables		**ever**				**Yesterday**			
	Count	**all %**	female %	male %	Count	**all %**	female %	male %	difference m-f
send a text message	65	**98.5%**	97.2%	100.0%	43	**65.2%**	55.6%	75.0%	***19.4%***
make a phone call	64	**97.0%**	94.4%	100.0%	41	**62.1%**	58.3%	67.9%	***9.6%***
please call me	58	**90.6%**	94.1%	85.7%	35	**53.0%**	58.3%	46.4%	***-11.9%***
give a missed call to other people	53	**86.9%**	90.9%	81.5%	21	**31.8%**	33.3%	32.1%	*-1.2%*
(aggregate) any personal communication	66	**100.0%**	100.0%	100.0%	60	**90.9%**	86.0%	96.4%	***10.4%***
N = 66, male *n* = 28, female *n* = 36									

Internet and Web usage

Access to the Web was measured using nine variables: *downloading songs, videos or ringtones; getting news or weather online; accessing information about a hobby or interest; looking for information for school; hunting for a particular fact; looking for health or medical information; accessing information on further education; accessing information about movies, books or other leisure activities*. When combining all nine variables into an aggregate of Web usage, 91% of all respondents have ever accessed a website using a cell phone – and 71% do so on a typical day. This definition excludes non-Web applications which are part of the Internet, but should not be confused with access to the World Wide Web. By aggregating the usage of instant messaging, email, and accessed websites (as featured in **Error! Reference source not found.**), we can

conclude that 97% of all respondents have used the Internet through a cell phone. 83% within this study's sample do this on a typical day; with boys leading this category by nine percentage points.

While some categories leave some uncertainty over respondents' understanding of the question, others are unambiguous. Nine-in-ten respondents (88%) have downloaded songs, videos, or ringtones – while 41% did so on the previous day. This high number is closely followed by access to online news or weather: 80% have done this while 41% did so on the previous day. By comparison, just 9% said they had accessed the news on a typical day using a computer. All other categories have been done at least once by at least 50% of respondents. As for activities done on the previous day, the lowest-used application was 'look for information for school' with only 12% reporting to have done so.

Email had been accessed by 63% of cell phone users in the past, and 26% did so on the previous day – thus making email the least frequent Internet-based application on a cell phone, compared with 47% using instant messaging and 71% accessing websites on a typical day.

The significance of these numbers becomes clear when comparing the findings to national data published by AMPS. The AMPS findings indicate that 7% of South African youth aged 16 to 19 have accessed the Internet over the past year, while racial differences range from 38% (whites) to 3% (blacks). Yet again, AMPS refers to the entire country, making higher numbers at even a township school in the generally more affluent city of Cape Town not a shocking surprise. But the extreme differences between the present study and the supposed national average call the accuracy of the AMPS' statistics into question.

Table 4: *Internet and Web usage*

	Internet usage variables	ever					yesterday				
		Count	**all %**	female %	male %	m-f	Count	**all %**	female %	male %	m-f
1	download songs, videos or ringtones	58	**87.9%**	77.8%	89.3%	*11.5%*	27	**40.9%**	41.7%	50.0%	*8.3%*
2	get news or weather online	53	**80.3%**	63.9%	60.7%	*-3.2%*	27	**40.9%**	19.4%	21.4%	*2.0%*
IM	(agg.) any IM used	53	**80.3%**	72.2%	92.8%	*20.6%*	31	**47.0%**	27.7%	71.4%	***43.7%***
3	go online for no particular reason	41	**62.1%**	66.7%	60.7%	*-6.0%*	20	**30.3%**	25.0%	32.1%	*7.1%*
4	send and receive email	41	**62.1%**	58.3%	60.7%	*2.4%*	17	**25.8%**	11.1%	14.3%	*3.2%*
5	use an instant messaging client	40	**60.6%**	77.8%	85.7%	*7.9%*	13	**19.7%**	36.1%	50.0%	***13.9%***
6	information about a hobby or interest	39	**59.1%**	86.1%	92.9%	*6.8%*	16	**24.2%**	38.9%	46.4%	*7.5%*
7	look for information for school	39	**59.1%**	52.8%	50.0%	*-2.8%*	8	**12.1%**	16.7%	17.9%	*1.2%*
8	hunt for a particular fact	38	**57.6%**	61.1%	57.1%	*-4.0%*	14	**21.2%**	22.2%	21.4%	*-0.8%*
9	look for health or medical information	36	**54.5%**	55.6%	64.3%	*8.7%*	11	**16.7%**	16.7%	32.1%	***15.4%***
10	information on further education	35	**53.0%**	63.9%	64.3%	*0.4%*	9	**13.6%**	33.3%	28.6%	*-4.7%*
11	information about movies, books or other leisure	33	**50.0%**	69.4%	57.1%	***-12.3%***	11	**16.7%**	27.8%	25.0%	*-2.8%*

11	information about movies, books or other leisure activities	33	**50.0%**	69.4%	57.1%	*-12.3%*	11	**16.7%**	27.8%	25.0%	*-2.8%*
	(agg.) any Internet										

N = 66, male *n* = 28, female *n* = 36

For two of the aggregates, IM refers to the aggregate calculated earlier, compounding all IM clients used by respondents.

Entertainment Digital Media Applications

Over the past years, the entertainment features of cell phones have become increasingly important. Almost all new phones produced today provide the ability to play music, take pictures or record videos, and play games. Concurrently, several cell phone manufacturers have developed special handsets in recent years that decidedly omitted these features in order to provide more affordable handsets to the poorer masses in developing countries. 12% of respondents own one of the two most prominent representatives of these no-frills kinds of phones (Nokia's 1100 and 1600).

However, a sizable majority of respondents have used each of the five "entertainment" features in the past. 92% have played a game on a cell phone while 53% do so on a typical day. 83% within this sample have taken a picture on a cell phone while on a typical day this is done by 56% of respondents. Playing music and recording videos have been done on the previous day by 44% and 47%, respectively.

Table 5: Entertainment applications

Entertain-ment variables	Ever					Yesterday				
	Count	**all %**	female %	male %	difference m-f	Count	**all %**	female %	male %	difference m-f
play games	61	**92.4%**	100.0%	85.7%	*-14.3%*	35	**53.0%**	61.1%	46.4%	*-14.7%*
take a picture	55	**83.3%**	77.8%	92.9%	*15.1%*	37	**56.1%**	47.2%	67.9%	*20.7%*
play music	54	**81.8%**	55.6%	50.0%	*-5.6%*	29	**43.9%**	8.3%	21.4%	*13.1%*
record a video	50	**75.8%**	72.2%	82.1%	*9.9%*	31	**47.0%**	38.9%	57.1%	*18.2%*
play video	41	**62.1%**	55.6%	53.6%	*-2.0%*	18	**27.3%**	13.9%	21.4%	*7.5%*

N = 66, male *n* = 28, female *n* = 36

Mobile Instant Messaging

For some time, instant messaging (IM) has been a rising phenomenon in South Africa. MXit, the client with the largest media attention, has also been the subject of some scholarly work (Bosch, 2008; Butgereit, 2007). However, recently other instant messenger clients have emerged, some

originating from the respective network operators. Although different clients require different technologies, all require cell phones that are able to access the Internet, thereby eliminating many low-range and older phones.

However, all IM clients combined, eight-in-ten respondents (80%) have used at least one in the past, while half of all respondents (47%) do so on a typical day. Instant messaging was found to be a predominantly male activity. 93% of boys have ever used an IM client, while 72% of girls did so. The difference is even more pronounced in a 43 point lead in IM clients used on the previous day: 71% of boys did so, compared with only 28% of girls. Male respondents were also leading in every single IM client, with the largest margins pronounced in typical-day-usage for the largest clients, noknok and MXit.

noknok, an IM client only available to MTN customers (but which also allows some interaction to other networks), is the most used client with 53%, followed by the network-neutral MXit client, with 49%. However, MXit is being used more frequently, with 29% of respondents doing so on a typical day, compared to only 17% for noknok. méèp (Vodacom's own equivalent) and the other network-neutral client 2go are only used by smaller shares on a typical day (9% and 5%, respectively).

MXit is used by 43% of boys on a typical day, compared to 29% of boys using noknok. For girls MXit triumphed over noknok as well with 19% compared to 6%. Although overall more people have ever tried noknok (which is probably tied to the enormous prevalence of MTN among respondents), MXit still prevails as the most popular IM client.
But as MXit's first mover advantage dissipates, noknok's community may soon be larger and thus more attractive. The technical difference between both clients might also have some influence in a decision to use one or the other: While MXit is based on Java, a programming script allowing for greater interactivity and better design, noknok is based on XHTML over WAP, a standard gateway to access websites on cell phones. It is not clear yet whether Java or WAP were available in greater shares on respondents' phones, but a possibly greater availability of WAP could have lead to this equation.

Table 6: Instant messaging

Instant Messaging clients	ever				yesterday				
	Count	**all %**	female %	male %	difference m-f	Count	**all %**	female %	male %	difference m-f
noknok	35	**53.0%**	47.2%	60.7%	*13.5%*	11	**16.7%**	5.6%	28.6%	*23.0%*
MXit	32	**48.5%**	44.4%	53.6%	*9.2%*	19	**28.8%**	19.4%	42.9%	*23.5%*
méèp	13	**19.7%**	16.7%	25.0%	*8.3%*	6	**9.1%**	8.3%	10.7%	*2.4%*
2go	8	**12.1%**	8.3%	17.9%	*9.6%*	3	**4.5%**	2.8%	7.1%	*4.3%*
(aggregate) any IM used	53	**80.3%**	72.2%	92.8%	*20.6%*	31	**47.0%**	27.7%	71.4%	*43.7%*

N = 66, female *n* = 36, male *n* = 28

CONCLUSION

This study was set out to pilot a quantitative methodology that would allow us to obtain a better understanding of cell phone usage among South African youth. By choosing grade 11 students at an urban township school, the study was put to an extreme test as many respondents were only recent users of this technology, and many have lower literacy levels in English. Based on the findings, some questions will require better wording or structure, although most seem to have been sufficiently understood by students in this sample.

The study, without intentions of representativeness, found that cell phones are used by practically all respondents. On a typical day, the most important uses were personal communication (91%), entertainment use (82%, including music, photos, videos), websites (71%), and instant messaging (47%). Respondents without a personally owned handset were found to be equally active cell phone users.

With the ubiquity of cell phones, and the broad availability of advanced features such as the Java platform or Web browsers, there is a sufficiently large basis for media-rich Web applications, despite the low socioeconomic status of the target group. Likewise, the available phones already feature a wide gamut of technologies that allow for handset-independent Java applications, games, or mobile websites to provide mobile learning or social development content to low-income South African youth. Given the surprisingly large cell phone expenditure by respondents and their overwhelming aspirations for tertiary education, one should also not discount a certain willingness to pay for accessing useful services.

This study was one of the major piloting phases for the subsequent main research involving a greater number of schools in the South African Western Cape province with a sample size of 441respondents (Kreutzer, 2009). While these findings are more conclusive and allow for a more detailed analysis of low-income urban South African youth, the present study has laid the ground work for more reliable quantitative usage-based research.

ENDNOTES

[1] In April 2008 there were 43,317,511 active mobile phone lines reported (Wireless Intelligence, 2008) for South Africa's 47,850,700 inhabitants (STATSA, 2007).

[2] The large-scale household survey AMPS found 56% of South Africans use a cell phone (AMPS, 2007). The World Development Indicators reported 72% cell phone access in South Africa (World Bank, 2007).

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