Non-literate and low-literate mobile phone users: Do they acquire literacy?

by

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Abstract

To observe the effects of prolonged periods of texting on adult literacy levels, this study distributed basic mobile phones to rural adult learners on a continuum of literacy skills from non-literate to literate at an advanced level. The details of the research design were only finalized once the study had begun, and a baseline of habits of mobile phone users in the target area was established. This informed the particulars of an intervention where participants were trained on the use of mobile phones and received text messages sent by the researcher for nine months. The contents of the text messages were news clips curated by the researcher on a variety of topics,
including sports, politics and science. The participants were prompted with questions and requests for comments on the news clips.

Seven of the total nine participants completed the study – a relatively high percentage given the high attrition rates of traditional adult literacy initiatives (Askov, 2000) – indicating that ownership of the mobile phones upon conclusion of the study may have acted as an incentive (motivation) for completion for the participants. In post-test literacy scores, the participants with the fewest years of education – three in total – outperformed other participants in overall gains in the reading and writing sections of the literacy tests. Six of the seven participants revealed changes in their engagement with literacy events and practices, and several participants recalled engaging in collaborative learning with peers to review texted news clips. Others reported re-engaging with traditional literacy media, including newspapers and children’s textbooks to supplement their texting abilities. One participant, essentially non-literate at the beginning of the intervention, had gained rudimentary reading skills by the end.
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1 Introduction

I: What could come after mobiles?

S: I can’t say. This is a sudden thing (mobiles). I had never even thought of something like this, that in my hands, because of a SIM, I could talk to you, no matter where we were physically. If someone had a phone in their hands before—I don’t mean phone, but telegram, that’s what people used to talk. If someone were outside the country they would send a couple of thousand taka, and converse with their family. But now it’s in everyone’s homes. It’s in everyone’s hands, “Oh, I had called abroad.” When? “Just now.” “I will call again tomorrow.” We didn’t have this opportunity before. (laughs)

I: How does it feel? To think about this?

S: Thinking about it… it’s a big thought! My brain will stop working if I think about this. What an amazing thing the scientists have created! What is it? Can you imagine?

I: An amazing thing?

S: An amazing thing. No one had ever thought that through a mobile, you could keep news of the world.

--Interview with Shakib (Participant)

(May 2012)

1.1 Context for the study

According to the International Telecommunications Union, the total number of mobile subscriptions will reach seven billion, worldwide in 2013 (ITU, 2012). It is notable that this number refers only to the mobile or cell phone subscription rates, meaning the actual number of mobile handsets worldwide likely exceeds seven billion. Given that a short twenty years ago the
total number of mobile phones worldwide likely numbered in the few millions, this is an unprecedented penetration rate for a consumer technology.

![Map showing mobile subscribers per 100 people (ITU 2010)](image)

**Figure 1 Mobile phones per 100 people (ITU 2010)**

Simultaneously, there remain nearly 800 million functionally non-literate adults in the world (UN, 2013). Figures 1 and 2 compare the two statistics, and, while we do not have accurate estimates, given the high penetration rates of mobile phones it is a logical conclusion that a substantial portion of these 800 million adults are mobile phone owners. Even taking a conservative estimate that 40% of functionally non-literate adults worldwide own mobile phones returns a figure of 320 million non-literate mobile phone users - a number greater than the population of the United States of America.
There has been research done on the coping strategies of non-literate mobile phone users (Knoche and Huang, 2012; Donner, 2007) and others have looked at the broader set of non-literate electronics users (Medhi, 2009a; Medhi, 2009b). Some have studied these users from a communal perspective (Sambasiven et al., 2010) and efforts are underway to design phones that cater to their lack of literacy (Lalji and Good, 2008; Deo et al., 2004; Shakeel and Best, 2002; Medhi et al., 2011).

This study began with the recognition that low-literate and non-literate mobile phone users are an understudied group, and that the data derived from studying them can be applied towards developing a literacy intervention that uses mobile phones. Even in countries like India, Pakistan, Bangladesh, Afghanistan and Nigeria, countries that have significantly low adult literacy rates, the rate of phone ownership has risen exponentially over the last decade. Bangladesh has gone from a total of 200,000 mobile phones in the entire country, in 2000, to 75 million in 2010 - a penetration rate of 50% given the country’s population of 150 million.
In the early stages of this study, the following research questions emerged, and these were the questions that guided the study:

A. What are the mobile phone usage habits of low-literate and non-literate mobile phone users in a rural, developing community in Bangladesh?

B. How do these strategies relate to the development of language literacy and fluency with information technologies?

C. Provided the above, is it possible to design a literacy intervention using mobile phones as a primary delivery medium?

1.2 Researcher's background

My formal training began in the domain of information technology, and in 2004 I was working for BRAC, a large NGO based in Bangladesh which had just begun to expand beyond the country’s borders, into Afghanistan and Sri Lanka. BRAC is large enough so that it is called the “Shadow Government” in Bangladesh (Cronin, 2008). It employs more than 100,000 in Bangladesh alone and accounts for nearly 2% of the nation’s GDP. In 2004, BRAC was running more than 40,000 primary schools for the children of the poor and landless in Bangladesh, with total enrolment of about 1 million children. BRAC took special pride in its management structure, and as a consequence these were some of the best managed schools in the country, not to mention the largest private school network in the world.
Figure 3 A BRAC school in Bangladesh (Asian Trends Monitoring, 2012)

This network also generated a massive amount of data - enrolment, teacher absences, Program Organizer reports, monitoring reports, schoolhouse openings and closures, all of which had to be channeled to the main office located at the capital, Dhaka. This data was filtered through 412 area offices, moving up through the 54 regional offices until finally arriving in the head office in the form of reams of paper, bearing mud splashes and cigarette burns they had picked up in their long journey from around the country, carried by regional managers who arrived in motorcycles and buses.

The data taken from these piles of papers would then be entered by a regiment of data entry clerks who diligently entered their numbers into aging computers.
In 2004 BRAC decided that this unwieldy system needed to be digitized, because the school network was growing too large for it to remain an efficient way of collecting data nationwide. This project was assigned to me, as the Manager of the Information Systems unit at BRAC Education Programme. I hatched an ambitious plan initially: we would supply computers to each regional office, equipped with 56k modems which would connect to the Internet at serviceable speeds. We had hoped that with this plan we could cut down at least one step in the protracted process of data movement through the BRAC school network.

We faced many challenges. Only after the computers were in place at the offices, the operators trained and ready, did we realize in a developing country like Bangladesh, reliable Internet and more importantly, electricity, were the exceptions rather than the norm. As we tried
to think our way around this problem, our modems remained silent, and the sleek blue and white casings of the once new computers gathered dust. We had to try another way.

We coalesced around the compromise solution of using USB sticks, which in 2004 was “state of the art” technology, and available in “massive” sizes of 16 or 32 megabytes. I proposed that the regional managers who visited the main office on a monthly basis begin to carry the USB sticks with digital updates instead of stacks of papers. The computer operators at the regional offices would have to enter the data, save it on the USB stick for the regional managers to bring back to the head office every month, and then the data would be merged into a main database. The USB stick method was less elegant, but it took our reality into account, put what we had at hand to the best possible use. This was my first experience with technology for development: I learned to work with what I had, not what I wished I had. The latest or most expensive technology would not win the day.

I have carried that lesson with me. The projects I have worked on, proposed, and explored since my work at BRAC have focused on identifying technology and techniques best suited to getting the job done. What was most likely to be available and to be acceptable to the population in question? What was the lowest common denominator that would allows us to design interventions to reach the broadest swathes of people? My dissertation project followed the same philosophy. The phones used in this intervention were locally purchased, cheap Nokia models that cost about thirty dollars. Each was easily replaceable and would draw no attention when used in public. Even the mechanics of the intervention use the two most basic features of a mobile phone: calls and texts. No apps, no Internet, no big colour screens. Not even a camera.

The Structure of the education system in Bangladesh
An overview of Bangladesh's education system is necessary before the potential for mobile phones as literacy tools can be evaluated. Bangladesh is a signatory to the Education For All and Millennium Development Goals initiatives. And there is a robust body of NGOs involved in the education sector in Bangladesh. But an overview of the general education system of the country may be helpful.

The education system in Bangladesh consists of three streams, all of which are substantially subsidized by the government. These are, in descending order of students enrolled, the general education system, the Islamic madrassah education system, and the vocational education system. These streams or systems are in turn divided into five levels - primary, junior, secondary, higher secondary (years 11 and 12), and tertiary. Figure 5 represents the education system hierarchy in Bangladesh.

Figure 5 System of education in Bangladesh (Alam et al. 2010)
The large number of out-of-school and drop-out children have led education aid donors to Bangladesh to diversify their funding by including non-government and non-profit organizations. This strategy has created a robust network of non-governmental non-formal schools system alongside the government one. BRAC, the largest national NGO, and one that is rapidly expanding worldwide, runs a network of 40,000 schools for primary age children. Over the years, BRAC has developed a working relationship with the governmental education system, and now, alongside training government teachers, works in close cooperation with the Ministry of Primary and Mass Education to mainstream primary age school children from BRAC schools to government schools. BRAC also runs pre-primary schools, a stream it considers a necessity because many children come from homes where they cannot be supported with proximate literates, as one or more parents are non-literate.

Adult literacy initiatives in Bangladesh reflect the pattern worldwide in that they progressed in fits and starts, where disappointment and reality repeatedly dragged down high hopes and ambitions. The Bangladesh Government launched the ambitious Mass Education Programme in Bangladesh in the 1980’s, which ran from 1980 to 1985, with an initial target of imparting functional literacy skills to 40 million adolescents and adults. The initial phase was able to meet less than 10% of the goal of educating 10 million, and even among that group, only forty percent of neo-literates showed enduring literacy skills (Tanvir, 2011). Faced with these disappointing numbers, the Bangladesh government abolished the mass education program, returning the responsibilities for adult education to non-profit and non-government organizations. This transfer of accountability has not made a measurable impact on the adult literacy rates of the country, however, and Bangladesh’s current adult literacy rates stands at 59% (Bangladesh Bureau of
Statistics, 2008). Tanvir (2011) should be consulted for the most comprehensive history of Bangladesh’s adult education efforts.

1.3 Setting: Radhanagar Village, Town of Sri Mangal, Sylhet Division, Bangladesh

This study took place in the village of Radhanagar, in Sylhet Division, Bangladesh. Sylhet is one of six administrative division’s of Bangladesh, and is itself divided into four districts (zilas) which in turn are sub-divided into a total of 36 sub-districts (upazilas). Sylhet is rapidly modernizing. Sleek glass buildings shine between pockets of slums. Women in burkhas weave a path through the bazaars alongside their modernly dressed counterparts from the Sylheti expatriate community in the UK. Sylhet’s expatriate community has a long and historical connection to the United Kingdom that arose from the tea gardens managed by the British. When Bangladesh won independence from Pakistan in 1971, many Sylhetis, already unhappy that they had been annexed by the ethnically distinct Bengalis in 1947, took the opportunity to leave for the UK. In the 40 years since Sylhetis have come to hold a lion’s share of the Bangladeshi community in the UK, and are represented not only in UK politics, but also in popular culture. The remittances sent back by these expats has fuelled much of Sylhet’s economic growth. Colourful mansions now dot the sides of the Dhaka-Sylhet Highway, and asking a local about one usually reveals it to be the vacation home of a Londoni, the local term for a Sylheti settled in Britain.
This study took place in the village of Radhanagar, a village in the Sri Mangal sub-district. Radhanagar is joined to the town of Sri Mangal proper by a thin strip of grayish-purple asphalt called Bhanugach road. Bhanugarch road weaves a path between tea gardens, its twenty feet of width shared between the sandaled feet of fruit-cart pushers, the heavy treads of truck and bus tires, the tri-wheels of auto-rickshaws and the gaunt spokes of the still venerated rickshaw. The road channels this flow of traffic both to and away from Sri Mangal city, and if anyone looks to their right or left they will see tea plants on rolling elevations like a green sea eternally frozen. Albizia trees, with their curious desiccated pods, hang over the tea plants, providing shade and a place to nest for the white hooded kites that are always circling the skies, their cries piercing an otherwise solid silence. If one chooses to leave the path to venture into the curiously unguarded tea gardens they will find a hidden canyon, carved out over the years by a thin stream of clean and gurgling water, there are no unnatural sounds. None of the cacophony of horns and bells and mikes that of Dhaka, the capital of 15 million 200 miles away.
Sri Mangal’s economy is agrarian: based on long green limes, pineapples (two kinds, one called *kalender*), and Jackfruit, a massive blob of spiky skin that holds hundreds of custard-coloured pods inside. Fruit sellers pile their carts full as early as four in the morning and set out from as far as 14 kilometers away to take their produce to the town market. During the long journey, they often talk to one another, but also have their mobile phones – simple devices that nonetheless let them listen to the radio. The fruit-cart *wallahs* walk by at a deceptively brisk pace, and songs emerge from their pockets and leak into the clean air.

### 1.4 Mobile phone landscape in Bangladesh

**I:** Could you share your thoughts on the overall mobile culture in Bangladesh? Especially in rural areas? What are your thoughts on where it’s been and where it’s going?

**F:** I would say in rural areas the spread of phones wasn’t as massive as it was initially in the cities. It took a bit for it get to the villages. But the impact was more positive in the villages than in the cities.

**I:** How so?

**F:** There are a lot of people in the cities who will talk on the phone even though there’s no reason for them to. Needless. There are a lot young people who are chatting on the phone with their friends about where they are and not. They’ve got no real work. But the rural people use phones properly. They’ll call to get information, or to ask after their relatives.

**I:** It’s work-centric?

**F:** Yes. Their use is very specific and I think they’re using it in the right-track.

**I:** That’s an interesting observation. Of course rural users are also less able to afford the minutes on their phones, so they have to be extra careful about how they spend their minutes.

**F:** Of course. But I would still say that the call rates in Bangladesh right now are quite affordable, even for rural users. It’s enough for a few days of talking. Now it’s okay for incoming
calls to arrive anytime; we didn’t have this convenience before. They’re in a position right now to spend 20-25 taka a week on just voice calls.

I: So rural users don’t shoot the breeze as much on the phone?

F: Correct. There’s very little of that. Or they might have a son in a foreign country, and they use their phones to talk to him. They might send an important message to someone. There’s less of that in the city. There’s a lot more of the shooting-the-breeze type of chats in the city.

--Interview with Khaled (Telecom shop operator), August 2011

Figure 6 A mobile phone shopper in Bangladesh (The Daily Star 2011)

The availability of cheap mobile phones and the ease with which one can purchase a SIM card may explain the explosive growth of mobile phones in Bangladesh. The North American model of carrier-subsidized handsets is non-existent. All of the mobile operators (except CityCell) operate on GSM (Global System for Mobile Communications) networks. The typical customer will subscribe to either a post-paid or pre-paid service from a provider, upon which they will be issued a SIM (Subscriber Information Module) card. The customer is then free to use the SIM card in a phone of their choosing, purchased separately. The most basic mobile
Phone models (with the abilities of making calls and sending texts, but few other features) are fairly low in price, at approximately US $20, or BDT. 1600. 2G or Edge speed Internet is widely accessible throughout Bangladesh through mobile phones and USB modems, and recently (2013) 3G speeds made their debut on select networks. However, given the lack of Internet features in the majority of the phones sold in the country, the relatively high data rates, and the unfamiliarity of users with the Internet in general, mobile Internet remains relatively unpopular. In contrast, SMS based services such as buyers’ and sellers’ market, sports and news updates, banking, and even educational services such as for English language learning, are widely used. SMS rates are relatively low, costing about 2 US cents (1 BDT) per message. Overall, in Bangladesh, mobile phones and services are accessible, ubiquitous, and inexpensive, making them ideal tools for a literacy intervention.

1.5 Dissertation structure

This dissertation consists of seven chapters. The present introduction describes the basic problem being studied, including the research questions, and provides pertinent background information on the researcher and settings. Chapter Two is a review of literature on topics relevant to this thesis. It begins with a discussion of the concept of orality and literacy, how the definition of literacy has evolved over the years, and the specific concepts of literacy as delineated by New Literacy Studies that I have adopted for this study. A discussion of prior studies of adult literacy follows, including the challenges traditional adult literacy initiatives have faced. Chapter Three concerns the research methodology of this study, accounting for the participants, materials, apparatus and procedures employed for this study. A richer description of the research design process is found in Chapter Four, which provides some more contextual information on the Sri Mangal and Radhanagar area, specifically on education and literacy. The
different participant groups such as the Advanced and Basic Users are introduced, as well as information about the specific recruitment strategies, interview techniques, and literacy testing for each of these groups. The balance of the chapter details the mobile phone training, mock testing and graduation ceremony, the reasoning behind choosing Nokia phones and the use of Bangla as the intervention language.

Chapter Five is the findings and data analysis chapter, which reports on two majors sets of findings: those resulting from the interviews with the advanced users and the others from the literacy intervention itself. The salience of these two sets of finding is explained and their eventual synergy clarified. The chapter concludes with analyses of the text messages and findings from the exit interviews with the BU group. Chapter Six provides case studies of select participants from the literacy intervention aspect of this study. Specifically, this chapter traces and highlights changes in the participants' literacy practices, events and attitudes. In this way, this chapter should be considered an elaboration and explanation of behaviours that may have been reported in Chapter Five. Finally, Chapter Seven provides a reflective conclusion on the work as a whole, including the limitations of this thesis and how they can be addressed in subsequent research designs. I also discuss the intriguing questions raised by some of the findings and point towards future applications of this study design at scale. I close with personal reflections on the more than two years of involvement with this study and the lessons I have learned in the process.
2 Literature Review

“Scholars tend to work on the archeological assumption that things need to be studied in isolation”

--McLuhan (1965)

This chapter will ground this study in foundational and emerging research at the intersection of literacy, adult education and Information and Communication Technology (specifically, mobile devices and cell phones). The review includes empirical research, theoretical scholarship, and the occasional non-academic sources that offer commentary on the trends and developments within the field of digital communications and innovative literacy interventions. This is necessary as it is difficult to grasp the quick evolution of digital technology through the unhurried medium of academic publishing.

I hope to show by the end of the chapter that although mobile phones can address some of the issues with adult literacy initiatives as identified by experts, there is little literature on the topic, presenting a gap that this particular study will address. I begin with an introduction to New Literacy Studies, which understands literacy as socially constructed and defined. I then discuss concepts of situated cognition or learning, literacy practices and events. I address the particular difficulties faced by adult literacy initiatives in the second half of the 20th century and unique challenges faced by adult literacy implementing entities in resource-constrained environments such as Bangladesh. Context on the educational efforts in Bangladesh in regards to adult education efforts is also provided. This chapter includes an overview of the history of and the continuing efforts to integrate Internet and Communications Technologies in education, specifically, this section explores the recent efforts, exciting, successful and otherwise, to use
mobile phones in educational contexts. This chapter concludes with a discussion of the gap in literature regarding the implementation of mobile phones in the specific context of adult education. Although these fields may appear disparate and incompatible, this literature review is carefully and deliberately constructed to create an original framework for the use of mobile devices to address literacy needs. The social and cultural understandings of literacy, adult literacy theories and mobile learning frameworks each constitutes a major component of a theoretical lens that hopefully informs the design of a pragmatic, solution-oriented approach to the issue of adult literacy (Figure 7).

![Theoretical framework](image)

**Figure 7 Theoretical framework**

To be sure, *literacy* is a contested term, defined and redefined over the years and still amorphous. For the purposes of this thesis, *literacy* broadly refers to *print literacy* - the ability to decode and create printed text. Given the multiplicity of definitions, it is also problematic to
label individuals *illiterate* based on their inability to decode printed text, a singular measure of literacy. However, given that the premise of this thesis is greatly concerned with the ethnography of unlettered mobile phone owners, the terms *non-literate* and *low-literate* (used solely as a measure of print literacy) are used to distinguish this group rather than *illiterate*, a word that becomes more archaic and pejorative over the years given the broadening of our understanding of what constitutes literacy. Specifically, this study takes an *emic* view of literacy as opposed to *etic*. As introduced by Pike (1954), these terms refer to two possible perspectives that researchers (especially anthropologists) can consider adopting in the course of ethnographic research, where the emic "approach researches from local perspectives, from intrinsic cultural understandings of a context. [And] [a]n etic approach, researches from an outsider, external perspective on cultural understandings of a context" (Rowsell, Prinsloo and Zhang, 2012, pp. 1-2). Recognizing also that literacies are locally created and vary in definition from user to user, this study is careful to not place non-literate individuals into a "deficit discourse" that sees them as automatically disadvantaged compared to literate individuals (Papen, 2001).

The social turn in linguistics has brought with it multiple schools and positions, of which New Literacy Studies is one that is still undergoing development. It is not the intent of this paper to conduct an exhaustive review of all viewpoints that may exist in the discipline, in the fear that the exercise may devolve into "refereeing" between schools of thought that have staked clear but subtly differentiated positions. Indeed, sub-groups and branches have emerged even in New Literacy Studies, some of which are critical of the absolutism of the original. These criticisms of New Literacy Studies will touched upon to provide a more nuanced portrait of the field for the readers.
2.1 Oral versus written cultures

Cultures untouched by, or bypassing use of writing systems are referred to as “oral” cultures (Brown, 2004). Dossou (1997) defines the communications systems in oral societies as one that "emphasizes aural (audio) perception, which contrasts with scripturality, a communication system with visual bias, usually referred to as literacy" (p. 12). Goody and Watt (1963) identify “words” and “verbal symbols” as the mules that ferry the most “significant elements” of human culture from generation to generation. They report the dozens of words the Pacific Islanders of Lesu have for the domestic pig, categorizing them by size, shape, sex, age, color and origin, a verbosity they attribute to not only the centrality of the pig in Lesu trade culture, but also to the absence of the reductive power of literacy in the non-literate Lesu society. Although this view has recently been challenged (Sinclair, 1993), in contrast to speaking, the writing implies de-contextualization of its referent, stripping meaning inferred from its time and place of existence.

Bereft of this technology of writing, in non-literate or pre-literate societies words cannot “accumulate the successive layers of historically validated meanings which they acquire in a literate culture. Instead the meaning of each word is ratified in a succession of concrete situations, accompanied by vocal inflexions and physical gestures, all of which combine to particularize both its specific denotation and its accepted connotative usages” (Goody & Watt, 1963, p. 4). Goody extends this “technologically determinist” view (Street, 1987) to confer upon literate societies, through the written word, a clear path which they have followed to arrive at the ability to reason, separate myth from history, and exercise skepticism towards social dogmas.

Similarly, Ong (1982) confers broad powers to writing by attributing to it the ability to restructure consciousness (Harris, 1989; Menary, 2007). Ong differentiates between the “primary orality” of cultures “untouched” by the “technology of writing” to the “secondary orality” of the
modern day world, sustained in literate societies by orality based mechanisms such as telephones, radio and television. To Ong, orality is free of the “residue” of written words, a concept he uses to dismiss the possibility of the existence of “oral literature” (p. 11).

Both Ong and Goody see in the technology of writing a catalyst for the rational, lineal social and psychological sequencing that characterizes Western civilization. Ong’s mentor, McLuhan (1965), finds in the phonetic alphabet inherent advantages absent not only in orality, but competing forms of writing such as pictographs and hierographs as well: “[T]he phonetic alphabet, by a few letters only, was able to encompass all languages. Such an achievement, however, involved the separation of both sights and sounds from their semantic and dramatic meanings. No other system of writing has accomplished this feat” (p. 87).

These three media theorists represent the purest forms of the "autonomous" views of literacy (Auerbach, 1992; Goodman, 1997; Hyland, 2002), one that empowers the technology of writing over those wielding it, or the social or cultural context of its utilization. In this way, the philosophy behind much of Goody (1963), Ong (1982) and McLuhan's (1965) assertions rest on the so-called “Great Divide” theory (Brandt and Clinton, 2002; Street, 2003), which gives significant agency to literacy comprised of the technology of writing and the act of writing, and holds writing to be consequential and determinative in the civil, social and cultural trajectories of the societies with or without possession of it. Among the first comprehensive ripostes to the Great Divide theory is Street’s (1984) important work introducing New Literacy Studies, along with those of other contemporaries in similar fields, which argues that literacy is comprised of more than the technologies enabling its expression: “No one material feature serves to define literacy itself. It is a social process, in which particular socially constructed technologies are used within particular institutional frameworks for specific social purpose” (p. 97). Street (1987)
criticizes the broad conclusions drawn by Goody as circular, in that it begins with the assumption of difference between literate and pre-literate societies and from those “adduces literacy as the explanation” (p. 49).

2.2 New Literacy Studies

New Literacy Studies (NLS) re-conceptualizes notions of literacy by recognizing that literacy activities become meaningful only in the context of the social and cultural practices of which they are a part (Gee et al., 1991, Street, 1984, 1993a and b). Several fields, including sociology, psychology, the cognitive sciences, and education, have been converging on this redefinition of literacy over the last few decades—the “turn” away from the behavioural and individual to the social (Gee, 2007). At its essence, NLS deals with the idea of meanings, that of words, tools, technologies or particular practices and have either little meaning, or different meanings based on their particular context of use (Gee, 1999). NLS is thus a part of the broader post-structuralist movement in the social sciences and education, where the burden of meaning is shifted to the listener or audience rather than the author (Läevinas, 2003; Davies and Harré, 1990; Barker, 2001). This move away from singular meaning has been the impetus for the social turn in other fields, and over the last half century the fields of ethnomethodology and conversation analysis, discursive psychology, ethnography of speaking, sociocultural psychology and situated cognition have arisen, all based on the understanding that meaning is contextual. Pahl and Rowsell (2006) note the increasing convergence and cooperation between theorists in the separate but related fields of NLS, multimodal literacy, multiliteracies, and critical literacy (p. 2).

Among these, NLS serves to re-orient the notion of literacy from that of an autonomous, skill to a more socio-culturally contextualized skill that is defined by the particular uses. NLS also
allows the notion of “multiple literacies” (Street, 1997; 2003), expanding the palate of options from the narrow unitary notion of reading and writing to include others such as numeracy, graphic or technological literacies which are inevitably more sensitive to the specific socio-cultural contexts, interactions, and media in which the literacy practices are embedded.

In a sense NLS is a field as strongly defined by what it opposes as what it champions. NLS uncovers new roles of contested relations of power that are inherent in any ‘act of literacy’, especially the "symbolic domination" lurking in the standardizing of language and literacy practices brought about by the autonomous model (Janks, 2010, p. 119). Street (2012) challenges the notion that literacy can be “given” to non-literate or children (or anyone defined as being “deprived”) with the understanding that it will endow economic, social and cognitive benefits. He argues that this assumption does not address the “social and economic conditions that accounted for their illiteracy in the first place” (p. 28). This re-orientation has attracted criticism, most prominently from Brandt and Clinton (2002), who suggest that in its attempt to discard the baggage of the autonomous conceptions of literacy, NLS goes too far in the other direction, sacrificing understanding of the global context for literacy practices that would otherwise be edifying:

[…] can we not recognize and theorize the transcontextual aspects of literacy without calling it decontextualized? Can we not approach literacy as a technology – and even as an agent – without falling back into the autonomous model? Can we not see the ways that literacy arises out of local, particular, situated human interactions while also seeing how it also regularly arrives from other places – infiltrating, disjuncting, and displacing local life? (Brandt and Clinton, 2002, p. 7).
To Brandt and Clinton, what "appears to be a local event also can be understood as a far-flung tendril in a much more elaborate vine" (2002, p. 10). The authors leverage Latour's Actor-Network theory (1996) to suggest a reconceptualization of the (defined in the following section) literacy event - too "anthrocentric" (p. 12) - that recognizes the agencies of non-human actors. Street has responded to Brandt and Clinton's critiques by conceding the importance of "distant" literacies while disputing their autonomous nature:

*The features of distant literacies are actually no more autonomous than those of local literacies, or indeed than any literacy practices: their distantness, their relative power over local literacies and their "noninvented" character as far as local users are concerned, do not make them "autonomous", only "distant", "new", or hegemonic. (Street, 2003, p. 4)*

Indeed, it is quite possible that the antipathy between the autonomous perspective and the social one has been exaggerated. Scribner and Cole (1981) reassure that "cultural and psychological" approaches to literacy need not stand in opposition to each other, rather, they should be viewed as "two different perspectives that can be brought to bear on the same set of phenomenon" (Scribner and Cole, 1981, p. 251). A better comparison for NLS can be made to the Freirean (1970) view of Adult Literacy as a call to Cultural Action for Freedom. To Freire, traditional adult literacy efforts follow the “bank” model, of the student as an empty repository of knowledge until “filled up” by the instructor. Freire rejects this mechanistic conception of the process—an understanding that reduces adult literacy to mastering pen on paper, and reading or memorizing words. He urges a re-conceptualization that “demands among teachers and students a relationship of authentic dialogue” (p. 6), and brings adults to recognize their “existential
situations”, so they not only acquire literacy skills, but enter into authentic praxis, which allows adults learners to read not only the word, but the “world” (Freire and Macedo, 2013).

2.2.1 Literacy practices and literacy events

The concept of *literacy events and practices* is central to NLS. Barton and Hamilton (1999) assert that literacy is a social practice, and it is from this fundamental claim that the concepts of literacy events and practices propagate. New Literacy scholars, which Barton and Hamilton undoubtedly are, prefer a "de-technologized" view of literacy, and taking removing the literacy from "within" its practitioners allows its conception to be flavoured with "values, attitudes, feelings and social relationships" (Street 1993, p. 12). To Barton and Hamilton, even though literacy practices are simply what "people do with literacy", they are not "observable units of actions" as they are informed by "peoples aware of literacy, constructions of literacy and discourses of literacy, ...[and] how people talk about and make sense of literacy" (p. 8). In contrast, Literacy events, are "activities where literacy has a role" (Barton & Hamilton, 1999). Unlike literacy practices, literacy events *are* "observable episodes" where activity or talk occurs around a text form. To the authors, literacy events are activities that recur in everyday life, ensconced in "social institutions such as work-places, schools and welfare agencies". As neither literacy events nor practices would be possible in the absence of a text form, it is these three components then, that "provide the first proposition of a social theory of literacy, that: literacy is best understood as a set of social practices; these are observable in events which are mediated by written texts" (p. 9).

Context therefore gains great importance in informal learning, as individuals who perform poorly in problem solving in formal contexts find it easier to do so in familiar, social situations (Rogoff and Lave, 1984). Yet the dominant trend in primary education, on which many earlier
attempts at adult literacy were based, has been focused on isolating literacy as a technical skill: portable, general, and unaffected by the social milieu of its practitioner (Street, 1987). It is then unsurprising that so many adult learners fail to find success when taught in this paradigm; formal education environments, such as the classroom, encourage learning that is linear, rigid and typically less suffused with the color of experience than is informal learning, where problem solving takes precedence over meeting curricular expectations (Choi and Hannafin, 1995).

2.3 Situated Cognition

Schools emphasize general, non-specific skills that they hope students will then be able to generalize for use in other situations (Scribner and Cole, 1973; Lave, 1988; Papert, 1993). Again, this may be due to the fact that the complex skein of contextual clues and patterns that so texture everyday life are absent in the controlled formal setting of the school, robbing the learner of a treasure-trove of information with which to find a solution to the problem presented. Situated Cognition (Brown et al. 1989) takes social context into account (Olinas, 2000). According to Choi and Hannafin (1995) Situated Cognition "recognizes the inextricability of thinking and the contexts in which it occurs, and exploits the inherent significance of real-life contexts in learning" (p. 1). To the authors, the role of context in learning is underpinned by three principles: Everyday Cognition, which stands in opposition to the "abstract and systematic" problem-solving skills taught in formal institutions; Authenticity, found in tasks that "possess extraordinary motivational potential" because they address real-life problems, and Transfer, which occurs when learners achieve " broad understanding of the properties and relationships within an initial context-which are referenced and deployed according to their similarity to new circumstances" (Choi and Hannafin, 1995, pp. 54-57). These principles, especially the latter two of motivation
and transfer, are re-examined in this chapter, following a survey of the current state of adult literacy efforts worldwide.

2.4 Adult literacy efforts compared to primary education efforts

A search for the keywords “Adult Literacy” on Google Scholar returns about 130,000 results. The newest article written was in 2005, nine years ago. In contrast, “Primary education” returns 3.5 million hits, with 65,000 appearing in the last year alone. This is anecdotal evidence but is symptomatic of broader trends of the drive, momentum and implicitly, funding, favouring formal education (K-12) over adult literacy. The argument can be made that focus on primary education rather than adult literacy may help children keep from becoming non-literate adults, yet this ignores the millions of non-literate adults currently in existence. Nor is it a foregone conclusion that increasing funding to primary education would reduce adult illiteracy rates, as the “opportunity cost” of education would remain a factor for students, who would leave school to work as domestic or agricultural workers (Ackers et al., 2001).

Through an analysis of 32 World Bank funded projects in literacy over four decades, Abadzi (2003) draws a number of key statistics and conclusions. While the median completion rate of the literacy programs was fairly high at 78%, the pass rate stood at 56%. Abadzi notes that though intangible benefits of adult literacy, social outcomes such as increased self-confidence and empowerment did occur, they were assessed no more than once and only though self-reports from the participants. In terms of cost, the cost-per unit of adult learner was comparable if not lower than the cost-per unit of primary students overall, but the cost per successful adult graduate was as much as three times higher. Abadzi notes that despite the low-cost per learner adult literacy programs have been de-emphasized by governments and donors in the countries with the
lowest levels of literacy, making up only about 1-5 percent of education budgets. Abadzi (2003) summarizes the overall ailment of adult literacy programs in a single disheartening paragraph:

*The literacy-only projects of the 1990s were largely implemented as planned, and their outcomes were rated satisfactory by OED. Altogether, they reached about 10.8 million illiterates including many women and showed that it is possible to bring large numbers of people to classes. (Nevertheless, the projects that included literacy as a minor component rarely met their numerical or learning targets.) Overall, borrowers showed commitment and their performance was satisfactory, as was Bank performance. However, the extent to which participants learned to read and remained literate is uncertain. Monitoring and evaluation proved too cumbersome, and it was impossible to verify learning outcomes and to monitor closely the extent to which classes actually took place or how time was used. Thus, sustainability of the interventions is uncertain. (p. 10)*

Abadzi (2003) lists a number of key lessons that can inform future adult literacy efforts, arguing for literacy interventions where literacy is the primary focus, and stressing that doing otherwise would result in little funding for these programs. The “vicious cycle” – where low performing adult literacy programs receive reduced funding, which in turn negatively impacts results – is highlighted by the author as an issue for adult literacy programs to be aware of. Finally, Abadzi insists that “intensive” government training and supervision of NGOs is “important”, and that newer, more “sustainable” monitoring designs need to be implemented for adult literacy programs (2003).

Abadzi’s review highlights the difficulty of adapting the primary education model, designed for children’s learning needs, for adults. Rural non-literate adults understand that one literate member of the family will share those abilities with the rest of the family; this is called proximate and/or family literacy (Basu, 2000; Basu, Foster and Subramanian, 2000; Almeyda-Duran, 2005). The fact that parental education levels have a strong impact on their children's
educational achievements and overall well-being is well-established (Chochrane, Leslie and O'Hara, 1982; Rowe, Jacobson and Van den Oord, 1999; Desforges and Abouchar, 2003). It was concern about parental education levels that led to the establishment of BRAC’s pre-primary school network, one that is almost as large as its primary one (BRAC Annual Report, 2012). The main reason for these pre-primary schools are to accommodate students from families where parents are non-literate, and cannot support the child’s learning at home (BRAC, 2006; Nath and Sylva, 2007). This may indicate that adult literacy efforts need not have a conflictual relationship with primary education, but can actually be synergistic, where adults with increased literacy can help their children in their early years of schooling and can later benefit from their children’s advancing literacy skills as they progress through their schooling. This future cannot be realized however, unless adults are sufficiently motivated to pursue literacy and are able to transfer those skills. This can be informed by further research and assessments of how adult learning may differ from that of children.

2.5 How adult learning differs from that of children:

Knowles first proposed the concept of Andragogy (1978), a distinct model for adult learning based on four premises: that adult preferred self-direction, that they derived much of their learning from their experiences, in that they preferred real-life problem solving to passive listening; that adult learning needs are precipitated by life events such as marriage, divorce, new jobs and such; and that adults are competency-based individuals who prefer to acquire skills that they can apply to real-life scenarios. According to Zemke and Zemke (1996) Although Andragogy was initially positioned as the adult counterpart to Pedagogy, the scholarly consensus is now that Andragogy and Pedagogy "probably represent the ends of a spectrum that ranges from teacher-directed to student-directed learning" (p. 2). The authors conclude however, that
there are some general characteristics that define adult learners and adult learning:

1. Adult learning is problem centred, where the learning experience is often initiated directly following a life event.

2. Adult learners are motivated by the potential for personal growth or gain.

3. Adult learning should not discount the "entry-level knowledge and understanding of participants" (p.4).

4. Adult learning experiences should encourage information integration.

5. Adult learning experiences should be realistic, involving, stimulate thinking contain a reasonable degree of challenge and accommodate their "continued growth and changing values" (pp. 5 - 6), and

6. Transfer strategies for the learning should be included (Zemke and Zemke, 1996).

Of the above, perhaps the two most critical ingredients for adult literacy and learning are motivation and transfer. Rogers (1999) explores the conception of motivation and transfer in adult literacy efforts. He identifies the social challenges of literacy efforts, illustrating them with a conversation in which a non-literate Bangladeshi villager recounts how she enlisted her ten-year old son to write a letter for her (p. 12):

*This conversation, recorded in the field in Bangladesh in 1988, is remarkable. It shows that a woman, categorised by aid agencies (and by herself) as being 'illiterate', is in fact quite normally, and apparently regularly, engaging in literacy activities without any sense of disadvantage. It challenges traditional approaches to adult literacy which see 'illiterates' as persons signally disadvantaged and unable to*
engage in developmental activities until they have mastered the skills of reading and writing through a special programme of adult literacy classes. Nor is this conversation unique: throughout the low-income world, thousands of men and women are living their daily lives, engaging in literacy practices without having the skills of reading and writing, despite all the efforts of aid agencies to provide adult literacy classes for them. Rogers (1999)

To Rogers, this is the first social challenge to adult literacy: motivation, or actually convincing non-literate or low-literate adults of the benefits of literacy when they do not see themselves as particularly disadvantaged. He identifies a second major challenge as the transfer of skills learned in the classroom to the literacy needs of daily life, recounting the following anecdotes of adult literacy graduates who could not read outside their classroom:

The case of the Nepali woman who said, ‘I can read the primer (literacy textbook) but I cannot read anything else’ (Rogers, 1994) can be replicated in most countries. A recent study of those income-generation activities which accompany adult literacy classes shows this failure clearly. The participants rarely use literacy in these activities. For example, one group in Kenya engaged in goat rearing said that they could not read the word ‘goat’—‘because it is not in the primer’. This is typical of many such programmes in many countries: what is learned in the literacy class is not normally used in the income-generation work. (pp. 2-3)

Rogers (1999) further explores the concept of ideological versions of literacy by highlighting literacy efforts in Bangladesh and India, where the primary mode for adult literacy interventions were to create “artificial” groups of adults created for the sole purpose of learning to read and write, or, a “literacy first” model. Rogers expresses his preference for literacy interventions that focus on gathering adults together for activities (natural groups) that yield through participation the basic benefits of literacy, or a “literacy second” model. Rogers primary criticism for dominant adult literacy paradigms are that they are too often based on the primary school model,
which treats learners like children—essentially homogenous, and at approximately the same level for needs and abilities. Rogers suggests that the ideal model for a literacy second approach would be groups that already exist, in some capacity, formed on the basis of shared income-generating activities such as weaving. Through the course of engaging in literacy interventions around these meaningful, personally relevant practices, adults would acquire literacy.

Such mixed activity groups are what on much of the NGO activity in Bangladesh is based. These groups are often composed primarily of women, formed with the purpose of creating a micro-credit (small loans given to the “traditionally unbanked”) loan group where new members are introduced and sponsored by existing member who “vouch” for them. Provided that a new member has spent a pre-specified period of time in the group, she is then allowed to take out microfinance loans. The history and camaraderie of this group are what are being leveraged in “literacy-second” interventions, which can be viewed as a way of co-opting existing communities of practice and re-orienting them towards literacy activities.

Literacy-second interventions can be viewed as a community of practice, which Lave and Wenger (1991) define as informal or formal groups coalesced around the idea of a shared activity or interest. In this way, Lave and Wenger are in agreement with Street and other New Literacy Scholars that learning is indeed a social process that is supported through groups acting in mutual interest. Communities of practice also increasingly exist online, where the medium of the Internet provides a means of congregation for individuals with shared interests from around the world. As corroborated by my interactions with the fruits sellers from Sri Mangal to be detailed later, these groups develop their own micro-cultures, semiotics, and indeed, their own form of literacy. Non-literate mobile owners in Sri Mangal similarly form their own community
of practice, based around coping mechanisms and bridging strategies as they dealt with a text based communication mode (Viswanathan et al., 2005; Adkins and Ozanne, 2005).

A better understanding of communities of practice, and adult learning in general, can be developed through understanding the lifestyle and needs of the adult learner - often characterized by less free time to devote to educational pursuits due to income generating activities on which their families may well depend. This presents both opportunities and challenges. Any program that targeted adults while situated in their working life would need to calibrate the scope of materials and activities to remain accessible (i.e., to those with limited time) but also remain intellectually challenging. An adult's life precludes extensive time spent indoors in a classroom, reading a book that they may find hard to relate to their day-to-day lives (Rogers 1999) nor can they carry their books around everywhere, hoping to open it up when they have a break, which is why Sharples (2000) argues that any adult literacy curriculum needs to be designed with the principles of mobility and life-long learning in mind.

2.6 Mobile Phones as a Medium for situated and lifelong Learning

Sharples (2000) explores the modern concept of lifelong learning in depth. Arguing that it is impractical to expect to equip learners with desired knowledge and skills in the static environments of schools, colleges and universities, Sharples envisions a future where learners continually “enhance their knowledge and skills, in order to address immediate problems and to participate in a process of continuous vocational and professional development.” (Sharples 2000, p. 2). To this end, Sharples identifies characteristics of ideal lifelong learning tools (p. 3):

1. Highly portable, so that they can be available wherever the user needs to learn;
2. Individual, adapting to the learner's abilities, knowledge and learning styles and designed to support personal learning, rather than general o.ce work;

3. Unobtrusive, so that the learner can capture situations and retrieve knowledge without the technology obtruding on the situation;

4. Available anywhere, to enable communication with teachers, experts and peers;

5. Adaptable to the learner's evolving skills and knowledge;

6. Persistent, to manage learning throughout their lifetime, so that the learner's personal accumulation of resources and knowledge will be immediately accessible despite changes in technology;

7. Useful, suited to everyday needs for communication, reference, work and learning

2.6.1

The advantages of a mobile phone over a primer book as a lifelong learning tool are obvious. An adult learner can simply throw a primer book on their desk on their way out of the house and forget about it, but they will almost always have their phones with them. Because of this simple reality, the value of the mobile phone as a learning device is transformed. Should the phone have a camera, the value appreciates even more, as scenarios could emerge where the non-literate individual could take picture of a sign or a document they are unable to read for later perusal by themselves or others. If the phone is a smartphone, then it begins to fulfill Sharples criterion of the device being “adaptable to the learner’s evolving skills and knowledge” (Sharples 2000, p. 3).

Mobile phones present both opportunities and challenges if used for education (Shuler 2009; Lindquist et al., 2007). Before we can focus on the opportunities that mobile phone-based learning device presents, we should acknowledge its limitations, which are ostensibly many:
compared to a computer, a mobile phone has a smaller screen and a limited keyboard. Compared to a television or a radio, a mobile phone lacks broadcast reception or the audio-visual capability to serve an audience of more than one, unless equipped with a speaker function. Yet the mobile phone incorporates and subsumes some of the features of all the devices described above (Anwar, 2009). A mobile phone has a screen, a limited keyboard and radio capabilities. Increasingly, mobile phones have powerful CPUs and displays that confer on them the processing power comparable to desktop computers (Marshall, 2012).

The two biggest advantages of mobile phones have nothing to do with their internals, but with the fact that they ubiquitous and portable. With more than six billion unique mobile phone subscriptions worldwide (ITU, 2012), even accounting for multiple handset ownership, the technology that the average person will most likely have access to at any point in time is a mobile phone. This constant availability is a strongly differentiating feature in terms of making them a unique learning device. Anwar (2009) explored the emerging use of mobile phones for educational purposes and found three themes that could be categorized under that framework: accessing educational experiences, enhancing educational experiences, and/or managing educational experiences (p. 68). The first category, of access provided to services through mobile phones for traditionally underserved groups, gains salience in resource-constrained settings such as Bangladesh and other economies in the Global South. There is accumulating evidence that traditionally underserved groups can be empowered through access to appropriate and relevant Information and Communications Technologies (ICT) such as mobile phones (Aminuzzaman, Baldersheim and Jamil, 2003; Scott et al., 2004; Myhr and Nørdstrom, 2006; Bhavnani et al., 2008; Rashid and Elder, 2009).
Thanks to the combination of availability, low-cost and incidental advantages listed previously, mobile phones are being used for economic empowerment in low-income, resource-constrained communities for health and legal rights education, mobile learning (mLearning), and importantly, literacy development in both children and low-literate adults (Kukulska-Hulme and Traxler, 2005). The next section will look at a number of existing mobile phone-based projects through the lens of the “empowering” aspect of these devices. This will reveal that, while mobile phones can be a flexible tool for economic, education and health empowerment for those living at the “bottom of the pyramid” (De Silva and Zainudeen, 2007; De Silva, Ratnadiwakara Zainudeen, 2009; Karamchandani, Kubzansky and Lalwani, 2011; Anderson and Markides, 2012), many of the end-users in these studies remain non-literate or low-literate.

2.6.2 Prior applications of mobile phones for development interventions

Innovative uses of mobile phones can meaningfully transform the quality of life for the poor in developing economies (Ford, 2013; West, 2013). Most of the projects surveyed here are privately funded startups and have not been subject to sustained academic study or review. Still, they may provide a sense of the activities currently underway, and reflect the functionalities pursued in various development efforts.

In a variety of settings, but mostly concentrated in low-income and resource-constrained ones, governments, NGOs and private sector entities are harnessing the availability and familiarity of mobile phones to provide critical social, health, and educational services. The mPedigree network is one such innovative use of mobile phones for health literacy (Kimber and Taylor, 2011). Now available in a number of African countries, including Ghana and Nigeria, mPedigree links African telecom operators, pharmaceuticals manufacturers and technology companies to collaborate on maintaining a database of information against which consumers can check the
authenticity of the medicinal drugs they have purchased. Given that counterfeit medicine kills nearly a million people a year, a service like mPedigree literally saves lives. Farmer’s Friend in Uganda, developed by Bangladesh-based GrameenApps lab, allows farmers to obtain information on planting, harvesting, crop storage, pest control, disease prevention in crops and local weather forecasts (Donner, 2009). In India, where non-literate farmers are often harassed and extorted over their land ownership, land records are made available over mobile phones through the Bhoomi (Hindi for “Land”) project by the Government of the Indian state of Karnataka (Pentland, Fletcher and Hasson, 2004). Kenyans now use mPesa, (Pesa means “money” in Swahili), a way to transfer money and access micro-finance services through mobile phones offered by the two largest mobile network operators in Kenya (Jack and Suri, 2011). mPesa, and other “branchless banking” (Ivatury and Mas, 2008; Mas, 2009; McKay and Pickens, 2010) services focus on the needs of the those without access to advanced western style social and financial services. In Bangladesh, phone ownership and renting of airtime to others has enabled the Grameenbank Phonelady program to provide livelihoods to rural women (Aminuzzaman, Baldersheim and Jamil, 2003). In Mali, health agents can now track the birth-weights of infants by using their mobile phones, enabling them to send back live updates from the field and the head office to track geographical spots that show acute malnutrition, using Pesinet (Patnaik, Brunskill and Thies, 2009).

Efforts such as mPedigree and Pesinet come under the category of mHealth initiatives, and it is not surprising that this is a current focus of funding and development effort for mobile phone interventions, as improvements in healthcare access and outcomes are likely an even greater concern than those related to literacy improvement. And while the above interventions have made critical differences in the lives of rural and poor adults in low-income countries, they
typically eschew the fundamental impediment to even more ubiquitous adoption of their programs: the fact that many adults in the developing world are non-literate, and cannot necessarily use the information provided on their mobile phones without help from a literate family member or friend.

2.6.3 Women, mobiles and development

The GSMA mWomen programme is a recent and notable initiative that involves increasing “women’s access to and use of mobile phones and life-enhancing mobile services in developing markets” (GSMA, 2013). The initiative was launched by the US Secretary of State Hillary Clinton in October 2010, and aims to refocus industry on the needs of resource-poor women, increase “life-enhancing value-added” services to the same, and reduce the digital and social divides that prevent women from using mobile phones. Like many other mobile phone based initiatives, mWomen is a collaboration between mobile operators, service providers, NGOs, and other members of the mobile phone industry. The program adopts a global reach in Africa, Asia Pacific and the Middle East, operating in regions deemed “historically experiencing more significant mobile gender gap.” It is notable that mobile phones, in a relatively short period of time have become such a common-place technology that we can draw historical trends in their ownership. And it is unsurprising to find that like with many other social and economic resources in low-income countries, it is more likely that women are deprived of them than not. mWomen notes that as of 2010, 21% percent fewer women than men owned mobile phones in low to middle income countries, a number that holds salience as it represents a 13 billion dollar revenue opportunity for the mobile industry, giving them an incentive to improve access for women. Among the reasons cited for the disparity are cost, limited understanding of the potential of
mobiles, cultural barriers, limited technical literacy, and the mundane one of limited access to charging resources.

The importance of initiatives such as mWomen lies in the fact that women have been repeatedly identified as key to successfully moving families from poverty and into higher socio-economic classes (Boserup, 1970; Chen, 1983; Yunus, 1999; Robinson-Pant, 2004; Sudhakara-Reddy and Nathan, 2013). Similarly, literate females may percolate literacy throughout the household, resulting in better child healthcare, greater likelihood of sending children to school, cleaner and more hygienic homes, and better family planning (Bown 1990; Browne and Barrett, 1991; UN 1995; World Bank 1995; Parikh and Gupta, 2001). Notwithstanding cultural reluctance to sending women to school or otherwise fully participating in the socio-economic intercourse, in conservative and resource-constrained countries women are often too burdened with household work and child-rearing to pursue education (Nussbaum 2001). Thus, among adults, women may come to embody the attitude of “let my children learn, I am too busy.” One reason that Rogers’ (2000) has reported success for the literacy second initiatives is that the literacy instruction was integrated into activities that women had already found worth their investment of time, and set in an interesting and positive environment.

Any discussion of women's literacy needs to acknowledge the reality that in many emerging settings women's rights are still oppressed and circumscribed by patriarchal structures. This gains especial salience when issues of literacy and learning are introduced. Maddox's case studies of the societal and economic struggles of rural poor women in northwestern Bangladesh illustrates the challenges they face in gaining literacy in patriarchal environments - one where they have to balance the demands of family, housework and husbands hostile to the idea of women acquiring literacy (2005; 2007; 2008). Even when a strong case is made for women's literacy by
international organizations invested in the outcome, it is "still to contribute to their efficiency in their roles as mothers and workers", and not "for their own individual development" (Robinson-Pant, 2004, p. 2). In this sense illiterate women are positioned as the Other, "lacking" but "homogenous" (Chopra, 2004).

The above examples reveal the flaws inherent in the Women in Development (WID) paradigm, which Attwood, Castle and Smythe describe as predicated on the "reductionist" view that men are "the problem" and women the solution (2004). The authors offer the Gender and Development model as a preferable alternative:

*Within this conceptual framework, 'gender' is understood to be socially acquired (rather than a biologically defined) identity [...]. The basic assumption is that men and women have different experiences based on their respective genders [...]. Gender is thus understood as a social and cultural arrangement with forms of social differentiation [...]. Within Gender and Development, there is a focus on the continual construction and reconstruction of relationships between men and women with inequalities and power relations expressed in different ways according to the particular constellation of socio-cultural forces at play.* (Attwood, Castle and Smythe, 2004, p. 3)

Bangladesh is ideally suited for interventions based on the Gender and Development paradigm. Depending on the region, women in Bangladesh have more freedom to participate in the labour force than other, more conservative Muslim countries such as Pakistan and Afghanistan. Much of the success of NGOs such as BRAC and Grameen Bank have been founded on creating a large group of women micro-credit clients (Evans et al., 1999; Chowdhury and Bhuiya, 2004; Rahman, Luo and Xiaolin, 2012), the benefits of which have trickled to their families and the
country as a whole. Bangladesh’s economy too, is dependent on women to a large degree (Kabeer and Mahmud, 2004). Although, Non-resident Bangladeshis (NRBs) make a significant contribution to the country’s foreign exchange earnings through remittances that they send back from abroad (Fowler, 1998; Salman, 2009), much of Bangladesh’s recent wealth has resulted from its massive garments industry, which contributed as much as 78% to the country’s export earnings in 2012 (BGMEA, 2013). The industry also employs about 3.6 million workers, 80% of them women and usually between the ages of 16-25 (BGMEA, 2013). Given that 68% of the population in Bangladesh owns a mobile phone (BTRC, 2013), it is a reasonable assumption that many of these low-wage, and low-literate workers are mobile phone owners, marking each as a potential client for a mobile phone based intervention.

At the time of this writing, mobile phones are still fundamentally based on a textual form of conveying information to their users. And it is likely that given the limitations of voice based messages, and the small amount of storage space in low-end handsets that are prevalent in developing countries, that simple text based messages will be the dominant communications method for mobile phone owners in low-income countries such as Bangladesh. Yet if the mobile phone owners who stand to benefit the most from the services provided by the likes of mPesa and mPedigree are non-literate, the effectiveness of these initiatives is reduced by a considerable degree. This should concern mobile phone evangelists, and bring mLearning efforts to the forefront.

2.6.4 Low-literate and non-literate technology users

Chudgar (2013) conducted a recent, extensive survey of non-literate and low-literate mobile phone users, gauging their interest in literacy interventions delivered by mobile phones. Chudgar's survey highlights both the potential and pitfalls of using mobile phones to address
literacy needs, and echoes some of my own findings. It focuses on rural India, which hosts a significant portion of the world’s 800 million non-literate adults, and cites the most recent Indian census, conducted in 2010, which found that 270 million Indians, about 26% of the population of the age of 7 and above, were unable to read or write in any language. The census also found that the difference was gendered, in that 82% of the men were literate compared to only 65% of the women. This literacy gap, according to the author, has persisted since 1951 – four years after Indian independence. Nor are India’s adult literacy issues addressed in a meaningful and persistent way, and the reasons offered by Chudgar (2013) reiterate Abadzi’s (2003) findings, in that these issues stem from “inadequate government investment, instructor apathy and lack of accountability, lack of student interest in learning, and limitations of the standard training system” (p. 2).

Chudgar’s random sampling of 409 Gujarati-speaking non-literate adults from the state of Gujarat was stratified to obtain comparable representation from both men and women and working and non-working individuals. Chudgar notes that the respondents, up to 99%, reported residing in a household whose head was also non-literate, illustrating the pervasiveness of illiteracy in South Asia. Data from Bangladesh reveals comparable results (Bangladesh Bureau of Statistics 2008). Chudgar compared responses from both owners and non-owners in regards to their use and plans to use mobile phones. Of note is that even in the group of non-owners large percentages (30% of working women) and 39% and 47% of non-working women and men respectively, desired to purchase phones. Even though this group did not own phones, they reported exposure to phones through other family members and their social circles. The main reasons reported for the lack of owning a mobile phone were cost and utility. When asked about literacy, 12-15% reported both lack of interest and of training opportunities as reasons they had
so far remained non-literate, highlighting again the issues of motivation as reported elsewhere (Rogers, 1999). Chudgar summarizes her findings as follows:

*The respondents in this sample clearly indicate that they understand the importance of gaining basic reading and writing skills. Simple tests of print awareness and letter recognition confirm this need for literacy training. At least some of the reasons that have thus far kept them from becoming literate may be addressed by mobile phone based training modules (especially the time constraints posed by such formal training). But the question is how suitable would mobile phones be for such training/intervention? (p. 8)*

Chudgar’s (2013) findings reveal that there is indeed interest in rural adults in developing countries in pursuing a literacy intervention that is based around mobile phones, which is understandable given the high level of exposure they have to these devices and the plans of most non-literate adults to purchase one. The lack of effective interventions reveal, however, that adult literacy educators are still coming to terms as to how these devices can be used in the context of adult education.

### 2.7 The gap that remains

To summarize the outcomes of this review, it is important to reiterate that many definitions and perspectives of literacy exist, and with the increasing pace of new technologies, these definitions and perspectives will likely give rise to new ones. An important point was that the autonomous models of literacy have been strongly challenged by New Literacy Studies scholars, who contend that it is the ideological aspects of literacy that should most concern us. Understanding the social foundations of literacy enables us to better integrate a literacy intervention designed around the lives of adult participants. Our interactions with the written word dominates our lives, and while it may be presumptuous to elevate one form of literacy over
another, neither is it helpful for non-literate individuals to stay un-coupled from the promises of textual literacy.

The impressive statistics surrounding mobile phones was raised as a promising avenue, as a significant portion of the nearly one billion low-literate or non-literate adults worldwide may be mobile phone owners. But as individuals or as a group, these citizens are not well-understood, and more research is needed to shed light on the particulars of their literacy concerns, values, and practices. Their interactions with mobile devices nonetheless hold significant promise for the development of effective adult literacy initiatives. Studying the interactions of low-literate adults with their mobile handsets can lead us to designing effective literacy interventions based around the mobile phone, as the bulk of adult literacy interventions, until recently, have relied on the “school model” of adults sitting around in a static classroom with instructors reading from primers. This is the “literacy-first” approach that is criticized by Rogers (1999; 2000). In light of these critiques, mobile phones may offer the most potential for advancing adult literacy in a literacy-second model, given that these devices are likely to be carried by adults, and are available to programs that seek to situate learning in everyday contexts. Leveraging these devices may be intuitively obvious, as recognized by Chudgar (2013), but the pace of progress has been frustratingly slow.

This study adds to the literature by considering whether another role for the mobile phone can be imagined for adults living in rural developing economies beyond that of a tool for health literacy efforts, or for facilitating banking and other services. The review of literature indicates that there is still strong motivation for, and great need to explore mobile phone as a tool for literacy and learning for adults, as a lifelong learning companion that can uphold the principles
of motivation and transfer, identified by scholars as cornerstones of effective adult literacy efforts.
3 Methodology

Although the general methodological framework for this study was determined before arrival at the research site, the specific methods used emerged organically through the course of the data collection period. This chapter begins with an introductory discussion of mixed-methods research as an appropriate methodology, followed by a description of the participants, materials, and apparatus. Chapter 4 then discusses more specific procedures, including methodological decisions that were made during the course of the study.

3.1 A mixed-methods approach

The overall research goals for this study were modest: to observe low-literate mobile phone users and produce a “from the trenches” report on their coping strategies and usage habits regarding day-to-day mobile phone use. For this, a qualitative, ethnographic research method seemed appropriate (Le Compte and Schensul, 1999). However, there was also an opportunity to conduct a study of the impact of using mobile phones on the literacy skills of participants, to the extent that the intervention included the mobile phone as the primary learning tool or device. This would entail some limited use of more quantitative measures (i.e., of any changes in participants’ literacy levels, as well as in their levels of engagement). Thus, a mixed methods approach was seen as appropriate for the quantitative and qualitative data that would emerge in the course of the study.

While the quantitative aspect of this research, (e.g., scores from the literacy test, number of texts sent, etc.) were important, a rich qualitative dataset was also captured, including the views of participants on negotiating social conventions in the age of the mobile phone, gender
differences and challenges in mobile phone use, and the underlying social stressors and circumstances that shaped their life trajectories. The literacy test scores and gains are captured and interpreted as a means to highlight the achievements of the participants. A deeper interpretation of the participants’ growth, in terms of literacy and technology practices, are best revealed through qualitative analysis.

Many of the details of the research method were left intentionally to be determined “on the ground,” during the data collection period. This decision was advised in reference to other ethnographic studies of situated cognition, including Saxe (1988; 1994) and Carraher, Carraher and Schliemann (1985). Early in the data collection process, as anticipated, it was clear that the researcher's anticipations of mobile phone usage habits did not match reality. It had been expected that adult mobile phone users, whether literate, low literate or non-literate, would, through the process of discovery, become familiar with all aspects of a mobile phone, and make prolific use of its features – especially texting. However, it was observed that only Enthusiast Users (see Chapter 5 for definitions of these categories) indicated broad interest in exploring their mobile phones in depth, Advanced and Basic users, who likely comprise the vast majority of mobile phone users in Bangladesh, showed little interest in venturing beyond the basic functionalities of their phones, and texting was not observed to be a ubiquitous practice in Bangladesh, perhaps reflecting cultural norms (i.e., where phone calls or direct household visits are seen as more appropriate).

Because of prior research such as that of Saxe (1988) and others, the researcher approached the design of this task in an open-ended fashion – going to Bangladesh with some formative expectations, but expecting to revise and adapt the study design as more concrete observations and insights emerged. The original, formative notion was to simply train users on basic phone
skills, distribute the phones, and return to Canada to maintain sporadic contact as the participants engaged in autonomous mobile-phone practices. This would have made for a more simplistic study, but observations revealed that new mobile phone users were unlikely to be adventurous in their phone use unless they first developed a measure of comfort using phones. Texting was not seen as a great imperative, and the likelihood that participants would be lost (i.e., not engage in any texting or other forms of literacy) was too great for this approach.

Based on initial observations and interviews, it was decided that the researcher would need to take a central role in the text messaging process. An additional argument for central control were the phones distributed to the participants. The simple Nokia 1100 models had limited internal storage or memory, holding only up to 50 text messages at a time, precluding the tracking of message history for the participants. Whereas, if the text messages were directed to the researcher, he could retain a central history and track of text messages on his smartphone. Unfortunately, there was no viable way to track the messages the participants sent to each other, or to friends and relatives. Hence, only the data about texts sent to and from the researcher are reliable; other texting activity can only be discussed anecdotally.

3.1.1 Culture and context: Bangla as language of intervention

Another early decision was that the study should be an L1 intervention, where the term L1 connotes Language 1: the native tongue of the participants – in this case, Bangla. For most of the participants, whether day labourers or rural housewives, learning English would be of limited social or economic benefit. Moreover, finding sufficient quality materials, such as newspapers, with which to practice their English literacy skills would also be difficult. Bangla was a different
matter. Increasing reading fluency in Bangla would have an immediate material effect on the quality of their daily lives whether through reading road signs or letters from family. Bangla newspapers, although not cheap, were more abundant in rural Sylhet. Another reason to focus on Bangla as opposed to English was that during the early-phase interviews, several participants indicated that had the phones they initially used featured Bangla, they would have learned the basics of use much quicker.

Bangla is an Indo-Aryan language descending from the ancient languages of Sanskrit and Prakrit and is spoken by more than 250 million people, mostly in Bangladesh and the Indian state of West Bengal. Bangla has a rich vocabulary, cultivated through a long literary history. Although a variety of spoken dialects exist in Bangladesh—with the study region possessing its own—written Bangla follows a uniform standard across Bangladesh and West Bengal. In Bangladesh, the large number of daily Bangla newspapers—more than twenty—reinforces this standard.

**Figure 8 Bangla consonants and their conjuncts**  
(Wikipedia 2013)

Although Bangla is written from left to right like most South Asian scripts, it does not feature an alphabetic writing system. It is rather an abugida, also known as an alphasyllabary. As defined by Wikipedia, an alphasyllabary “is a segmental writing system in which consonant–vowel sequences are written as a unit: each unit is based on a consonant letter, and vowel notation is obligatory but
secondary. This contrasts with a full alphabet, in which vowels have status equal to consonants” (2013). Bangla, like other abugidas, also features ‘consonant clusters’, where consonants with no interrupting vowels are written in unique, joint forms, and diacritics, or vowels that take the form of a glyph or mark when placed between consonants. The above features, and the large number of consonants and vowels (36 and 12 respectively), can make Bangla more complex than English for texting and typing purposes.

A mitigating aspect for the difficulty of writing the Bangla is in decoding the written form. As it is not a tonal language, Bangla has relatively shallow orthographic depth (Katz and Frost, 1992), meaning that there is generally a direct correspondence between the phonemes (sounds) and the graphemes (letters), thus, it is relatively easy to predict the pronunciation of a word based simply on its spelling in Bangla. Examples of languages that have deep orthographies include English, French, Arabic and Hebrew, where new and young learners learn to read more slowly because of the inherent challenge in decoding the words based on their written forms (Goswami, 2006).

3.2 Major Phases of Study

This study comprised two major phases. In Phase One, the researcher surveyed a group of citizens in the Radhanagar area, using a snowball sampling approach (see Participants section below) to understand their family’s mobile phone usage and identify possible themes or opportunities for a texting intervention. The observations made on general trends of mobile phone use in Phase One informed the design of Phase Two: a literacy intervention in which snowball sampling was again used to recruit nine participants who engaged in texting with the
researcher over a nine-month period. A detailed account of the procedures used in the study is provided in Chapter 4.

Figure 9 Research Timeline (not to scale)

3.3 Participants

In total, 23 adult mobile phone users from the Radhanagar area were interviewed in the first month of the study, for Phase One, which served to distinguish three categories of mobile phone users: Enthusiast Users, who are domain experts on the topic of mobile phones, eager adopters of new technology and area resource persons on the same; Advanced Users, seasoned mobile phone users who are comfortable and familiar with most features of mobile phones, and, Basic Users, who are either unfamiliar or just passingly familiar with mobile phones (i.e., they use their
handsets just to make phone calls). Each of these categories of users had distinct roles to play in the study; these roles are elaborated on in Chapter 4: Ethnographic Methods. Further details on these groups, and their distinguishing characteristics, are found in Chapter 5: Findings, participation and input. The Enthusiast User group was composed of 1 man, the Advanced User group was comprised of 21 men and 1 woman, and the Basic User group was comprised of 6 men and 3 women. The age range for all participants was 18 – 35.

The participants for this study were selected through "snowball" sampling. Particularly popular in the social sciences, "snowball" sampling is also know as "chain referral sampling" (Biernacki and Waldorf, 1981), and involves a series of referrals within a social circle for individuals seen as appropriate for a research study. For this study, the researcher approached individuals – working adults with mobile phones – and gained referral to others who might be willing to discuss their mobile phone usage habits and thoughts. This yielded a total of 23 Advanced (including one Enthusiast) User participants for Phase One (please see Chapter 5 for definitions of these user/participant categories).

In Phase Two, the snowball sampling method was again followed, where Advanced Users from Phase One were asked if they knew of individuals in the community who were not highly literate and did not currently own mobile phones. This set of chain referral sampling led to 9 individuals selected as Basic Users, who formed the participant pool for the literacy intervention phase of this study. All participants were adults aged 18-35.

Table 1 List of participants in Phase Two
<table>
<thead>
<tr>
<th>Name</th>
<th>Age</th>
<th>Sex</th>
<th>Education (years of schooling)</th>
<th>Mobile Experience</th>
<th>Baseline literacy assessment (/100)</th>
<th>Completed study?</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bishnu</td>
<td>29</td>
<td>M</td>
<td>8</td>
<td>Some</td>
<td>84</td>
<td>Y</td>
</tr>
<tr>
<td>Govinda</td>
<td>20</td>
<td>M</td>
<td>0</td>
<td>None</td>
<td>16</td>
<td>Y</td>
</tr>
<tr>
<td>Karabi</td>
<td>34</td>
<td>F</td>
<td>4</td>
<td>None</td>
<td>61</td>
<td>Y</td>
</tr>
<tr>
<td>Khadija</td>
<td>25</td>
<td>F</td>
<td>9</td>
<td>Some</td>
<td>93</td>
<td>Y</td>
</tr>
<tr>
<td>Kumar</td>
<td>24</td>
<td>M</td>
<td>5</td>
<td>Some</td>
<td>73</td>
<td>N</td>
</tr>
<tr>
<td>Mrinal</td>
<td>22</td>
<td>M</td>
<td>8</td>
<td>Extensive</td>
<td>92</td>
<td>Y</td>
</tr>
<tr>
<td>Shakib</td>
<td>32</td>
<td>M</td>
<td>4</td>
<td>Some</td>
<td>44</td>
<td>Y</td>
</tr>
<tr>
<td>Shefali</td>
<td>18</td>
<td>F</td>
<td>10</td>
<td>Some</td>
<td>94</td>
<td>Y</td>
</tr>
<tr>
<td>Sukumar</td>
<td>27</td>
<td>F</td>
<td>8</td>
<td>Some</td>
<td>71</td>
<td>N</td>
</tr>
</tbody>
</table>

### 3.4 Participant informed consent procedures

The researcher thoroughly explained the nature and purpose of the study to all participants, including both Advanced and Basic Users, following which they were requested to sign a letter of consent. The letter was composed in Bengali and contained information on the background of the researcher, his institution and purpose of the study. The participants were assured that their participation was entirely voluntary and confidential. At no point of the study was deception used in any form with the participants. Basic Users participating in the literacy intervention
phase of the study were informed that they would receive a mobile phone for the course of the study (9 months) and that it would be theirs to keep if they completed the study. In case a participant was non-literate and could not read the consent form unassisted, a literate community member was present to read the consent letter and confirm its contents to the participant. This literate community member was asked to sign a letter of confidentiality beforehand.

**Materials/Instruments**

All users were interviewed in a semi-structured interview format; the interview questions are provided in Appendix 2. The semi-structured interview format was considered appropriate because it allows for the collection of generalized data such as name, age, SES, while still accommodating open discussions with participants, resulting in rich descriptive data that can be analyzed qualitatively. For Phase Two, the literacy intervention phase, the participants were interviewed in a similar semi-structured interview format, but once selected, were also asked to complete a literacy baseline assessment using a UNESCO literacy instrument previously used in a national survey in Bangladesh in 2008. The test featured two sections of 50 points each, respectively on reading/writing and mathematics/general knowledge, for a possible total of 100 points. The test is a total of three pages, and was developed in conjunction between The Bangladesh Bureau of Statistics (BBS) and UNESCO (2008). A total of eight questions are further divided into sub-questions for a total of 31 items. The assessment covers Bangla reading, writing, general knowledge, and math skills. Please refer to Appendix 1 for a sample test.

Phase Two participants were involved in a data collection period that lasted for approximately nine months, from September 2011 to April 2012. During this period, the researcher telephoned
each participant weekly to discuss their progress and thoughts on the previous week’s messages. No specific scripts were followed or instruments used during these phone conversations, as the intent was to exchange pleasantries and foster an "informal" discourse between the researcher and participants. In general however, the participants were asked about their thoughts on the news synopses sent over the previous week, as well as to clarify any outstanding questions that may have arisen during the exchange of messages for either the researcher or participants. These exchanges were not recorded electronically, but later transcribed to a note-taking application on the researcher's laptop to the best of his memory. Typically, this transcription occurred within a half-hour of the conclusion of the phone conversation.

At the end of the nine-month data collection period, the researcher conducted another round of semi-structured interviews with the participants of Phase Two to collect and assess their reflections on the study. At the conclusion of the round of semi-structured interviews, a focus-group interview was conducted that included all the participants from Phase 2. The individual interviews were conducted before the focus-group so that the participants could be completely forthcoming and not inhibited or influenced by others’ responses.

3.5 Apparatus and Materials

The choice of apparatus used for this study was guided by a number of important criteria: the phone used for the literacy intervention aspect of the study would have to be inexpensive, widely available, reasonably familiar to the community while still featuring Bangla as an operating system language. In the end, Nokia 1100 phones were selected as they met all of the above criteria. Twelve Nokia 1100 phones were purchased from a local shopping centre at a cost of approximately USD 20 each. Of these, nine were distributed to the participants of the literacy
intervention and three were kept as spares in case phones were lost or damaged. Each participant was also assigned a SIM card (which contains the phone number and other subscriber information that makes a phone operable). Each phone package also contained an electrical charger. Headphones were supplied to the participants as an optional extra in case they wanted to use the FM radio functions of the phone. Details on the Nokia 1100 as well as its consumer history are provided in Chapter Four.

For Phase Two, an existing quantitative instrument was adopted to measure participants’ literacy skills, and capture any progress made as a result of the intervention. The UNESCO literacy assessment instrument (shown in Appendix A) was administered to participants before and after the intervention. The assessment measured basic reading and writing in Bangla language, and consisted of normed, validated items (Bangladesh Bureau of Statistics, 2008) which had been used for a nation-wide survey by the Bangladesh Bureau of Statistic (BBS) in 2008. The response items in the literacy assessment were developed "based on IALS principles, UIS Guidelines for LAMP, and methodologies and tools used in the former two literacy assessments: “Education Watch, 2002” and “Assessment of Literacy Situation in Bangladesh 2005” (UNESCO, 2008).

3.6 Measures

All text messages sent between the participants and the researcher were recorded so they could be analyzed in terms of frequency, length, and complexity of content. In addition, qualitative data was collected through the use of open-ended interviews, focus groups and telephone conversations with the participants over the course of the data collection period.
3.7 Procedure

For Phase One, 23 participants were contacted through community referrals. Either right away, or at an agreed time, the researcher met with the participant and asked a series of interview questions, described in Appendix 2. The interviews lasted approximately 30 minutes and participants were not compensated for their time. At the end of the interview, the participants were asked if they knew of others who might be interested in discussing their mobile phone usage habits, and if they knew of anyone who would be suitable as a Basic User for Phase Two of the study. The intent of these Phase One interviews were to glean insights from the mobile phone usage habits of existing rural, low-literate phone users, so that these insights could inform the design of Phase Two, where novice phone users were provided with mobile phones to participate in a texting-based literacy intervention.

For Phase Two, the literacy intervention phase, a total of 9 participants were recruited of whom 6 were men and 3 were women. These participants were termed Basic Users for their relative lack of familiarity with mobile phones. They were required to be non-mobile phone owners and not highly educated, with less than 10 years of schooling. Once selected, each Basic User was interviewed in a semi-structured format on their life history, experience with mobile phones, and their preference for news categories should they enroll in the literacy intervention. After the initial interview, each participant took a literacy pre-test, and then was told about an initial training session. The participants were trained in a group, with an explicit identity as a “community” that would be going through the experience together. This helped to provide a social context for the intervention, as discussed in greater detail in Chapter 4.
Following the training session, the basic Nokia cell phones that the participants were training with were formally handed over to them. These phones were capable of text messaging in Bangla, the native language of the participants. The PI and a research assistant trained the participants thoroughly on the use of the phone over the course of four days. The participants were informed that the researcher would pay for their monthly minutes (approximately USD 5 per person per month) and - if they completed the study (9 months) - the phone would be theirs to keep. This was done as a motivational measure, to provide the participants with an incentive to complete the intervention.

Participants only continued with the program (and only received a phone) if they expressed willingness to exchange texts with the PI over a course of nine months. Each week, the participants received news clips in the form of text messages on their phones. These news clips were always in Bangla. The news clips contained a variety of content curated by the PI from a Bangla news website and included items on politics, international affairs, finance, and sports.
The contents of these news clips were negotiated with the participants prior to the start of the intervention, during semi-structured interviews where they expressed their preferences from a variety of news genres. When a message did not fit the text character limit of the phone, the researcher edited the message into a short but informative blurb. The participants were required to text back at least one question or comment on the news clip. Additionally, the researcher spoke with each participant by telephone once a week, to exchange pleasantries, as an additional motivational measure.

3.8 Analytic approach

A variety of data types were collected for this research, including interviews, videos of task performance, test scores, in-person and telephone conversations, and corpus of text messages, which served as the primary source of analyzed data. The text messages were collected and organized into a Microsoft Excel document in their original Bangla and sorted by date. Text messages with significantly garbled syntax, characters, or ones that were obviously practice messages sent in the training period were discarded from analysis, as were text messages that were written in English (only a handful) and Bangla words written using Roman characters, and the text messages from two male participants who left the study mid-way. This still left a corpus of 461 messages to analyze. For analysis the messages were placed in an excel spreadsheet. Columns included the date, the sender, an English translation for messages in Bangla, the function of the message, the content of the message and the most recent text sent by the researcher that the message might have been a response to. The relationships between the different variables involved in messaging (i.e. time, error rate, word complexity) were analyzed using Regression Analysis. The details of analyses, as well as other findings from Phase One and Two, are found in Chapter Five.
4 Ethnographic Methods

This chapter builds on the previous, to describe not only the details of what was done during the research stages, but also the rationale for those design decisions. As described above, research studies that are situated deeply within a cultural context require some formative explorations to determine the suitability of intervention features, and to fine tune their elements. Hence, while the research began with a commitment to engage low literate Bangladeshi citizens in a text messaging intervention, design details were left intentionally unfinished to allow for a more careful fit to the particular setting, literacy practices and wider cultural context. Hence, the design of Phase Two could only progress as part of the study itself, and the sections below present details of this rich design narrative.

4.1 Choice of Setting and Initial Observations

Sri Mangal, the district where this research primarily took place, is in Sylhet division. The demographics in Sylhet differ from that of central Bangladesh. Sylhetis consider themselves a separate ethno-linguistic group, and do not self-identify as Bengalis, the ethnicity of the vast majority of Bangladeshis. The general ethnic and linguistic homogeneity observed in Bangladesh is less apparent in Sylhet. Several of my participants spoke neither Bangla nor Sylheti at home but a language called Deshwali, an amalgamation of several languages - Bangla, Hindi and Ooriya. In religious terms, there is a stronger Hindu presence too in Sylhet, rising above the general national average of 10 percent to as high as 50-90% in some villages in Sri Mangal. Six
of the nine Basic Users were Hindu, not including one man who was born Hindu but then converted to Islam after marrying a Muslim woman.

I recruited participants for the study using a snowball sampling method. Snowball sampling is also called chain-sampling, chain-referral sampling, or referral sampling (Goodman, 1961; Biernacki and Waldorf, 1981). Snowball sampling falls under the category of non-probability sampling models, and should be used with caution when extrapolating from their results to the general population. Atkinson and Flint (2001) find that while snowball sampling may "contradict[s] assumptions of conventional sampling, it retains a number of advantages for sampling populations such as the deprived, the socially stigmatised and elites" (p 1). Similarly, Noy (2001) considers the potential of snowball sampling in feminist and constructivist worldviews, and finds that under certain circumstances snowball sampling can unearth unique social knowledge and power relations that would be unavailable through conventional sampling methods. Given the circumstances, where a high degree of trust and confidence was required of the participants, I considered a non-probability sampling method like snowball sampling to be appropriate. Even though it would come at the expense of the ability to generalize, the study would gain from the trust and confidence gained when friends, acquaintances, or family members referred participants.

4.2 Phase One: Advanced Users

To recruit the first cohort of Advanced Users, I began by contacting a few respected older individuals. I explained my study in brief and asked them if they knew of people who owned mobile phones but were low-literate. These discussions and referrals led to contact with 23 low-literate adult mobile phone users with whom I conducted semi-structured interviews. Here too, I
made some changes to the initial study design. I had originally planned to conduct a literacy test with each participant in the Advanced Users group, but decided against it based on social concerns as well as the recognition that there was no clear purpose for literacy tests of this participant group. I was apprehensive that using a literacy test might make some participants reluctant to talk to me, as illiteracy – although common in rural Bangladesh – is still a sensitive issue. Hence the literacy test was replaced with an interview question about the participant’s educational history.

The outcomes of these interviews are discussed in Chapter 5. They led to new understandings about the nature of texting and mobile phone use in Bangladesh, which informed some of the design decisions for the Phase Two intervention. The next section describes another Phase One activity, where I explored various cultural contexts in which to situate my study. The first attempt was to investigate a local sub-group of fruit sellers, who seemed a plausible community in which to situate a texting intervention.

4.2.1 Seeking a community of practice: Fruit sellers and betel nut traders

Lave and Wenger (1991) describe communities of practice as a naturally organized group of people, brought together by a shared craft or profession. After completing the interviews with Advanced Users, and making some progress, I sought such authentic communities of practice in the village. Fruit cart pushers made the most sense, given that the three most abundant products of Sri Mangal’s orchards are pineapples, limes and jackfruits. Over the last twenty years, old Toyota jeeps, filled to the brim with limes, haul much of the fruit down Bhanugach road, from the orchards to the central market. These Jeeps clearly pose a challenge to fruit-cart pushers, but they are unlikely to be completely replaced anytime soon. Often, the cart pushers are orchard
owners themselves, or the sons of orchard owners who take their wares to the market every morning. I decided to observe fruit-cart pushers as one such community of practice, and explore more of their mobile usage habits.

![Fruit-cart sellers returning from market](image)

**Figure 11 Fruit-cart sellers returning from market**

One morning, I asked a local to introduce me to some of the fruit-cart pushers who ply the streets of Bhanugach road, which runs from the orchards to Sri Mangal town market. I woke up early and stood by the gates of the guesthouse where I was staying. Within a few minutes I saw carts and the men pushing them emerge out of the fog in the distance. Despite the fog, it wasn’t very cold, and some of these young men were shirtless, joshing and jostling with each other as they pushed their carts. I could hear music emerge from their pockets, from what I assumed were their mobile phones. My companion was a small wiry man named Nirmal who impressed me with his ability to scamper up the many hills in the village without as much as breathing heavily.
afterwards, Nirmal introduced me to the fruit cart pushers as a researcher from Canada, and with their permission I walked alongside them for four kilometers to the market.

The fruit-cart pushers are a long tradition at Sri Mangal. The carts they push are nominally the property of the orchards, and the cart pushers work in the orchard and are paid a commission of the amount of fruit that they end up selling at the market. After their arrival at the market, the pushers typically call the orchard owners with the day’s going rates and decide on how much and at what rate to sell. This is one of the ways the mobile phones have economically enriched farmers by allowing them access to real-time information from the market.

Most of the fruit-cart pushers are so poor that they cannot afford mobile phones on their own. In this way they demonstrate the economic necessity of owning mobiles that has been a prime driver in mobile phone adoption in low-income, rural settings. Rather than through any innate fascination with technology, or to “keeping-up-with-the-joneses”, rural farmers, fishermen and agriculturalists have adopted mobile phones because of their economic and business needs. Mobile phone ownership in the villages, according to mobile shop owners interviewed (Personal communication, 2011), is much more need-driven than want-driven. This is commonly observed in rural low-income economies, as Sreekumar and Rivera-Sánchez (2008) explain, that in rural settings, "[technology] adoption decisions are need-driven, the result of a careful deliberation about the cost-effectiveness involved with the investment" (p. 15).
Sri Mangal Market was at the Western edge of town; two long two-storied buildings ran parallel to both sides of the street. With open balconies upstairs and rows of shops downstairs, they looked down upon a strip of road that bustled with fruit seller activity, rickshaws, auto-rickshaws and foot traffic.

Later, in one of these downstairs shops, dimly lit even in the middle of the day with a naked light bulb, I found the group of the fruit sellers who I had met previously in the day. They were resting after selling their wares. They would be going back to their homes, some as far as fourteen kilometers away, but at that time they were stopped to drink tea, smoke, compare their luck at the market, and catch up with friends.

The men were instantly interested and cooperative when introduced to my research. None of the fruit sellers had beyond a first grade education, none had electricity at home, and the only way they could charge their phones was when they were at the fruit market. Although none of

Figure 12 Sri Mangal Fruit Market
them used the text-messaging functions on their phones, they had mastered a variety of others. One man demonstrated how he could lock the SIM card on his phone so that no one else could make calls unless they entered the pin, although he struggled to explain why this was necessary. He was similarly lost for words when I ask him how he knows what to do, given that the phone operated in English. But when I asked him if it was a function of the muscle memory of the physical gestures involved (i.e. left three times, then down three time, then the green button, etc.), he finally laughed and nodded his head. When I asked them if they would be interested in joining a small group to learn by sending texts, they all agreed. I do not know if this was a genuine interest or they were simply being polite to a stranger. When I asked them if they know how to text and they all said no, but in a key moment, one man crystallized the study when he told me, “I know how to send a text; I just don’t know how to write.”

Over the next few weeks, I conducted interviews with more Advanced Users - individuals who had mastered the basics of their phones and regularly used other features such as the calculator, radio, music and video players, and alarm clocks. These interviews were always audio-recorded with permission of the interviewees, and sometimes video-recorded so that I could observe them performing specific tasks on their phones, such as playing a game or saving a contact number. Some interviews were conducted informally; as I would walk in the market, I would randomly ask people if they owned a mobile phone, and the answer was inevitably “yes”. Following this I would then ask if they also used text messages, and the answer was often “no”.

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Figure 13 Central courtyard at Tipra village, Srimangal

I also wanted to interview some participants from aboriginal communities—who were a strong presence in the area—on their use of mobile phones. With a local guide and my mother (who owned a cottage in the area) in tow, I travelled to one such community, called the Tipra. The Tipras in question lived in a “gated” community on a hill. Leafy and green, the community had its own schools (developed and influenced by Jesuit priests), and a strong economy based on the cultivation of betel leaves. I arrived there one morning with a guide and my mother accompanying me. The Tipra community was relatively closed off from the ethnic majority Sylhetis in the areas, sharing little in language and culture. Their community consisted of cement houses ensconced into the curves of a gently sloping hill, leading to a flat plateau at the very top that housed a betel leaf cutting room. The day we visited we received a few curious stares but little active engagement from the community members. I was able to convince a family to talk to me about their mobile phone practices. A young man, apparently the oldest male in the household, greeted us at their doorway. We sat in their verandah on small stools as young Tipra
children drifted in and out of our orbits. The young man answered my questions about his mobile phone practices, but needed considerable coaxing to offer anything of even moderate substance. His sister-in-law was impressed by my iPhone, which I was using as a recording device. She admired the heft and design of the phone in her hands before handing it back to me. Frustrated but not deterred by this initial interview, my crew and I ventured out deeper into the hill community, but for the rest of the day our luck did not improve.

We left that day having surmised from our sporadic and informal conversations that Tipra youth, being better educated and with the social safety net of a society enriched by strong betel nut trade, were unlikely to be interested in participating in mobile phone mediated literacy intervention.

4.3 Phase Two: Basic Users

While the research forays into local sub-communities did not reveal any natural sub-group with whom I could establish a texting intervention, the interviews with Advanced Users were beginning to suggest that such an approach was not particularly well-advised. I was learning through these interviews that text messaging is not as intrinsic to daily life in Sri Mangal as it is to those living in the West, or to many other parts of the developing world (where text messaging is much cheaper than phone calls). Given the highly interactive nature of social interactions, many of my Advanced Users told me that they simply would not text because it was rude, compared with a phone call or household visit. The written Bangla language was also not well-suited to short texts and abbreviated words, as occur in English or other languages. Hence, it was recognized that fruit sellers would likely not take well to an intervention where they would be asked to text their peers or supervisors. At the same time, it became increasingly clear that
people would take well to a texting interaction with myself, given my relative celebrity as an international visitor and one who brought mobile phones and paid for usage minutes. Hence, it was decided to simply find a small set of low literacy participants in Sri Mangal, to participate, and I abandoned my search for a specific sub-community.

At the end of my interviews with the Advanced Users, I asked them to refer me to potential participants for the intervention phase who were not highly educated, and did not currently own mobile phones. This combination of characteristics was surprisingly hard to find. Nevertheless, I interviewed a dozen individuals and ended up selecting nine. I surmised that if the group were any larger it would be difficult for me to engage with them in-depth, as the sheer number of texts I would have to send could become burdensome.

4.3.1 Interviewing Basic users

The set of questions I asked each interviewee was identical and open-ended, and virtually the same as those asked of Advanced Users. It began with a general question asking the interviewee to elaborate on their personal history by talking a little bit about their family and their roots in the village of Radhanagar. This was important, as I had wanted a group of participants—especially for the intervention aspect of the study—who had deep roots in the community. Otherwise I risked having participants who might move for economic or other reasons, and take their phones with them.

When asked about their roots and family lives in the village, some of the participants would tend to digress into topics and episodes from their lives that were, while fascinating, not directly relevant to the study itself. When this happened, I would try to gently nudge the conversation back to the topic at hand. Specifically, I was very interested in the educational history of the
participants, as in how far their studies had extended and the reasons for which they had or had not continued them. I asked about their general experience with using mobile phones, and whether they would be interested in having one—for this question, I had only one person answer no.

4.4 Assessment and mobile-phone training

Following referrals as potential participants from others, I asked each participant to meet me at my guesthouse at a specific time, where I proceeded to interview them in a similar format to the Advanced Users: open ended questions about family and educational history. Except for these “Basic Users” I added questions about how they thought they could benefit from owning mobile phones, and if the answer was “yes”, whether they wanted to own one.

After an initial assessment of the participants’ comfort and familiarity with mobile phones, I tentatively planned for a day-long training session on mobile phones for them. The more I thought about it, though, the more apparent it became that this was too small a window. So instead of a one-day long training sessions, I split the training across four days, in chunks of two hours everyday. My intent was to avoid overwhelming the participants with information and give them daily feedback and encouragement so that they experienced real progress in their training. I was fortunate to have Shamol (name changed). He was originally interviewed as a member of the group of Advanced Users that I interviewed prior to designing my intervention. It quickly became clear to me, that given his level of expertise with all things mobile, Shamol was in that rare category of Enthusiast Users. He had already been informally training new mobile phone owners on how to use their devices, and became quite excited when I told him my plans for the intervention. He asked if he could join as a research assistant (although he did not use that term).
I could see the benefits of having a local person run at least the training aspect of the intervention, so I agreed. As a local, I thought that the participants would find Shamol a more approachable and familiar figure.

On his request, I went into town and bought a small blackboard and chalk. We set the initial training session as a co-educational one, in the living room of the guesthouse where I was staying. The men and women sat in chairs arranged in a circle facing us. After a brief greeting and introduction to the essentials of mobile phones Shamol took over. This initial training session revealed some challenges that we hadn’t considered beforehand. The use of a mobile phone involves many fine motor motions: pressing the buttons, removing the back cover to remove the battery, taking out the SIM card, inserting the headphones into the headphone jack…etc. Some of the men and women, used to work that involved broad, diffuse, motor motions, found manipulating the buttons on a tiny device difficult. We set aside some time at the end of the first session to practice the above over and over again until the participants felt more comfortable. We explained the basic science behind the mobile phone, touching on essential concepts such as electricity and how that charges the phone, as some of the less-educated members of the group were unfamiliar with the workings of electricity and electronics.

Although it is "highly desirable, if not essential that women are taught by women and men by men" in gendered societies (McCaffery, 2004, p.5), we did not have a female trainer. So we did the next best thing. Following the first day’s training, we split the sessions into a group for women in the morning, and a separate group for men in the evening. The day schedule also worked better for the women as their children would be in school and they could stop by after their initial household chores. The men preferred evenings as they could join after finishing work.
On the final day of training we announced that we would hold an oral and practical test to assess the participants’ learning. This was not meant to be a serious test; rather, something to motivate and provide a sense of accomplishment in the participants. It had already occurred to me that not having completed schooling, none of these participants had experienced a graduation ceremony – something that many take for granted as a rite of passage in life. With Shamol’s assistance, I designed a series of questions for the “candidates” to answer upon completion of their mobile phone training. The participants sat in the drawing room, and walked in one by one to answer these questions on mobile phones, ranging from basic ones such as how to charge the phones, to slightly more complicated tasks such as showing how to dial a number and end a call. We were generous with our marks, as our intention was to not fail the participants, but to instill in them a sense of accomplishment on their last day of training. The panel of judges was composed of Shamol, my mother, and me.

Once all the participants had been “tested”, we had participants come up one by one as they received their phones from my mother. I took pictures of the participants as they received their phones. Both Shamol and my mother delivered “commencement addresses”, my mother sticking to general statements on being impressed by the participants’ dedication, and Shamol delivering an inspirational lecture exhorting the participants to give their best and to uphold the “honour of the village” as they participated in the research.

Although each participant was assigned a phone and a phone number on the first day, I did not allow them to take the phones homes. My fear was that handing the phones over in the very first day would likely reduce the motivation for the participants to return for subsequent training. I was right. The participants would generally show up on time for the training sessions, eager to try the phones they had held in the previous ones.
4.4.1 Motivating participation - Text to own: The motivation model

Motivation was an integral part of the design of my study. I was inspired in particular by the incentive model used by the NGO BRAC in its drive to eradicate tuberculosis, which was still a real threat to national health in much of the sub-continent, including Bangladesh, until the 1990’s. Tuberculosis medication was available and the disease therefore eminently survivable, but the problem lay with making the patients to adhere to a long and disciplined drug regimen. BRAC approached this problem in Bangladesh with an innovative solution that motivated the participants to complete the drug regimen. BRAC health workers visited tuberculosis patients nationwide and provided TB medication at the rate of about Taka 200 (USD 3), which equaled about five days of wages for most patients at the time. The participants were then required to sign a written agreement that promised a return of Taka 100 of the deposit should the patient complete his or her course of medication; the rest would go to compensate the health worker. This approach worked. Faced with the financial consequences of their failure to complete the medical course, health clients finally began completing their dosages. Chowdhury et al. (1997) found that between 1992 and 1994, 90% out of 3,886 TB patients identified by community health workers in Bangladesh accepted the treatment offered. 81% of these completed the full 12-month course, and 85% of the patients tested negative for TB at the end of three months.

BRAC’s approach to TB eradication is an example of motivating adults to completion of a course or program using incentives, financial or otherwise. Rogers (1999) considers this approach a key component missing from recent adult literacy initiatives; for me, this concept of motivating and incentivizing the adults was a priority from the start of this project. As with BRAC, I wanted the participants invested in the act of finishing this project by providing incentives to complete their participation in the study.
Two other concerns were dropouts and attrition, which are particularly acute within adult literacy programs. Adults drop out of literacy interventions in greater number than for younger age groups because of economic reasons, social reasons, or sometimes just because they don’t see tangible practical results of the many hours spent sitting inside the class (Rogers, 1999). Although each participant in this study was keenly interested in owning a mobile phone, I required them to complete the study in order to own it, reminding them that they were free to drop out of the study if they wanted, but that they would have to return the phone if they did so before the end of the study period.

4.5 Appropriate technologies for developing settings - "placed resources"

An important aspect of this study was the treatment of literacy and mobile telephone practices within a legitimate cultural context. Bangla was chosen as the language of intervention for this reasons (discussed in Chapter 3), and considerable attention was given to the question about what mobile handset would be the most suitable.

Figure 14 An OLPC computer
Although in a strict sense, this study is a “technology intervention”, that word should not be a license to dump technologies on a community that might be ill equipped to operate or unfamiliar with. The case of the One Laptop Per Child (OLPC - shown in Figure 14) Initiative should serve as a cautionary tale here. The goal of the OLPC initiative, to provide basic affordable technology learning tools to school children, was undoubtedly laudable, but the approach was flawed due to an insufficient understanding of cultural contexts in which the laptops are to be used. The OLPC initiative deliberately took an approach of giving students a laptop and “walking away” (Slate 2007). Had the OLPC been a technology that the students and the community in general were familiar with, this approach might have worked. But the OLPC in most contexts was an alien technology, without a local support structure should things go wrong.

In one possible approach to my study, every participant would have received an advanced smartphone, constantly connected to the Internet and easily serviceable and purchased in local stores. But that would have been neither sustainable nor would it have acknowledged the realities of rural Bangladesh. I was determined from the start to use the most basic phones possible,
which were suitable to the technological norms of that setting, as this study sought to be forward-looking and potentially replicable. I also wanted to use a mobile phone that was commonplace and would not attract attention, a phone that could be easily purchased at an affordable price from the local town, easily serviced in a mobile shop, not dependent on an Internet connection for its main features, and familiar to the populace. Above all, the focus was on the activity, and not the instruments, so I did not want a phone that would attract undue, and possibly negative, attention to the users, resulting in envy, theft or even robbery.

Blommaert defines "placed resources" as ones that are "functional" in one setting but "dysfunctional" in another (2002). Whether these are conceptual or tangible technology, placed resources gain particular salience when they are relocated from industrialized nations to developing ones. Blommaert explains that this happens due to the difference in value created by the process of flows, where the "indexical links between signs and modes of communication [...] and social value scales allowing [...] identity construction, [and] status attribution [...] are severed and new ones are projected onto the signs and practices" (Blommaert, 2002, p. 20). Prinsloo (2005) concretizes this concept with his examination of the computer resources made available to Grade 1 students in a school in Khayelitsha, Cape Town, specifically, the outlines of "social indexicality" as made apparent by the contestation for these resources between students who had paid their school fees (thus able to access the resources) and those that had not. Prinsloo concludes that computer and other ICT resources, under the umbrella term of "new literacies" are "best studied as resources situated in social practices that have local effect" (Prinsloo, 2005, p. 1). In a positive experience of placed resources, Kendrick, Chemjor and Early (2012) report the spontaneous empowerment of girls in a rural Kenyan secondary school when ICTs were introduced in the context of a print-based journalism club. In Australia, Auld, Snyder and
Henderson (2012) recount the effects of mobile phone use in an indigenous community, and while they found differences in the way some of the phone functions were employed in a non-industrialized setting - with the act of speaking over the phone made a community activity with the use of the speaker function - the indigenous community generally used the phones in mundane and expected ways, such as downloading songs and playing games (Auld, Snyder and Henderson, 2012). It is likely that given the ubiquity, rapid worldwide penetration and acceptance of mobile phones in almost all cultures and settings, they have truly become the "house sparrow" of ICT. If an exception to the concept of "placed resources" exists in ICTs, mobiles phones are the technology closest to fulfilling that role.

4.5.1 The Nokia 1100

The needs of emerging markets are unique, and it is important for researchers and designers to take context into account when considering releasing products for emerging markets. Here, the concept of "frugal engineering" become relevant, which Sehgal, Dehoff and Panneer (2010) describe as thus:

"...frugal engineering is an overarching philosophy that enables a true “clean sheet” approach to product development. Cost discipline is an intrinsic part of the process, but rather than simply cutting existing costs, frugal engineering seeks to avoid needless costs in the first place. It recognizes that merely removing features from existing products to sell them cheaper in emerging markets is a losing game. That’s because emerging-market customers have unique needs that usually aren’t addressed by mature-market products, and because the cost base of developed world products, even when stripped down, remains too high to allow competitive prices and reasonable profits in the developing world. (p. 1)."
As a specific example of a frugally engineered product, Sehgal, Dehoff and Panneer (2010) cite the Nokia 1100 mobile phone, aka the best-selling mobile phone in the world, a popular brand in rural South Asia (Banarjee, 2008; Sharma, 2009) and commonly the model used in mobile phone based development interventions aimed at the *Bottom of the Pyramid* (Loorbach, Karreman and Steehouder, 2007; Rao, 2007; Mas and Kumar, 2008; Shulze, 2008; Reitmaier, Bidwell and Marsden, 2010).

In 2011, although Nokia was still the dominant manufacturer of mobile handsets in the developing world, including Bangladesh, its might was fading. Cheap Chinese-made handsets had flooded the Bangladeshi market (Xinhua, 2013). While often at the expense of reliability and durability, these Chinese handsets are attractively designed, affordable, and offer a number of features such as large color screens (even touchscreens), video play, and dual-SIM (The ability to put in two different SIM cards, or operate the phone with phone numbers from two different networks), that are not available on basic Nokia handsets. What Nokia retained however, was a reputation for quality and durability among customers; owning an “original” Nokia handset was still seen as something of a status symbol in rural Bangladesh (Personal communication, 2011).

![Figure 15 Nokia 1280 (1100) - black and pink models were used (mobile1.blogspot.com)](image)

Figure 15 Nokia 1280 (1100) - black and pink models were used (mobile1.blogspot.com)
Nokia phones have also recently offered a unique feature: fully Bangla keyboards and the options to switch the phone language completely to Bangla. Weighing these advantages, I bought a number of Nokia 1280 mobile phone that can make voice calls and send text messages. The Nokia 1280 is a continuation of the Nokia 1100 series of phones: a simple, inexpensive GSM handset developed specifically for South Asia and other developing countries. The localized model that I provided to the participants featured a full Bangla language keyboard, an option to select Bangla as the operating system language, long (400 hours) battery life, an integrated flashlight, dustproof keyboard, and non-slip grips for humid and wet weather. This phone model has been extensively tested in developing settings and has a reputation for durability that borders on legendary in the developing world. In a famous advertisement made for Indian television, a truck driver and his helper drive across India with a Nokia 1100 dangling from the truck’s front bumper like a good luck charm.

I purchased twelve phones, at about USD $20 each. Nine were for the participants, and two were ultimately given as gifts to those in the village who had been of particular assistance. I retained one for myself for demonstration purposes. Additionally, I bought nine pairs of headphones from a local mobile store, so the participants could listen to the radio if they wanted.

4.5.2 Compensating participation costs

Call rates are cheap in Bangladesh, but for poor rural families, even five dollars a month spent on their phone bill is exorbitant (i.e., approximately a tenth of the family income). I told the participants at the start that I would bear the costs of their mobile phone use for the next nine months, that I would put Tk. 300 (USD 4) into the accounts of each participant on the fifteenth of each month. This monthly duty was entrusted to an assistant from the community who went to a local store to do a “flexi-load”, specifying a phone number to deposit an amount of money into.
Half of this deposit amount I asked the participants to reserve for communication with me, whether through texts or phone calls. They were free to spend the remainder of the minutes as they saw fit.

My hope was for these two factors – the free phone at the end of the study and the monthly stipend for phone usage – to act as motivators, and this seemed to be the case. But something that I had not counted on also emerged; each participant was excited to be part of a literacy study that could increase his or her literacy skills. It became clear that being able claim this fact to the neighbours, as well as potentially boast about the fact that they were in regular communications with someone as far away as Canada, was an additional factor in motivating the participants.

4.6 Evolving the Intervention Design

Even after the basic goal of engaging low literate non-phone users in text messaging had been determined, there were still important modifications that emerged as a result of the engagement with participant observations and interviews. For example, when it became apparent that the practice of text messaging would not be readily taken up (i.e., as a simple consequence of being in possession of a phone), alternative approaches to engaging participants needed to be designed. For example, we considered the possibility of providing husband/wife (or other pairs) with mobile phones who would have a more intrinsic need or opportunity for texting. We finally settled upon an approach of engaging participants with short news messages, sent via text to their mobile phones once per week for a period of nine months, and requiring them to respond with at least a comment or a question.

The goal was to create an intervention that would be both manageable at my end and engaging for my participants. I had determined in my interviews with the Basic Users whether
they had any interest in receiving news synopses over SMS messages from me, and of what kind. When asked, most of the participants revealed—to my disappointment—that they were only interested in receiving sports news. I chose to ignore that. Although I would keep sports news in the mix, they were less frequent than news synopses on society, politics, science, business and culture, and it seemed to me that these topics provided more opportunities for engagement and dialogue between the participants and I. As elaborated in my results and discussions chapters, this assumption was later proven correct.

After a month in Bangladesh, the date I would have to fly back to Canada was nearing. Before I could do that however, I needed another research assistant on the ground who would “troubleshoot” issues for the participants in my absence. This was necessary because I had setup a system regarding the purchase of minutes for my participants phones. I went with a local man named Nirmal (name changed) who was well-known and trusted in the community. Together, we went into Sri Mangal, into a gleaming Grameenphone Centre (modern mobile phone dealers that have sprouted in small towns around the country), and bought twelve SIM cards, or little chips that contain the subscription information for each mobile phone. SIM cards in Bangladesh cannot be obtained without an application including a passport sized photo and Voter ID card or passport number. So all twelve SIM cards were issued to Nirmal’s name, with his national Voter ID card used as identification. This would later turn out to be a misjudgment on my part, as any servicing requests required that the actual SIM card owner be present, so Nirmal had to accompany participants to the service centre anytime they had issues with phones.
As Nirmal would be the one staying behind after I left, all the applications were made in Nirmal’s name. I instructed him to deposit a 300 Taka (about USD 4) into each participant’s phone number on the 15th of every month. My agreement with the participants was that they were allowed to spend up to half of this amount on the personal calls and texts, and the other half to text and talk to me on the phone, which would be on a weekly basis. They were allowed of course, to add additional amounts to their phones if necessary. In many ways, this process is very easy in Bangladesh. Many roadside shops and even tea stalls have the provision (for the Grameenphone network at least) for Flexi-loading, where someone can ask for any amount of money to be deposited into a phone number. The shop owner typically takes the cash and sends a text through another phone to the number in question and the person whose number the money is being deposited to receives a text message telling them how much money was deposited.
4.7 Ethical considerations

Issues of adult literacy in poor, resource-constrained settings such as Bangladesh come with significant ethical considerations. These can and should affect the design of a study in order to minimize the potential risk to participants. I was grateful to have completed the University of Toronto ethical review process, which allowed me to reflect on and clarify potential issues of ethics in regards to my study.

The act of researching others is value-laden, inevitably connected to existing, invisible power-structures that underlie society. In this way, social science is not "a neutral inquiry into human behaviour and institutions" (Zubair, 2001). I decided early that it would be naïve to assume that I could approach a research study with the ostensible goal of improving the literacy of rural adults without creating an automatic power differential between my participants and myself. The privileged life I had lead to the point of the start of study, marked by birth in a upper-middle class family where I never had to confront want of anything, my education in private schools, my freedom to pursue my studies at the expense of a livelihood, made me a member of what Freire calls the “ruling class” (Thampi, 1973), who impose their social, cultural, and political norms on the so-called “dominated classes”, who are often powerless but to submit to them.

There was simply no way for me to “blend in”, even though I was of the same nationality and at least superficially resembled other men in the area. I looked different, spoke differently and carried and conducted myself in a manner that made me stand out as an outsider, as a member of a privileged class. One day, when I asked a fruit-cart pusher if I could push the cart all the way to
the market, I received stares from the fellow fruit-cart pushers, and yelled-out questions enquiring why a sahib, an upper-class person, was pushing a cart.

Bangladesh and South Asia as a whole bear the legacies of both Hindu and British cultures; the two are similar in that their respective societies are cast in invisible but unalterable demarcations of class and status. Hindu society is often strongly caste-based while British society is strongly class-based. And there is a strong class/ caste dichotomy that exists still in Bangladesh. Middle and upper-middle class men who are educated are called Bhadra- lok, literally, Gentlemen. I was given automatic deference because of my education and social class. Most of my participants insisted on calling me “Sir”, not as a reflection of my social status, but because I would be their “teacher”, a profession that is held in very high regard in South Asia, up in a pantheon of a professional trinity along with doctors and engineers. Trying to create a false democracy by insisting that my participants not call me “sir”, or that they call me by my name, would have been counter-productive, I realized. I would have to accept the automatic ingrained respect that I garnered from most people in the village and use it in a productive way. I tried instead in the course of our text exchanges to create an environment conducive to egalitarian exchanges of knowledge. I repeatedly praised and thanked my participants whenever they expanded my understanding of things with which I was unfamiliar, such as news about the village and village life, national or local news, or little factoids that I might have been unaware of.

Another delicate matter was the issue of literacy itself. Illiteracy is not uncommon in South Asia, but I took care to ensure that no participants were embarrassed because of any perceived “lack of literacy”. I had initially planned to test each advanced user, who I was not planning to include as participants in the intervention itself, on their literacy skills. They would have acted as
a control group. In the end I did not test the advanced users on their literacy skills as I wanted to avoid the possibility of having to take a “literacy test” deterring participation.

I had prepared consent letters in Bangla for the participants, even though I expected a majority to be unable to read or understand the consent letter unassisted. To remedy this, I asked a literate third party from the local community to read and explain the consent letters to the participants. The participants also signed consent letters to allow me to video and audio record the interviews and tasks performed on their mobile phones. They were assured in the video consent letters that their images would not be displayed in a public forum in a way that they would be recognized, and that their names would also be changed. But it was a given that I could not give the same reassurances about my participants remaining anonymous in the village. The word had already spread about my study and I had many people enquiring about being a participant. The participants were also all either friends or acquaintances of each other, as is the case in a small community. I saw this as an advantage rather than a disadvantage, hoping that the participants would end up texting each other, given that they had built-in texting partners through the participant group. As we will see in the findings, this was not what actually happened.
5 Results and Discussion

Phase One of this study sought to understand the day-to-day patterns of rural adult phone usage in Bangladesh. A total of 23 adults were interviewed on the nature and experience of their day-to-day mobile phone use. When added to the informal conversations held with the fruit-cart haulers and betel nut traders, these interviews revealed important observations about the technology practices of low-literate mobile phone owners. These observations are provided in the sections below, including a discussion of the interviewees’ literacy practice and key literacy events. Subsequent sections present findings from Phase Two, the literacy intervention, such as reading practices, engagement with literacy, gleaning versus gaining literacy, and other concepts such as motivation and learning transfer.

The literacy intervention phase constituted the bulk of the study, and its results are reported through the pre and post results of the literacy assessment completed by participants at the beginning and the end of the intervention. The scores from these assessments, and their statistical analyses, are reported in this chapter. What may be more interesting to the reader however, is the diary of experiences that retained of day-to-day interactions with the participants, and the reports of the participants themselves as conveyed in their post-test interviews, which revealed that engagement with mobile phones as a literacy and news consumption medium materialized in subtle but profound changes in the participant’s day-to-day interactions with literacy materials. Please refer to Chapter Six - Case Studies, for more on this.

The text messages exchanged between the participants and researcher comprise a large portion of the data gathered through this study. Although often short and simple, over the course of the nine months of this study, nearly 500 text messages were received from the participants.
When analyzed for content, function, word complexity and errors, distinct patterns (some expected and some not) emerged in the participants’ use of the mobile phone as a lifestyle and literacy tool. This analysis of the text is also provided in this chapter.

5.1 Phase One: Observations from survey and interviews of mobile phone users

5.1.1 Categories of users

[Situated Practice]... is the part of pedagogy that is constituted by immersion in meaningful practices within a community of learners who are capable of playing multiple and different roles based on their backgrounds and experiences. The community must include experts, people who have mastered certain practices. Minimally, it must include expert novices, people who are experts at learning new domains in some depth. Such experts can guide learners, serving as mentors and designers of their learning processes. This aspect of the curriculum needs to recruit learners' previous and current experiences.... (Cazden et al 1996)
Among adult mobile users in the research location, Phase One identified three distinct categories of users, in terms of their overall engagement and knowledge of the mobile phones that they used. Basic Users use their phones for few functions other than calling. For some of these users, these interactions with their phones was limited to answering and ending calls. They availed of few of the other functions available on their phones, often relying on technical assistance from others when they needed to save phone numbers to their address books or to send a text message to someone. Advanced Users were more comfortable with the various features of their phones. They were generally able to save phone numbers on their phones independently, send occasional informational text messages when necessary, and use phone functions such as the calculator or the radio. Only one person was found who could be categorized as an Enthusiast User. Enthusiast users have mastery over the functions and features of phones, having developed intimate understanding not only their own handsets, but the phone models owned by their acquaintances as well. Enthusiast users frequently upgrade their phone models, are aware of the latest or upcoming mobile phone models and prioritize features and design over price when selecting phones. Enthusiast users often function as volunteer tech support for not only immediate family members for their community in general; many basic and even advanced users consult them for phone issues. In this sense, Enthusiast users, by acting as resource persons for fellow mobile phone users, exemplify the use of proximal literacy by rural adults. Even though the example here is mainly one of technical literacy, this is an important concept: adults may be less likely to see acquisition of literacy skills as necessary, since, non-literate adults often seek out proximate literates on a need-basis, whether they are neighbours, acquaintances, or even family members such as children (Maddox 2007; Gibson, 2001; Basu and Foster, 1998).
5.1.2 Interviews with Advanced Users

Between Advanced and Basic Users pre and post intervention, a total of 30 individual interviews occurred in the course of this study. Advanced users were interviewed but not literacy tested, the reasons for which are elaborated previously. The purpose of the Advanced User (AU) interviews was to establish the day-to-day usage patterns and experiences of rural, low-literate mobile phones users in a way that could inform the design of the subsequent literacy intervention that involved mostly Basic Users. Basic Users were interviewed prior to recruitment to gauge their interest in enrolling in a mobile phone based literacy intervention, on their experience (if any) with mobile phones, and to assess interests as related to categories of news items which they would be sent. Given the relative newness of the area of inquiry (mobile phone usage in low-literate adults), the AU interviews yielded significant new advancements in my understanding of the usage patterns and needs of low-literate mobile phone owners. These understandings have been summarized into three broad observations on mobile phone usage by low-literate and non-literate individuals.

Observation 1: Advanced Users engage multiple literacies with their mobile phones

Careful distinctions need to be made between the concepts of multiliteracies, and multiple literacies. Cazden et al. (1996) understand multiliteracies as the "negotiation of a multiplicity of discourses [...] representational forms [...] increasingly significant in the overall communications environment, such as visual images and their relationship to the written word" (Cazden et al., 1996, p.1). This definition, primarily concerned with the differing modes of presentation of text forms and predicated on English as lingua franca and lingua mundi (Cope and Kalantzis, 2000, p. 6), stands in contrast with the ethnographically-based multiple literacies - a "plurality" of literacies that "vary with time and place and are embedded in specific cultural practices" (Street,
Observation 1 - the biggest and most unexpected finding from the first phase of this study - aligns more closely with the concept of multiple literacies. The variety of uses of their mobile phones described by the group of low-literate and non-literate adults necessitated a reconsideration of how this study initially defined “literacy” in the context of mobile phones. Could it not be argued that a person using the phone’s alarm clock or calendar function is engaging in time management, an important life skill? Or that downloading music and videos onto one’s phone was an aesthetic pursuit? Similarly, does regularly engaging the phone’s games improve one’s hand-eye coordination, and the calculator numeracy? What was apparent that the study’s understanding of literacy at the outset was at least narrow, if not flawed, and that opportunities of multiple literacy engagement during the technology intervention phase of the research would have to be reconsidered.

<table>
<thead>
<tr>
<th>Phone feature used</th>
<th>Literacy/life skill engaged</th>
</tr>
</thead>
<tbody>
<tr>
<td>Calculator</td>
<td>Numeracy</td>
</tr>
<tr>
<td>Calendar</td>
<td>Time management</td>
</tr>
<tr>
<td>Contact books</td>
<td>Information management</td>
</tr>
<tr>
<td>Converter</td>
<td>Numeracy</td>
</tr>
<tr>
<td>Games</td>
<td>Hand-eye coordination/Reflex</td>
</tr>
<tr>
<td>Music Download</td>
<td>Aesthetics</td>
</tr>
<tr>
<td>Notes</td>
<td>Information management</td>
</tr>
<tr>
<td>Phone profile (ring/silent/etc.)</td>
<td>Social skills/awareness</td>
</tr>
</tbody>
</table>
Observation 2: Texting is not a habit naturally picked up. A texting based literacy intervention would have be researcher directed to a significant degree.

Interviews revealed that intermediate users were unlikely to pick up the practice of texting unless introduced to it from the beginning of their phone use. There were a number of reasons for this, including the low rate for calls, illiteracy, or insufficient literacy to compose texts messages, and even social reasons, such as the risk of appearing “cheap” when texting instead of calling, as revealed by an itinerant boyfriend. The lack of natural uptake for texting precluded the possibility of simply handing a number of mobile phones to individuals and hope that engagement in texting would emerge organically over a period of time, implying that any texting-based intervention would have to be centrally directed by a researcher to a significant degree.

Observation 3: Participants would have to have at least some textual literacy for mobile phone based literacy intervention to work.

From the beginning this study focused on the effects of mobile phone use on the least literate in society. Much of this was predicated on the assumption that there would a level of “natural” uptake of text messaging about low-literate users, and that even for the least-literate users, just the day-to-day interaction with a text-based electronics would result at least in a somewhat
increased familiarity with orthography. The few interviews that were conducted with completely non-literate mobile phone users indicated that this was not the case; the lack of literacy was simply too great a hurdle for non-literate users to overcome. It was apparent that a simple technology-based intervention would not be enough to provide non-literates with the fundamental reading and writing skill that they so needed. For this population, a traditional literacy intervention, involving instructors and primers, was still the most appropriate.

It was vital that this fact-finding aspect of the study, where advanced users were interviewed in-depth about their mobile phone use practices, came before the actual intervention, or the second aspect of this study. Each of the three main observation above contributed to the final design of the intervention. Observation 1, the use of multi-literacy skills by advanced users, primed us to train the participants on all aspects of the mobile phone during the training period, and once the intervention began, to scrupulously engage the them in whatever opportunities arose to use the mobile phone’s peripheral features, such as the medical hotline that could be called or the alarm clock. Khadija would be repeatedly late to our initial training meetings, and once asked as to why, she replied that she didn’t have a clock at home. Again, this was a simple opportunity to view the mobile phone as a multi-literacy tool, in this case, time management. In the same vein, Mrinal, who worked as a security guard at night, would later relate how invaluable the phone’s alarm clock feature was to him, as was the built-in flashlight. The Nokia phones, although basic, did feature an FM radio receiver, and all of the participants received earphones so they could access the radio. Some of the news tidbits that the participants sent were ones they had first heard on the radio.

The fact that mobile phone users were not naturally gravitating towards the mobile phone’s texting feature, which was an assumption as the start of the study, was a surprising finding. This
is why Observation 2 was so critical to the design of the study. There is a complex intersection of motivational, social and technical reasons why adults did not seem to take to the texting function. It was simply easier to call. There were social reasons for not texting, founded at least partially on the shame and embarrassment that many low-literate individuals feel about their lack of literacy. It would have been risky to ignore this finding and hope that the participants would begin texting each other organically; there would have been a real chance of little data emerging after nine months.

Observation 3 was the least surprising. This thesis never expected nor advocates that mobile phones are a wholesale alternative for establishing foundational literacy skills. They are simply not designed that way. A larger concern was the potential of these devices not only as literacy improvement tools, but also as lifelong learning and skill retention tools as well. Completely non-literate participants were no longer a focus for this study once it was clear that these individuals would find little benefit from a mobile phone-based intervention. Govinda was the exception; his literacy skills were close to zero - he scored 14/100 on his literacy test. Yet he was included in the intervention so that a spectrum of literacy abilities was targeted. And although he showed spectacular gains from this intervention he had mitigating factors such as the support of literate family members. More on Govinda’s story can be found in Chapter 6, Case Studies.

5.2 Phase Two: Emergent literacy behaviours in the course of literacy intervention

5.2.1 Passive reading

An important dynamic emerged over the course of the study that could be directly attributed
to the fact that the literacy intervention was conducted via mobile phones. Had this literacy intervention been textbook or primer based, then it would have been easier for the participants to be less engaged in their literacy practice. As we can all relate, one of the hardest things in this world to ignore is a buzzing or ringing mobile phone. One conjecture, made at the outset, was that every time a message was sent and a participant’s phones rang or buzzed, he or she would find it irresistible to not check the message just received – which would constitute a literacy engagement. Were the participants provided with a textbook or primer instead of a phone, which they would have to faithfully read and review, and ultimately be tested on at some point, there likely would have been some positive impact on literacy, especially if the right motivation were provided. However, the portable, deeply personal and contextual nature of the mobile phone meant that unlike a primer, it could not simply be thrown on a study table and forgotten about.

Similar experiments with passive reading practice have taken place in countries as disparate as Finland and India. In both countries, the practice of Same Language Subtitling (SLS), or subtitling the dialogues of dramas and lyrics of songs in same language have been implemented on television. Kothari et al. (2002) found reading improvement skills in a controlled study of participants who viewed same language subtitled television. They go on to call SLS a “butterfly for literacy”, pointing to the “enormous potential of this simple and economical approach for mass literacy development” (p 1). The mobile phone based literacy intervention works around the same concept, except it’s slightly more active, and provides opportunities for writing practice as well, which SLS does not. It was more important to the study that the participants received reading practice than writing practice, as the ability to read can make the most immediate and tangible impact in the life of a non-literate adult. Directly resulting from this imperative was a broad pattern of re-engagement with literacy, which is discussed next.
5.2.2 Re-engagement with literacy

Something unexpected happened when the participants received their mobile phones and engaged in a texting exchange for nine months. Where the initial expectations were that using a mobile phone would strengthen the participant’s reading and writing skills so that they could re-engage with traditional literacy sources, the converse happened. The participants re-engaged with traditional literacy sources to strengthen their texting abilities - the participants reported behaviours such as reading their children's textbooks, and regularly perusing newspapers, ostensibly to improve their text messages in terms of content, form, and spelling. Although not admitted by the participants (possibly because of social reasons), the promise of permanent ownership of the phones they were given may have also had an effect in this enthusiastic re-engagement with literacy media.

The observed phenomenon of re-engagement with literacy indicates potential for a virtuous cycle of literacy activities. The more the participants text, the more they will engage with literacy media; the more they engage with literacy media, the more they will acquire knowledge and learning that they may wish to share with the researchers, or each other, or with complete strangers. Specifics on how individual participants re-engaged with literacy can be found in Chapter 6, Case Studies.

5.3 Pre and post-test scores

The literacy instrument used for this intervention is an existing one developed by UNESCO and administered by the Government of Bangladesh during the last major nation-wide literacy survey, in 2008. As Wagner (2011) notes, the assessment of adult literacy in developing countries has undergone significant changes over the last two decades. Where up until the 1990’s
adult literacy was assessed simply by asking adults whether they could read or write, as one of the set of questions asked during a census. Wagner calls this a “self-report dichotomy” that is “a blunt measurement instrument (of limited value either for policy or individual use)” (Wagner 2011, p. 124). The UNESCO literacy instrument, developed by the International Literacy Institute, takes a varied and comprehensive approach to assessing adult literacy. The first section involves reading and writing questions, the second math and general knowledge. Given that this intervention specifically targeted the development of reading and writing skills, and may have only tangentially contributed to the development of general knowledge, the pre and post-test scores from each category have been analyzed in isolation. As one of the limitations of this study was the lack of a control group, the scores from the math and general knowledge section can be viewed as offering some level of control, or at least comparison - as math and general knowledge skills were not an explicit part of this intervention.

The mean scores for the pre-test results of read/write segment of the literacy was 35.00, while the mean for the post-test was 41.14, the respective standard deviations (SD) were 18.20 and 14.37, and the standard error measurement (SEM) 6.88 and 5.43. With an n of 7, the result is considered statistically significant. In comparison, the difference between the pre and post test measurements for the math and general knowledge sections, which were not intervened for, was not statistically significant. Please refer to Figure 25 for a comparison of pre and post-test scores for reading and writing for the literacy intervention aspect of this study. Please also note that the pre/post scores only feature 7 out of the 9 participants as mid-way through the intervention, two participants dropped out as they relocated to another area for employment reasons.

The changes in the overall post-test scores were not statistically significant, however, viewed in isolation, the post-test scores for the different categories of question yield a different picture.
There were statistically significant increases in the read/write sections for the group as a whole, but within the group, the changes in the read scores were greater than the changes in the write scores, with respective difference in means being \(-3.57\) and \(-1.86\). This finding is intuitive as although the participants did “write” messages, the writing was done by typing in text characters on a screen, and not by pen on paper. In contrast, the participants likely did far more reading as more text messages were sent to them than were sent back to the researcher. Importantly, the concentration of improvements in only specific and common areas of the test for the group also indicates that the increase in scores is unlikely to have come from familiarity with the test or from increased test-taking skills.

![Figure 18 Literacy assessment pre and post scores (read/write section)](image)

The overall scores for math/general knowledge sections showed no statistically significant changes in the post-test, which is also unsurprising, as the present intervention did not target
math and general knowledge, although general knowledge may conceivably have been
tangentially acquired through the practice of reading informative texts or as the participants re-
engaged with other literacy materials such as textbooks and newspapers.

5.4 Text messages: descriptive statistics

Analyzing the formatted text corpus revealed that 93 of the 461 messages were process
related, where the participant was either enquiring about, complaining about, or asking clarifying
questions about the texting process. Examples of process related text messages include when
participants would coordinate with me about calling times, inquire as to why I had or had not
messed them recently, convey information about some kind of difficulty they encountered as
they were trying to communicate with me, or inquire as to whether I had received a recent
message that they had sent. The fact that 20.1% of the messages were related to process perhaps
illustrates the difficulty in coordinating a texting intervention between a researcher and
participants separated by three continents, two oceans and 12 time zones.

The initial week of texting were dominated by texts that I categorized as “texting practice or
skill-building”, where the participants were familiarizing themselves with the practice of texting
and using their phones in general. There were both texts that had more than the usual number of
errors as well as very well-composed texts by participants who were perhaps seeking to impress
me. Overall, 14.3% of the messages could be categorized as skill-building to texting practice
messages.

Whenever participants would report on their daily lives, or events in their immediate family
that involved them, those messages were categorized as “self-reportage”. A self-reportage
message would begin a chain of messages where I would enquire and ask further questions about
the event reported. So 183 messages, or 39.6% of messages related in some ways to the participants’ sense of themselves. This included the 31 instances where the participants reported on events relating to their immediate or extended family.

Quite often, the participants would make requests for not process related, or even financial assistance, but for moral support. These messages would range from a simple request to pray for their success as they or some family member undertook a new endeavor such as a journey or a national examination, or a simple request for empathy following minor or major calamities. There were twelve instances of such requests, representing 0.24% of the total messages.

The weather was a frequent topic of conversation, recurring no less than 27 times. The participants were particularly curious about the great contrast in weather between Canada and Bangladesh, as were they by the disparity in time, they found the fact that it was night in my time when it was day in theirs, and vice-versa, to be a topic of continuing interest. The topic of Canada recurred 19 times in the messages.

Given that many texts sent to the participants were in the form of a news item, I often followed up these texts with specific questions on their content, or queried the participants for opinions on the news items in questions. Combined, a total of 138 messages, or 29.9% of messages were either opinions, answers, explanations or elaborations on news-related texts. But the participants were not satisfied to merely be “good students” who answered questions when asked. They would ask questions on news items or about me and my life in Canada frequently. Categorizing such messages as “enquiries”, I found a total of 65 such instances, or about 14.1% of the total messages. The texts from the participants reflected the conventions and formality of day-to-day Bangla speech, in that each message was prefaced with a greeting, nominally of
asking how I was. Of the 461 total texts, nearly half – 216, were prefaced with a greeting.

As much as they themselves were the topics of conversation in the text message, the next most mentioned individual was me. Participants would send me texts enquiring about my health, my day or just my general state of being. As our relationship progressed, so did it evolve. Within the first month of the intervention participants had already began to send me little news synopses, either about the village, about the country in general, or about international events. I termed the functions for these text messages as respectively local, national and international reportage. At 278, reportage type texts comprised the majority of the text corpus, representing 60.1%. Within the reportage category, the breakdown for local, national and international were 50, 60 and 11 % respectively. There are a number of possible reasons for this disparity. The national-reportage items were often copied from newspapers, suggesting that the participants found it easier to copy existing news items than creating original text messages about local events on their own. The relatively low number of international-reportage items may indicate a lack of confidence in my participants in informing me about international events in which they may have suspected I was already well-versed. This is of course, educated speculation on my part.

It is important to note that the participants show no clear trends (at least according to regression analysis) in terms of improving their quality of texting over time. But it is also important to note that I did not engage them to become better texters, rather better readers and writers, something supported by the statistically significant increases in their literacy scores.

5.5 Regression analysis

Regression analysis is most commonly used to ascertain the relationship of one or more
independent variables to a single dependent variable, and while it is especially useful for situations where the independent variables cannot be controlled, it is applicable to "more controlled settings" as well (Kleinbaum, 2007, p. 36). In this study, regression analysis does not show any clear trends for any of the participants in terms of the effect of time (independent variable) on the quality of their messages (dependent variable). In most cases, the r-squared values as related to message length, number of errors and word length are not close to 1. The only obvious correlation seems to be between the length of messages and accuracy, because it follows that with longer messages the number of errors are going to increase. No clear relation can also be observed between word length and messages length. The participants were likely not adjusting the complexity of their messages based on the length of the message. This would indicate that the informal structure of the curriculum was accepted as such by the participants, i.e. they were not looking at the text messages as homework.

Overall, the participants established no clear patterns with their text messages over time, but the messages themselves served a variety of functions and exhibited diverse content. More important to the study was the potential motivation and the long-terms changes in approaches to literacy that were observed over time. These topics and others are discussed at length in Chapter 6: Case Studies.

In all, over the course of nine months, the participants sent a total of 461 messages, comprised of a total of 6407 words. The average number of words per message was 13.9. Dividing by 277, the number of total days in the intervention, this translates to about 1.66 messages received a day, or 23.1 words a day. Given that there was real fear at the outset of this study that there may be no messages at all, this number is a pleasant surprise. However, this number does not include the text messages that were lost in ethers of space while traversing the
ten thousand miles that separated us, nor does it include messages that were duplicates or arrived garbled, sometimes in Chinese characters. Of the 461 messages that were received, 218, or 47.3% were direct responses to the news clips, a number that was quite satisfactory given that there were few precedents to an intervention of this kind that could guide expectations.

5.5.1 A few gender differences in texting

There are few empirical studies on the effect of gender on mobile phone use, including texting. While one recent study (Thibaut, 2011) indicated that women texted and talked more on their phones, compared to men who tended to spend more time browsing the Internet, it was conducted in a the context of the Industrialized West, specifically Europe; this may or may not hold for low-income communities in emerging nations such as Bangladesh.

There was only a small number of participants, with 6 men and 3 women, which is likely why no conclusive patterns are observed in the texting based on the participants' genders. Women constituted 33% of the participants and sent 175 of the 461 total messages, representing 38% of the total messages. In terms of total words texted women sent 2,076 of 6,407 total words, or 32.4%. For words per message: men's text messages averaged 15.1 words per message compared to 11.9 for women. Figure 26 provides a breakdown of words texted by men and women in the intervention in a pie-chart format. Overall however, the differences were not statistically significant in a two-tailed t test performed on the means.
5.5.2 The more educated versus the less educated

Participants with more than five years of formal education are *More Educated* (ME) and those with less as *Less Educated* (LE) for the purposes of this analysis. There were four participants who fell under the “less educated” spectrum, Karabi, Govinda, Shakib, and Krishno. The LEs sent 227 text messages, or 49.2% of the total. The LE's text messages contained a total of 2,893 words, which was 45.2% of the total. The MEs averaged 15.3 words per message compared to 12.14 for the LEs; for the latter MEs averaged 4.5 characters per word compared to 4.3 for the LEs. Figure 27 provides a comparison between the two groups. The differences between the two groups again, were not statistically significant.
5.6 Message length and complexity

Content of text messages were coded according to objective surface features, such as word length, item length and punctuation usage, but also more substantive measures such as the complexity of the ideas expressed or the depth of thought behind questions posed. On a scale of one to five, each message was assessed on its length in words, the average number of letters in a word (word length), and accuracy (number of errors, with fewer errors getting a higher rating). For each rubric, a message was rated on a scale of 1 – 5 to provide a sufficient level of granularity for analysis. Although not a finding, Table 2 describes this scoring rubric that formed the basis for analysis of the participants’ texting performance over time, as detailed in the following sections.

Table 3 - Text message scoring rubric

<table>
<thead>
<tr>
<th>Rubric/Score</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
</tr>
</thead>
<tbody>
<tr>
<td>Errors (number)</td>
<td>12 – 15</td>
<td>8 – 11</td>
<td>4-7</td>
<td>1 – 3</td>
<td>0</td>
</tr>
</tbody>
</table>
5.6.1 Message Function

All text messages received from participants were categorized according to the functions they served. The most common themes that began to emerge had to do with greetings. As Bengali culture dictates that most missives begin with a greeting, this was the case with almost every single text message that the researcher received. Normally they would be the Bengali equivalent of “hello” or “good morning”, but on special occasions like religious holidays, the greetings reflected the import of the day. The functions of the text messages evolved over time. During the initial rush of excitement, “text practice” and “skill building” functions dominated. Also common were messages that expressed excitement and were complimentary towards the researcher for involving the participants in this study. As the participants familiarized themselves with the phone and got into the habit of regular texting, more and more process oriented messages emerged. The researchers received requests for specific call times, or regrets when participants were unable to send a message because of technical reasons. The functions are categorized “process” oriented.

Initially, the agreement was that the researcher would send the news clips to the participants
and that they would respond with comments and questions. While this did occur and continue through the life of the intervention, even in the early stages of the study the participants began to “flip the script” by sending the researcher tidbits of news. These news items ranged from happenings in the village, summaries of national newspaper stories, and even international news events. These messages are categorized under the “reportage” label; they were hyphenated with “local”, “national”, or “international” depending on the setting of the news story that was sent. When the participants discussed “hyper-local” events such as themselves, their immediate or extended families, or friends, the messages were categorized as serving “self-reportage” functions. The self-reportage category dominated the reportage category for message function, with a total of 92 instances of its occurrence, appearing in approximately 20% of the messages. In comparison, national-reportage, local-reportage and international-reportage appeared in 13%, 11%, and 2% of the messages respectively. Other high-occurring functions include text messages that were direct enquiries to the researcher, explicit or solicited opinions on news items, and the initial wave of text messages that I categorized as "skill building" or "texting practice".
Figure 21 Function of text messages

The fact the self-reportage category dominated is perhaps expected, as we are our favourite subjects after all. Nor should it be surprising that national-reportage items were more common than local-reportage and international-reportage items, as when looking for news sources several participants consulted national dailies, in which national news stories tend to dominate over international or local ones.

5.6.2 Message Topics

All text messages received from the participants were analyzed for content or subject matter. The most common themes that emerged were of messages that discussed either me - by enquiring about the researcher or paying him a compliment - or of the participants. In communication between two people, this is perhaps expected.

The content or subject matter of most text messages could naturally be predicted from the
function the message was serving, i.e. the contents of a *self-reportage* message would concern
some of aspect of the participants or his or her life; the subject matter for texts under the category
of *greeting* would be the researcher; *national* and *international-reportage* messages would
respectively concern the subject matter of the original news synopses, and so on. The greatest
variety in content emerged when the participants discussed specific news stories. The topics were
as varied as rainforest animals, smoking, violence towards women, the importance of learning
English and political corruption.

![Figure 22 Word cloud of text content topic](image-url)
5.6.3 Errors

![Error over time](image)

**Figure 23 Error over time (linear regression)**

Figure 30 displays the participants' spelling errors over time, Figure 31 the errors over message length, and Figure 32 errors over word length. Text messages were assessed and rated according to the number of errors they contained. This was a complicated construct on which to assess the text messages, as a few mitigating factors particular to Bangla had to be considered. Bangla is an orthographically “shallow” language, meaning the phonetics of a word can normally be predicted from the written form (Kratz & Frost 1992). Compared to English, an orthographically “deep” language (just compare “tough” “plough” and “cough”) Bangla should be relatively easier to spell. However, Bangla possesses several letters for the same sound but with subtle differences. We have three “R”s, three “S”s, two “N”s, and two “J”s. Additionally, when two consonants are combined in Bangla, they form unique joint combination consonants,
with dozens of possible joint characters. The end result is that in Bangla even highly educated individuals often make mistakes in picking the right letter to spell word. Given that the participants had limited educational backgrounds, it was expected that there would be many spelling errors. But the expectation was that the number of spelling errors would decrease through the duration of the intervention. In actuality, a linear regression of errors over time did not show a decrease, possibly because as the participants became more comfortable with texting they began to send longer messages, thus raising the occurrence of errors as a result.

![Figure 24 Error over message length (linear regression)](image)
Figure 25 Error over word length (linear regression)
Figure 26 Message length over time (linear regression)

Text messages were also assessed and rated on the length of the message (see Figure 33), where again, a linear regression of message length over time did not show perceptible changes in the length of messages. This confirms that participants maintained a balance of long and short messages, each week, across the duration of the intervention window (i.e., short greetings, and longer responses related to news items).
5.6.5 Word length

Figure 27 Word length over time (linear regression)

For word length, the expectation was that the participants would begin to use more complex, at least longer words over time. However, this did not occur. The average word length in messages actually decreased over time.
6  Case Study of Participants

Literacy events must also be interpreted in relation to the larger sociocultural patterns which they may exemplify or reflect. For example, ethnography must describe literacy events in their sociocultural contexts, so we may come to understand how such patterns as time and space usage, caregiving roles, and age and sex segregation are interdependent with the types and features of literacy events a community develops. It is only on the basis of such thorough going ethnography that further progress is possible toward understanding cross-cultural patterns of oral and written language uses and paths of development of communicative competence.

- Heath (1982)

This section presents a number of case studies of participants from the advanced user portion as well as those from the actual intervention. The case studies serve to highlight not only the unique educational history and life circumstances of these individuals, but in some cases the change that occurred in their approaches to literacy materials as a result of the texting intervention.

6.1  Govinda: from zero to hero

Of the 9 participants, Govinda was the least literate in terms of formal education - he had never experienced formal education of any kind, having had to step into the role of bread-earner for his family at an early age after the unfortunate demise of his father. While he worked as a labourer in the fruit orchards, his younger brother continued to attend school, and still was when Govinda was recruited into the study. As a participant, Govinda presented a challenge to me as I had concluded early from my interviews with local, low-literate mobile phone owners that some rudimentary literacy skills would be necessary for a participant to have a successful experience in using a mobile phone, a device that is based primarily around text-based navigation. However, given the already low number of participants, I was reluctant to disregard anyone willing;
Govinda was accepted as a part of the study despite my worries of how quickly he would be able to catch on in the training sessions.

Govinda was not completely non-literate, he did have extremely basic knowledge of Bangla letters. He was able to follow the instructor (Shamol) during the mobile phone training sessions and was able to perform the basic phone functions and answer questions on the phone use during the "mock examination" described in Chapter 4. What was more surprising was the level of sophistication displayed in his text messages, none of which I observed him creating in-person. I began to suspect that someone was aiding Govinda in composing his messages, but did not confront him on the issue, as I wanted to see what developed. Over the course of the 9 months of the intervention, Govinda's text messaging output was not prodigious, but it was regular and of a surprisingly high quality. As I neared the end of the intervention, I was filled with quiet anticipation at the prospect of conducting the post-intervention literacy test and de-briefing interview with Govinda, as I wanted to know exactly how Govinda was composing such high-quality texts when he was functionally non-literate.

As expected, Govinda had difficulty completing his post-intervention literacy test, until encouraged by me to do his best. When he did complete the test he ended up outperforming his previous test score by a significant margin, going from 5 points to 14 in the read/write section of the test. He then revealed that he was aided in composing his text messages by his younger, school-going brother, to who he would dictate his messages to type into the phone. However, it appeared that even that "arms-length" engagement with texting accumulated into a rather remarkable change over the course of nine months. By the end of the intervention, Govinda reported (and demonstrated) that he could read road signs - something he was unable to do at the
start. He also showed me the contact book on his phone, and demonstrated how he could input names independently.

Govinda's results were beyond anything I expected from a literacy intervention based on a mobile phone. They indicate that constant engagement in literacy practices can have impressive effects over the course of a long period of time; in Govinda's case it was nine months. The results were all the more extraordinary given how little scaffolding I provided to Govinda as he negotiated his way around the text messages that arrived on his phone. Fortunately for Govinda, he was able to rely heavily on his proximate literate network (Basu and Foster, 1998), namely his younger brother, reversing the traditional mode of sibling-mediated learning where the older child acts as an "adjuvant" to the younger (Gregory, 2001). Govinda's case highlights the importance of ensuring that very low-literate participants in literacy interventions have an adequate proximate literate network that they can consult when in need.

6.2 Karabi: mother, tutor, texter-extraordinaire (eventually)

A Hindu housewife in her mid-thirties with a Grade 4 education, Karabi was hesitant when offered a phone as a part of the intervention. She revealed that although her husband carried a mobile phone as he worked as a contractor, she didn't have one. This made it difficult for her to reach him, which was why she ultimately agreed to be a participant, even though she appeared uncomfortable with technology. Her discomfort was evident during training; Karabi barely spoke, or answered any questions asked to the group. When handed the phone, her fingers hovered nervously over they keys, seemingly afraid to make contact. Only after significant coaxing and gentle teasing did she finally display a level of comfort with the phone -- near the end of the four day training period.
Once the intervention period began, Karabi shed some of her shyness and began to text me with regularity. Her texts were verbose and sophisticated, containing interesting factoids composed with complex words. When asked, Karabi admitted that as she would tutor her grade-school age children (she did this every day) she would co-opt some of the factoids she found in their science or social science textbooks. Having the source of her text-messages right in front of her allowed her to spell-check her text messages as she composed them, which she found to be an added advantage.

Like many housewives in conservative rural Bangladesh, Karabi was mostly homebound, rarely finding the occasion, if not the desire, to venture out. Even with her husband. Once, when she messaged with the news that her phone was malfunctioning, I saw my opportunity, rather her opportunity, to engage with the wider world around her. When Karabi requested that I send my research assistant, Nirmal, to take the phone into town, I suggested that she and her husband take the phone into town themselves, and that I would be willing to pay for their expenses. I did this because this was an opportunity to "piggyback" the phone into wider community-engagement for Karabi, something she rarely experienced. She accepted my offer, but in the end it was moot because of some document-related technicality at the phone shop which required Nirmal's presence anyway.

Karabi was already engaged in a form of daily literacy practice when she joined the study, in that she tutored her children regularly. Yet there was a material difference in the way she engaged with those texts after receiving the mobile phone. In her post-intervention interview, Karabi told me that she began to pay extra attention to what she was reading, looking out for little tid-bits of info that would serve well as text messages, making careful note of them and then transcribing them word for word for the text message. Often, these tid-bits would lead to a
series of text messages between her and me that would require her to dig deeper on the topic of discussion, thus hopefully requiring her to think critically. Karabi was also able to extend her social circle from beyond those of her immediate family and neighbours, to include her extended family living in other districts of Bangladesh. Geser (2004) discusses the concept of "emancipation from local settings" for mobile phone users. For Karabi, I saw at least the beginnings of something similar.

6.3 Shakib: learning under the tree

With a 4th Grade education, Shakib was at the less-literate end of the spectrum among my participants, but he was one of the most enthusiastic from the beginning to the end of the intervention. Shakib already had a familiarity with using mobile phones, having owned one before he accidentally dropped it in a pond one day while washing a shirt. He took to texting with an eagerness that often overtook his actual literacy abilities. I found it difficult to get Shakib to engage in a critical manner with the news blurbs that I would send him. He would offer me platitudes and generic greetings instead. After a period of trying to engage him deeply on political and scientific topics, I decided to let matters progress naturally.

Although he seemed to be the most animated by sports news, there were certain topics that captured Shakib's imagination. One such topic concerned the Poet Laureate of Bangladesh, Kazi Nazrul Islam. Although he had been deceased for more than 25 years at the time, there were efforts in 2012 to build a museum in his honor. When I sent a news clip on this issue to Shakib it resulted in an unusually strong reaction; he insisted both over email and during phone calls that “we should accept Nazrul’s demand” regarding the museum. It dawned on me eventually that Shakib may not have been aware that Nazrul was no longer living, still, his enthusiasm was such
that I rode with his excitement. He told me that he has been discussing the news items with some of his friends and that they were “in agreement with Nazrul’s demands.”

This new group of friends were Shakib's "texting buddies" that he met after in the course of his work after he became a mobile phone user. I found his interactions with this group fascinating not only because it was a group spontaneously formed around the act of texting, of using an electronic device, but because the group members also developed their own code of ethics around the act. Often, upon receiving a text from me, Shakib would consult his texting buddies on an appropriate answer. And although this lead to a discussion, Shakib would be refused when he asked for explicit aid in composing his text message back to me, being told that it would not be right for them to help in his texting; it would be considered a form of cheating.

Among all the participants, Shakib was the one to send me the most personal messages, about his family, his struggles, his doubts and triumphs. Throughout these interactions, I tried my best to protect my role as the researcher while still allowing outlets of expression for both Shakib and I in a manner that did not stifle us. At his post-intervention literacy assessment, Shakib, like Karabi and Govinda, showed significant improvements in his reading and writing skills. Freire (1970) insists that for learning, especially adult learning, the teacher and the student must enter a state of "authentic dialogue", because "True dialogue unites subjects together in the cognition of a knowable object that mediates between them" (p. 6). I certainly felt that for most of my participants, especially Shakib, the medium of text messaging allowed use to enter such a state.

6.4 Khadija: news-hound

Khadija was a housewife who was in her early twenties at the start of the intervention. Having attended Ninth Grade, she was more educated compared to the participants so far
mentioned. This gave her an advantage in regards to the discussion of the news blurb items. She was not a prolific texter, but she would send me back critical and well-thought-out questions. When I texted a news item about waterways in Germany freezing over from extreme cold, she asked me about its economic impact. Commenting on a story about anti-trafficking legislation, she lamented the state of women's rights in Bangladesh.

Khadija was mother to an eight-year old son, and like Karabi, she took an active role in his studies. She tutored him thoroughly on his homework everyday. However, unlike Karabi, Khadija did not rely on her son's textbook for content for text-messages. Instead, Khadija asked her husband to start bringing back a newspaper everyday from the small sundries store he managed. Khadija consulted the newspaper to double-check her spelling, grammar, and occasionally to curate content for text messages that she would then send me. On occasion, she and I would even exchange messages in English, so she could practice a second language. These experiments did not develop into a serious secondary curriculum however, as I was afraid that it might distract from our main activity of texting in Bangla.

As she had already scored highly in the pre-intervention literacy assessment, there was not significant change in her score on post-intervention assessment. However, Khadija mentioned that she had experienced an increased fluency and comfort with Bangla, one that she had not experienced from simply tutoring her son, or from her day-to-day engagement with literacy media.
6.5 Conclusion: Re-engagement; motivation and transfer; vernacular literacies

I attribute the emergence of motivation to the specific design of the study, which encouraged participants to stay in the study to completion, thanks to the promise of phone ownership. And I attribute the learning transfer I observed to the strengths of the mobile phone as a learning device, particularly portability and familiarity, making it an ideal lifelong learning tool (Sharples, 2000). In this study, adhering closely to Rogers' (1999) adult literacy of fundamentals of motivation and transfer resulted in both reported and observed improvements in the literacy abilities of the participants.

Although it is perhaps exemplified by the participants discussed above, what all of the participants in this study reported was a real re-engagement with literacy media already extant in their day-to-day lives, including textbooks, newspapers, and road signs. This may have occurred as the participants asserted their ownership of technology by the way they used it, by shaping it around "place-based practices" (Prinsloo and Rowsell, 2012); the participants fell "into practice that [was] theirs rather than freely choosing it or being impelled into it by mechanical constraints" (Bourdieu, 1990, p. 132). The catalyst for this re-engagement was ostensibly the mobile phone, thanks to the affordances made possible by the device's portability and familiarity. Yet I suspect the re-engagement was also possible due to the more fundamental and non-technological affordances of motivation and transfer. In each case, the participants reported that they re-engaged with literacy media because they were motivated to do better in the intervention. They wanted to be better texters, wanted my praise for good performance. Already motivated, and given the portability of the mobile phone as a learning device, they were able to transfer their literacy skills across different media and contexts - whether during tutoring their children,
or reading a newspaper as in the case of Karabi and Khadija, or engaging in social interactions with friends, colleagues and family as with Govinda and Shakib. Interestingly, the increased fluency or literacy with the mobile phone may have led to the fortification of the participants' vernacular literacies, defined by Barton and Hamilton (1998) as literacies "not regulated by the formal rules and procedures of dominant social institutions and which have their origins in everyday life" (Barton and Hamilton, 1998, p. 247). The authors identify six vernacular literacies: organizing life, personal communication, private leisure, documenting life, sense making and social participation - I would suggest that whether it was Khadija using the clock function on her phone to arrive on time for training sessions, Shakib befriending texting mentors in the village square, or Govinda entering the information of his contacts on his phone by himself, each participant was honing their vernacular literacies thanks to the affordances of the mobile phone.
7 Conclusion

But literacy technologies, such as pen and paper, index cards, computer databases, word processors, networks, e-mail, and hypertext, are also ideological tools; they are designed, accessed, interpreted, and used to further purposes that embody social values. More than mechanistic, they are organic, because they merge with our social, physical, and psychological beings. Thus, we need to look more closely at how technologies are realized in given settings. We may find that technological tools can be so embedded in the living process that their status as technologies disappears.

(Bruce and Hogan, 1998, p. 2)

This chapter will synthesize the findings, in terms of their implications for literacy programs and future research, as well as the limitations of the study. It begins by examining the notion of multi-literacy practices for low-literate persons, and how the mobile phone can open up avenues for connecting across several forms of literacy. It then examines key issues of motivation, transfer, lifelong learning, and the notions of situated learning in terms of adult literacy programs.

7.1 Multi-literacy practices of non-literate and low-literate mobile phone users (Gleaning, not gaining literacy)

With more time and interactions with the mobile phone using community in Radhanagar it was apparent that I had approached this project with a flawed and simplistic assumption about
low-literate mobile phone users. My first assumption was that low-literate users were not “sophisticated” users of mobile phones, that they were unlikely to use their phones beyond the basic features of answering and making calls. My second flawed and simplistic assumption was that the only “literacy” rural, low-literate mobile phone users might imbibe from prolonged use of mobile phones would be through using the texting function, as it is the most obvious and text-heavy interaction interface on a mobile phone. Both my assumptions were proved incorrect.

Let us look at the first assumption I made. It was true that some rural low-literate mobile phone users used only the basic functions on their phones, but I suspect the distribution of these basic users among the broader population is no higher in rural low-literate mobile phone users than in industrialized and more educated contexts. Furthermore, I had not considered the amount of collaborative learning between low-literate users that may mitigate the impacts from the lack of fluency basic users might encounter with mobile phone use. Basic users can consult advanced users when in need, and advanced users can in turn consult enthusiast users. This concept of proximate literacy is aided by the dynamics of social interaction enabled by a village culture that encourages cooperation and collaboration between neighbours, where word of mouth and personal references matter to a greater degree than perhaps in metropolitan or urban settings.

Before the study I had speculated as to whether low-literate and non-literate adults were “gaining” or “imbibing” literacy transparently through their regular use of mobile phones. The reality turns out, as it always does, to be slightly more complicated. The adults were acquiring some “literacy” abilities, but they were random, and rarely useful. There was basic recognition of Roman numerals, but not in a way that would help the participants decipher and decode texts. In this sense low-literate and non-literate adults mobile phone users may in fact be “gleaning” literacy rather than gaining it. These little tidbits of literacy were no different than the ancient
tradition of picking off leftover crop from farmers’ fields. These “pickings” of literacy might serve some limited, short-term purpose, but they are not enough in themselves to set the gleaner on a self-sustaining path to literacy.

7.2 Motivation

Motivating the participants was key to the success of this study, and it came in two major form, extrinsic and intrinsic. The extrinsic motivation was clear, stay in the study for nine months and you own the phone. The intrinsic motivation was something that I had hoped for, but was not sure that it would really happen. Yet it did. The design of the training session, and the realization on the part of the participants that they were involved in something bigger than they was played a key role. Education is still valued in Bangladesh despite the millions of educated jobless adults. In popular culture, teachers are still seen as noble and heroic, and involvement in education is always seen in a positive light. I would love to think motivation could be something as simple as the promise of ownership of a phone, and it’s likely that this promise did initially get the participants eager and enthusiastic to text. But I have to acknowledge even a phone may not be sufficient incentive for someone to devote themselves to a nine month study, involving the fairly complex activity of composing sentences on a device that is as non-writing friendly as the mobile phone. In itself, the prospect of literacy, of betterment, can be sufficient motivation (Rockhill, 1990; Fiedrich, 2004); I do believe that while the promise of the phone was an initial motivator, what may have pushed the participants to the finish line was the fact that they were told that this wasn’t the end of their literacy journey, that they had another chance, that someone believed in them. We should be careful to note however, that given social etiquette, we do not know if participants would be fully forthcoming if it were that it was only the promise of the phone that inspired them from start to finish. Nor do we know what would have happened if the
researcher were someone from the local community, who did not seek to form personal bonds with the participants, who was free of the glamorous background of having lived abroad and did not possess a "higher" social status. In other words, there was no "Arif Condition" to which we could subject this study.

7.3 Transfer

Rogers (1999) identifies the two critical components of effective adult literacy interventions as motivation and transfer. While motivation has been addressed in the previous section, transfer was another matter entirely, because it is difficult to design a literacy intervention that can predict how learning transfer will take place. At least according to the behavioural changes as reported by the participants, learning transfer took place in this study, and it manifested itself as the various forms of re-engagement that the participants experienced with traditional literacy media in their lives. Khadija started reading the newspaper; Karabi read her children’s textbook more in depth, and of course, Govinda’s experience is a strong argument that learning transfer occurred - as evidenced by the fact that he was able to read road signs by the end of the intervention, as opposed to barely anything at the start.

7.4 Mobile phones as an everyday or lifelong learning tool

We can examine the Nokia mobile phones distributed to the participants through Sharple's (2000) concept of the ideal lifelong learning tool introduced in Chapter 2, which he stated would have to be highly portable, individual, unobtrusive, ubiquitous, adaptable, persistent and useful (p.3). Without question, the small Nokia phones were highly portable and this played a significant role in the success of this project. The participants were free to glimpse, read and
compose text messages at their leisure. Given that these phones were a model that was popular in the community, we can also say that these were unobtrusive tools, none of the participants reported getting either wanted or unwanted attention as a result of the phones. The phones were also available almost everywhere as the Grameenphone network had strong coverage in the research area. The only time the phones were not available was when they were out of charge. The phones were certainly useful, and allowed the participants to use them for communication. Where the phones did not meet the criteria for effective lifelong learning tools were for individuality, adaptability, persistence and usefulness as related to reference, work and learning. Unquestionably, a smartphone or a small laptop would have fulfilled these criteria more so than a basic mobile phone, but they would not have been as portable, as available anywhere and as unobtrusive. By themselves, the basic Nokia phones provided to the participants were highly portable, unobtrusive, and available anywhere, which are three of the seven criteria. Had I been able to provide the participants with high-end smartphones, then they might have even encompassed six of the seven criteria, with the possible exception of being unobtrusive, as an iPhone would attract a lot of attention in rural Bangladesh. I believe that the tradeoff of the mobile phone as opposed to other lifelong learning tools is worth it, as without opportunities to practice following the acquirement of literacy, reading and writing skills gained tend to atrophy in adults (Abadzi 2005).

7.5 Adult learning needs facilitation

My conclusion is that, at least for adults, learning does not "self-organize", rather it is a system that needs a facilitator who takes an active role in guiding and directing the learning activities, one who can help motivate the learner by providing feedback and encouragement. This was a realization we came to early on in this study. None of the Advanced Users I interviewed
indicated that they had picked up texting just by themselves, so leaving adults with a new device and hoping that they master most aspects of it on their own would be wishful thinking. This led us to emphasize not only a thorough training period, but design an intervention where the texting activity was channeled through a central moderator, namely, me. Similarly, when the participants were first asked what types of news items they wanted to see, almost everyone said “sports”. But I ignored this. Although I did end up sending some sports stories, they were few and far between. My rationale was that sports stories, with their typical focus on reporting results, would provide fewer opportunities to engage critical thinking and knowledge that was out of the participants’ peripheral world. Instead, I curated a variety of news items across sections such as politics, general, business, sports, and world. Each week, during phone calls, I was careful to gauge the level of interest the participants had in the news clips I had sent. I made sure to send more of one kind of news items if an item was popular and vice-versa. At the closing interviews, none of the participants was upset that I had not exclusively sent them sports stories as promised.

Without direction and support, I assume that most of the participants would simply use the voice features of the phones for communications purposes and leave alone the text messaging and other features of the phone. The interviews I conducted with advanced users prior to the intervention seem to support this conclusion. Without direction, the learning group would have likely disintegrated. Without a facilitator, the learning achievements of the participants would have been few. Without a central collection point for the text messages, the progress in the quality of text messages could not have been tracked. I am not arguing that structured learning is superior to unstructured learning experiences, however, adults seem to benefit more from a structured experience than younger learners, who are motivated to explore by their natural curiosity. It will be intriguing if in future versions of this study a control group is established
where the participants are given minimal guidance and direction.

7.6 Situated/Deep Learning

From the beginning of this study the challenge was whether a device as simple and as limited as the mobile phone could stimulate deep, situated learning in the participants. My initial expectation was that this would be difficult, given that the texts sent were short in nature and not accompanied by rich media such as sound, pictures, or video. Yet something unexpected happened. Although the content sent to the participants were short in nature, they effectively seeded concepts that led to deep discussion between the researcher and participants, and deep reflection on the part of the latter, at least reportedly. This indicates in order to produce meaningful learning, and meaningful changes in literacy practices we need not feel the urge to "drown" the learner in material. In many cases, the simple act of seeding a discussion with the participants led to them seeking out more material on a topic on their own. This is a significant and fascinating finding.

Although some scholars have attributed excessive cognitive impacts to systems of writing, championing in particular the Roman alphabet (McLuhan, 1965; Havelock, 1976), Kress speculates whether specific "transcription systems" bear the legacies of the "general cultural and semiotic organization" of the specific societies that originated them (Kress, 2009; also McGovern, 2004). In that sense, further contributing to depth of thought and intensity of effort may have been the insistence on making this an L1 intervention, using Bangla as the language of instruction and composition as opposed to English, an easier choice. The ecology of texting in Bangladesh is based around the use of what I call Banglish, an amalgam script of Bangla words spelled with Roman letters. This is a fairly common practice in many countries where the native
script is not supported by the mobile phone's operating system, and this was confirmed through casual interviews with mobile phone users in the intervention area, as they reported that even if their phone supported Bangla, they would still use Banglish to compose texts, given the relative ease of spelling with Roman letters. Several of the participants reported that they had to increase their focus and concentration when spelling with Bangla characters on their phones, given the more complex and "finicky" rules for spelling in that script. Arab-Moghaddam and Senechal (2001) compared strategy and perform differences in spelling in English or Farsi in bilingual Persian children and found that the results "raised the possibility that the nature of the Persian orthography encourages children to adopt different strategies when reading and spelling words. Spelling Persian words might be particularly conducive to using an analytic strategy which, in turn, promotes the development of and reliance on orthographic skills" (p 9). Given some of the orthographic similarities between Bangla and Farsi, it is likely that the decision to employ Bangla script may have had an impact more significant than initially anticipated, as script reading often becomes a problem-solving process (Scribner and Cole, 1981, p. 164).

7.7 Limitations of the study.

In any research study, there are limitations and obstacles that the researchers are aware of at the outset, as well as those that arise during the course of the study itself, unanticipated. I was aware from the beginning that this study would be primarily conducted by myself, a single graduate student with great desire and willingness to devote myself to the project, but with limited experience and resources. This section discussed those limitations, how I responded to them, and any implications that I can see, in terms of the findings or outcomes of this study.
7.7.1 Sample size

I had made some projections, at the outset, about the number of participants I would ideally want for this study, but this was coloured by my assumption that this could be a laissez-faire intervention, with minimal involvement on my part. I was disabused of this notion once I realized that the study would have to be closely supervised and directed by me from start to finish, and that just giving participants phones and hoping for data to emerge organically was wishful thinking. The question then became whether I wanted a study with more participants but a more superficial engagement between them and me, or a smaller pool of committed participants with whom I would interact more frequently and at a deeper level. I chose the latter and on hindsight I think it was the right decision. A smaller participant group makes it hard to generalize findings, but I want to emphasize here that this is a pilot study, and the results so far are intriguing enough to warrant further investigation with a larger participant pool, and possibly in different contexts and locales.

7.7.2 Technical issues

The study occasionally fell victim to technical limitations or complications. First, on the few occasions during the nine-month intervention where I was travelling outside of Canada, I found it hard to send text messages to my participants in an affordable way. However, I still made sure to call them using Skype, to inform that the reason they had not received messages (i.e., was because I was travelling). This did have an impact on the overall number of text messages that I received during those windows. Sometimes the messages would arrive garbled, and quite often in Chinese. I was told by a number of participants that they hadn’t received some of the messages, which were definitely sent. These issues occurred approximately 20 times, and affected, in my estimate, approximately less than 5% of the text messages.
7.7.3 Literacy ability of participants

The final pool of participants for my study had a higher mean literacy level than I would have ideally liked. But finding participants who met the criteria of (1) low-literacy, (2) not owning a cell phone, and (3) willing to participate in the study was challenging. In some ways this may have been fortuitous, as I ended up with a pool of participants whose literacy abilities were spread along a spectrum of experiences, achievement and ability.

It was also becoming apparent to me that to give a completely non-literate person a mobile phone as their first and primary literacy acquisition tool might be setting them too steep a hill to climb. Even though Govinda showed some remarkable improvement in his reading and writing, it still may well be the case that the best course for complete non-literate persons is to start with traditional literacy tools in a more familiar learning context. A mobile phone is simply not well suited to teach an adult the basic elements of reading and writing – at least not yet – and should at best be seen as a companion device to more full-featured literacy models.

This study is not implying that mobile phones are in some ways a panacea or an appropriate and complete replacement for full-featured, deeply-engaged instruction. While comprehensive and sustainable adult literacy programs are obviously the appropriate goal, adult literacy initiatives are unlikely to be as well-funded as primary school programs. The use of mobile phones could help respond to this fact. Abadzi (2003) and Rogers (1999) both note that adult graduates of literacy programs are often in danger of “losing” their literacy skills, which has been described as “fragile” (Rogers, 2002; Kothari et al., 2004; Ouane & Amon-Tanoh, 1990). A mobile phone based literacy program, delivered as it is on a device that adults carry with them all day, provides them with a chance to practice their literacy skills of writing (in a way) and reading. It is an ideal life-long learning tool (Sharples, 2000).
7.7.4 Blurring the lines

I realized quickly the limitations of an approach that involved texting someone, or a group of people, on a regular basis for a period of nine months. It is prohibitively challenging to engage in regular news exchanges and question/answer sessions about the content for any sustained period of time. And it is also difficult to keep one’s personal life from becoming entangled in the professional one. Real life seeped into the study, and questions deepened beyond the mundane to the personal. A number of times, some of participants would share some of their daily lives with me, the joys and laughter, the trials and unexpected calamities. Through all this, I tried my best to be of assistance in ways that didn’t compromise our relationship as researcher and participants. When one participant asked me advice on a very painful personal matter, I tried to draw on my own life and experiences in the answer. Sometimes I was asked for favours that were beyond my capabilities, but which I could anticipate given the way I may have been perceived by my participants: as someone born in privilege, living in an exotically rich country thousands of miles away, someone who is comparatively wealthy and boasts a Western education. Deciding what requests were within my ability and appropriate for me to fulfill were the some of the most difficult decisions I had to make in this study. It was nearly impossible not to become intertwined in the lives of others, given the tenuous links of our voices floating through the depths of space, or bits and bytes of random text characters. In the end, not only were literacy practices embedded into our social structures, but we also become embedded into one another’s lives.

7.7.5 Literacy testing all participants

The initial plans for this study called for testing the intermediate (advanced) users on their literacy skills as well, but I decided against this in the early days of data collection. The primary
reason was that, even though illiteracy is widespread in rural Bangladesh, it still carries with it an element of shame – a stigma that some are not keen to advertise. I feared that asking intermediate users who had volunteered to talk to me to take a literacy test would embarrass them, and possibly dampen enthusiasm in others who might otherwise have talked to me. This robbed me of having a control group, as I could have re-tested the intermediate users after the course of the nine months to compare to my intervention group. Ultimately, my lack of a control group is mitigated to some degree, given the literacy test administered contains sections on topics that were not part of the intervention. However, if I had to do this over again, I would try harder to establish a control group at the outset, as well as a somewhat larger sample size.

7.7.6 Alternative lenses: Cognitive Work Analysis and Human-Tech Ladders

Much of the research design for this study emerged ad-hoc, yet there are more systematic approaches that future researchers could adopt. One that stands out is Cognitive Work Analysis (CWA) (Rasmussen 1994; Vicente 1999), a conceptual framework that can guide design for human-tech or human-information interactions. CWA takes an *affordances* and *constraints* approach to understanding *sociotechnical systems* (Trist 1978) -- the complex interplay between societal processes and human behaviour -- in order to enact process adjustments that result in meaningful improvements in productivity and well-being for human actors using technological tools. Vicente's (1999) framework for CWA is comprised of five key components: (1) Work Domain, or the system being analyzed in question, independent of human actors or workers; (2) Control Tasks used to achieve system goals; (3) Cognitive Strategies used to perform said tasks; (4) Social Organization of the network of human operators and, (5) Worker Competencies. This framework for CWA, Vicente argues, allows researchers to design for effective *Human-tech*
relationships, which is "is based on system-thinking and focuses on people-technology system, [...] stresses the importance of human needs over technology glorification, [...] never [is] an end in itself, [and...] reminds designers that technology should be tailored to the physical laws and most importantly should have affinity with human nature" (Vicente 2004, p. 25).

CWA and Human-tech frameworks have been effectively adopted for educational settings: MacKinnon and Woodruff (2009) conducted a human-factors analysis as a three-year study of the implementation of online learning for teacher education, leading to a Human-tech influenced "open online research support forum (MacKinnon & Woodruff, 2009, p. 8); Nirula and Woodruff (2006) collected interview data from stakeholders of a school Work Domain where handheld computers were used in a grade two knowledge-building classroom, and found CWA to be a " vital component in developing and testing educational software applications (p.4). Given the deeply personal nature of the mobile phone, and many handheld devices in general, extensive stakeholder feedback prior to research design using CWA, and enactment of device use cases with Human-tech relationships in mind will go some ways towards more effective design of mobile phone based literacy interventions. The Human-tech model also predicts to some degree, the way societies are affected and changed when new technologies are introduced.

7.7.7 Other limitations

Finally, one of the biggest limitations of this study was myself. Despite attending a school where Bangla was the medium of instruction for the first four years of my life, I subsequently switched over to English beginning in the fifth grade and never went back, and while I retained an abiding love for my native tongue, my writing skills in it—especially spelling—have atrophied. There were many occasions where I struggled to find the right words in Bangla to express myself over text. Most times, when I was simply copying texts from Bangla newspapers
this was not an issue, at these times I consulted a dictionary. There were occasions when I even “cheated”, by copying word correctly spelled by a participant in my text. I realized also that given my fluency in English, and ability to text in the three prevalent “modes” of texting in Bangladesh, I was in a unique position to interpret, arbitrate and exchange messages in English, Bangla and Banglish. Anecdotally, I can report that my comfort and fluency in Bangla improved as a result of my involvement in this study, supplying at least one further bit of evidence that regular engagement in the practice of reading and writing in a language can have a positive effect on literacy abilities.

The phones used for this intervention were basic Nokia models commonly available in the area. It can be debated whether I had erred on the side of “too basic” as opposed to “more features”. Certainly, it would have been intriguing to see what affordances a camera-enabled or more advanced feature phone might have opened up for the participants, or the learning possibilities and opportunities for them that could be brought about by unfettered access to the Internet. Neither feature was implemented because for one, issues of storage, transmission and retrieval of pictures, (given the likely limited capacity of the phones) made it unsustainable for a longitudinal study. Internet access was another matter, although at the time EDGE speed (below 3G) mobile Internet was available in Radhanagar, it was slow. I was also hesitant of introducing a web element to the intervention, given the limited control I would have on directing the learning experiences for the participants once they were out on the world wide web. The text and phone calls model was a carefully designed garden, while the Internet was a jungle teeming with both opportunities and danger. Subsequent iterations of this study could consider expanding the scope of the Intervention by introducing elements of photo-voice by using camera equipped phones, and trace the development of life-long learning and knowledge acquisition behaviour in
the participants by providing access to the Internet.

A feature of the Nokia models used that was critical to this intervention was the support for Bangla characters. But it would be prudent here to flag this feature as a potential limitation as well, especially given the current market realities in Bangladesh. Since cheap and feature-rich Chinese made handsets have flooded the Bangladesh market, the number of Nokia users has shrunk, along with it the total pool of Bangla enabled handsets. This creates a situation where Metcalfe's Law may play an important role. Metcalfe's law states that the value of a telecommunications network is the square of the total number of users connected to the system (Wikipedia 2013). The common example given to describe the law is that the very first few fax machine owners would have derived little value from the fledgling network of the machines, as at one point there simply were not enough fax machine worldwide to justify the purchase of one. Obviously, this was a situation that changed quickly. Metcalfe's law becomes relevant in this study as if there are not enough Nokia or other handsets with the support for Bangla characters, the participants lose incentive to practice their Bangla skills -- they simply have no one to text. This limitation is one those attempting to replicate this study on a wider-scale should take into consideration.

Above all, this was a pilot study, and although the limitations were many, there exists ample opportunity to address them in future iterations.

7.8 What the future holds

This study was financially constrained, give the fact that I was the only one directing it, the participant to researcher/COORDINATOR ratio is something that should be revisited in future implementations of this research. I think in retrospect that a ratio of one researcher to nine
participants is too low. There should ideally be one researcher to three participants who form a “quad”. I had three women in this study with whom I exchanged messages. But with respect to the culture, I had to first discuss the matter with two husbands and one father. In the future, these quads should be same-sex, for propriety’s sake.

Three of my participants, with greater years of formal education, quickly mastered texting and improved their diction and error rates in texting. They were then motivated to text in English to improve their skills in the language. I did this on a trial basis at the start of the study but quickly abandoned it so that it would not affect the purity of the data. But this L2 transition is something that can be considered in future implementations of this model, as a potential second year curriculum.

The idea of “texting mentors” should also be considered. In the quads the central facilitator should be a man or a woman with at least a Bachelors level degree. This person should be someone who has been part of the community for some time so there is minimal disruption if they have to relocate. I think that a local person, who the participants may in fact encounter in their day to day lives, may motivate them further to stay in the study. This local person can even act as a technical resource should the participants encounter problems with their phones. There is even greater potential with this mentor model. There are many Non-Resident Bangladeshis (NRBs), who live and work abroad, who may become enthusiastic recruits in this project. From my personal experience, many NRBs are actively involved in development work in Bangladesh, not only through the remittances they send back, but through advocacy and field work for actual non-profit organizations. Those that aren’t involved, wish to become involved. We can convince NRBs, especially young Bangladeshis on college campuses to become “texting pen-pals” with rural adults in Bangladesh. This will help not only harness a willing corps of teachers for this
project, but promote cross-cultural, cross-generational and cross-SES understanding.

Much has happened in the aftermath of this study. I have had an opportunity to meet with other scholars working in the field of mobile phone based literacy interventions, such as Professor Amita Chudgar, whose work (2013) is cited in Chapter 2. Additionally, in recent months I have sought out partners and mentors who could guide an expansion of this project, including Nobel Peace Prize Laureate Mohammad Yunus of Bangladesh, who was kind enough to meet with me in September 2013. During the same trip, my old colleagues at BRAC invited me to discuss my research. As a result of that meeting, I am happy to report that in October 2013 BRAC agreed to pilot a mobile phone-based literacy intervention modeled on the one described in this thesis.

Adult illiteracy is a worldwide challenge, and calls for creative solutions. The primary challenge is in not only designing a literacy intervention that takes into consideration the unique needs of adults learners but also one that adapts to their lifestyle. This makes it difficult to identify a panacea to adult literacy. Mobile phone based literacy interventions may not be a comprehensive answer, but I believe that they can be an important piece of the puzzle. Burgeoning research in mobile phone based learning interventions show promise, at least in providing a mechanism for reading and writing practice that encourages learning retention. The mobile phone is, and will likely remain, the most ubiquitous electronic technology for the foreseeable future. The provisions that mobile phones have for text-based input, their ability to provide multi-modal communications through text and voice, their portability and low-cost make them an ideal media for literacy instruction. Yet it is not simply the novelty factor the mobile phone that can drive engagement. A lightweight, “literacy-second” curriculum that will build reading and writing skills on bite-sized news items should get adult participants interested in
texting and reading. Using technology that is as thriving and ubiquitous as the mobile phone comes with a brace of advantages. One is that the learning curve that new devices would require would be reduced, and the other is that a strong support structure exists for these devices, especially for repair and technical support. Importantly, the field of mobile learning is still young, and a wider-scale study such as this one will give it impetus and legitimacy which will hopefully drive more innovation and experimentation.
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Appendix 1: Personal reflections on literacy

My grandmother is non-literate.

Perhaps that is too simplistic, but that is how my grandmother, my mother’s mother, Miss Samsunnahar describes herself. She is 81, a fairly advanced age in Bangladesh. Yet my grandmother’s life is not one of wallowing in reminiscing, or a soft fade into irrelevance behind the walls of the old-age homes that do not yet exist in Bangladesh, but whose arrival we await with a subtle dread, as it will confirm a turning point for our society and culture into something alien.

Miss Samsunnahar has had fourteen children, of whom 9 survived into adulthood, and the eldest of whom is my mother. At the age of fourteen, my grandmother married a man seven years her elder. She remembers delivering my mother at the spotless Mitford Hospital in Dhaka, still run by the *gora* (Bangla for “fair-skinned”) British doctors, just three years after the end of the Second World War. She remembers getting roast chicken for lunch, so generously portioned that my grandfather would visit her midday to help her finish her food. She named my mother Rosie, after one of the affable British nurses who helped deliver her baby. Of my Grandmother’s nine children, seven hold Master’s degree, and eight have at least a bachelor’s. Even her least educated child has completed high school. Of her twenty grandchildren, I am the first doctoral candidate. Ironically, my grandmother’s sum total of education comprises eight years of grade school.

My grandmother has lived in three continents. She was quite possibly the first Bangladeshi grandmother to hold a driver’s license. She ran her own business delivering samosas
and other fried Bangladeshi snacks while living in the US. Even now, with her all her children educated and happily ensconced in their family lives around the world, my grandmother lives alone in her house at the south end of Dhaka. She rents out the upper apartments and rooms in the house to other families and single men who work in the city’s financial district, a five minutes walk from the house. Miss Samsunnahar claims that this work, staying active, and doing the basic arithmetic of calculating rent and electricity bills keeps her sharp. At night, she watches cricket matches on the TV in her room, cheering lustily whenever the Bangladeshi National Team is playing. In bed, she reads herself to sleep. “Thank God,” she says to me. “My parents at least gave me the knowledge of letters.”

It is remarkable that despite all her accomplishments, experiences, and skills in the various transactional aspects of adult life that define modern existence, and having raised nine highly accomplished children, my grandmother can only be considered low-literate by the standard definitions of the word, and non-literate by her own, showing how limited our understanding of that concept really is.

We who are literate are fortunate, although perhaps not as much and not in the way that we like to think we are. With sufficient use, our ability to decipher text becomes second nature, as do the obstacles that occupy our world that require those abilities. Over the course of my life, I have likely read several million words of printed text voluntarily, whether through books, both fiction and non-fiction that I’ve read for pleasure, as well as texts that were the requisite for the many courses, classes, seminars and workshops that I’ve taken in my already too long academic life. If I count the reports and memos at work and the newspapers that I’ve read voluntarily, across two different languages and scripts, the number easily crosses several million. I am of course not counting the words embedded in my everyday life that I passively absorb, on signs,
wrappers, directions, and advertisements, texts that so permeate my existence that their presence has become invisible to me, even as I consume and retain their meanings sub-consciously.

The first advancements of broad literacy efforts came with the codification and mass-production religious texts such as the Epic of Gilgamesh, the Old Testament, the Bible and the Koran. In comparison, the notion that the expansion of literacy skills will bring about broad-scale economic benefits is much more recent, only gathering momentum over the last 75 years or so. But even at the heart of such well-meaning efforts, literacy is dispensed in a segregated and elite manner, in that literacy activities are usually conducted in particular places and buildings called schools, facilitated by “trained” individuals called teachers or instructors, and received dutifully by students, who are expected to look, think, and behave in a homogenous way.

There is a fundamental gulf between a society where literacy is an expectation, and one where it is anything but. Bangladesh has a functional adult literacy rate of 59 percent. Things are only marginally better in other South Asian countries such as India and Pakistan. Many villages in South Asia still have professional letter writers, (usually) men whose job is to take the dictated messages of those unable to write letter on their own. They sit under the shade of large Banyan trees and patiently transcribe the messages between mothers and sons, fathers and daughters, business associates, and even lovers. To these missives the letter writers nominally add their own “headers”, such as, poro shomachar ei je (“my news is as follows”).

I was both sensitized and inured to the fact that my country was cleaved between those who could read and those who couldn’t. The cheap cost of labour in Bangladesh allows many middle and upper-middle class families to employ domestic servants. Prospective servants are
often interviewed on their literacy abilities, with illiteracy sometimes being preferred on the part of the employer, so the person employed can be trusted to handle correspondence.

We have elevated the written word over other methods of communications. Much effort has been expended on increasing literacy, on standardizing texts, and much teeth gnashed by educators and cultural critics, lamenting the corruption of language through non-standard adaptations such as the shortcuts used by teenagers while texting, or through communal and cultural dialects such urban hip-hop and slang. Yet the written word is not omnipotent in its expressive power; McLuhan (1965) illustrates this through the example of how few ways there are of writing the word “tonight”, compared to the shades and variations of meaning that could be applied to the word by a stage actor who speaks it aloud (p. 79).

I experienced the elevation of the written word over the oral myself. As a child of a Muslim household, my parents made perfunctory attempts at introducing me to my religious heritage. At the age of eight, I was entrusted under the care of a Mullah, an Islamic religious teacher, a most pious man as judged by his beard, clothes and bearing, whose responsibility included teaching me to read the Koran, fluently, in Arabic. Incredibly, while this individual could read the Koran with a liquid grace, reproducing each syllable of the alien language perfectly, he did not understand a single word of what he was uttering or reading out aloud, because my Mullah, like most other Mullahs in Bangladesh, did not actually understand Arabic. He had only learned to read it. This empty exercise of reciting words on a piece of paper while retaining none of the actual meaning is symptomatic of the culture of rote learning that still pervades in Bangladesh.
Appendix 2: Bangladesh - The macro context

“Where the mind is without fear
and the head is held high,
where knowledge is free.

Where the world has not been broken up into fragments by narrow domestic walls.

Where words come out from the depth of truth,
where tireless striving stretches its arms toward perfection.

Where the clear stream of reason has not lost it's way
into the dreary desert sand of dead habit.

Where the mind is led forward by thee
into ever widening thought and action.

In to that heaven of freedom, my father,

LET MY COUNTRY AWAKE!”

— Rabindranath Tagore (1910)

The region now known as Bangladesh has seen continuous settlement and occupation for the last four thousand years. Geographically, Bangladesh is low-lying, almost the entire country a flood-plain delta for large rivers that originate in the Himalayas. These churning waters are rich with nutrients, resulting in almost eighty thousand square kilometers of arable land, which helps to support a population of 161 million. Given the country’s tiny footprint, this translates into the highest population density of any country that is not a city-state.
Historically, Bangladesh was part of the British Raj before the Partition of India and Pakistan in 1947, where the British divided the country along ethnic and religious lines immediately preceding their departure as colonial powers. In 1947, Hindu-majority India was born, along with the Eastern and Western wings of the Muslim majority Pakistan, a country that India separated geographically. West Pakistan was dominated by Urdu speaking Muslims who had little in common ethnically or culturally than the Bengali speaking Muslims in the Eastern wing of Pakistan, the country that would go on to become Bangladesh.

**Figure 28 Pre-partition India (Compare Infobase 2001-2)**

Twenty-three years of tense existence followed for the two, or some say, three countries. West Pakistan dominated its Eastern counterpart both culturally and economically. Eastern Pakistani natural resources were diverted to Western Pakistan. West Pakistani politicians dominated the combined Pakistani parliament. In 1952, West Pakistan tried to declare Urdu, the official language of West Pakistan as the state Language in the East. East Pakistanis, quite
attached to language and culture, naturally protested, leading to the death of eleven students marching for language rights in 1952 at the hands of the police, who opened fire. This event highlighted the tension between the two wings of the newly created country, and is commemorated by International Mother Tongue day on February 21st of each year, the day of the shootings.

Figure 29 Post-partition India (1947 - 1971)

The underlying issues between the two countries remained: West Pakistan continued to culturally, politically, and economically dominate the East, while East Pakistanis were reminded of how little they shared with their West Pakistani counterparts apart from a common religion. Culturally and linguistically, the Bengali Muslims were much closer to the Bengali Hindus across the border in India, even as Pakistan and India fought three wars between the years of 1947 and 1970.
In 1970, the southern coast of Bangladesh was hit by a massive cyclone. The resulting tidal surge in November 1970, combined with the failure of the authorities to warn coastal population resulted in the death of more than a half million people. It was the worst natural disaster in modern history.

Figure 30 Aftermath of the Bhola Cyclone

The events in the months following the storm would set in motion the Bangladesh War of Independence. The West Pakistan authority’s slow response to the crisis, and subsequent refusals of aid from countries like India, were emblematic to East Pakistanis of the unequal relationship between the two wings of the country, and the disdain and apathy held towards East Pakistani’s by the West Pakistan elite. In late 1970, in the wake of the storm, the East Pakistani Awami League party won 167 of the 169 seat in parliament in East Pakistan, and thus a majority of seats for the two countries combined. This was a result that would have made Sheikh Mujibur Rahman, the first East Pakistani Prime Minister. The West Pakistani political establishment however refused to let Mujibur Rahman become the Prime Minister for both wings of the country. Over the next few months, as tense negotiations continued between Mujibur Rahman
and political power brokers in the West, the West Pakistani army quietly began amassing its military forces in East Pakistan, anticipating unrest.

When negotiations broke down between Mujibur Rahman and the West, he declared a “struggle for independence” for the country, and the West Pakistani army launched a brutal pacification operation against East Pakistan called Operation Searchlight on March 25th, 1971. West Pakistan army forces systematically searched out University residences and gunned down professors and students in cold blood. Select members of the country’s intelligentsia were rounded up over the course of one night and executed by the Pakistani army. This may have been done not only to pacify the populace, but to also intellectually cripple a new nation should one emerge.

![Rebel Bengali Army circa 1970](image)

**Figure 31 Rebel Bengali Army circa 1970 (The Guardian UK 2010)**

An uneven war continued for the next nine months. The Mukti Bahini, or Liberation Army, a rag-tag volunteer army, waged guerrilla warfare on the vastly better trained and armed
West Pakistani military members. Atrocities against the civilian population by the West Pakistani forces continued, with women and religious minorities such as Hindus facing the worst of the brutality. India, which had already fought two wars again Pakistan since their respective independence from Britain, provided shelter to the millions of refugees who crossed the border from East Pakistan into Bangladesh, and only became involved militarily following a pre-emptive strike by West Pakistan on an Indian air base. With India’s involvement, the war came to a swift end, and on 16th December 1971 the General of the West Pakistani army signed the Instrument of Surrender in Dacca (now Dhaka), the capital of the newly independent Bangladesh.

Now, at 41 years old, Bangladesh remains one of the world’s youngest countries. And although a low-income nation beset by frequent natural disaster, Bangladesh has been declared one of the "next eleven" emerging economies by Goldman Sachs (O'Neill, 2011). Culturally the country remains a moderate Muslim country. Islam is recognized as the official religion in the country’s constitution, but the country has a long history of religious tolerance, and is one of the few to recognize Christian, Buddhist, Hindu and Islamic holidays.
11 Appendix 3: Literacy Assessment Instrument

Figure 32 UNESCO literacy assessment instrument page 1
Figure 33 UNESCO literacy assessment instrument page 2
### Literacy Assessment Survey 2008

#### Question 6

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#### Question 8

![Image of individuals]
Date:

Dear Participant,

My name is Arif Anwar and I am a PhD student at the Ontario Institute for Studies in Education at the University of Toronto, Canada. To complete my degree requirements, I am conducting a study on how the people of Radhanagar, despite not having traditional schooling, have learned to use mobile phones. My study is titled *Exploring mobile phones use in alternatively literate adults in Bangladesh*. My goal with this research study is to learn more about your background, your experiences with using a mobile phone, its impact on your daily life, and some of your day-to-day activities. I would like kindly request your participation in my study.

Some of the things I would like to know more about are:

- Your background, including: any schooling that you may have received, the type of work that you are involved in, some details about your family, and your roots in this community.

- Your mobile phone: The make and model of your mobile phone, how long you have used it, how you obtained it, its impact on your daily life, how you first learned to use, and, how you use it on a day-to-day basis.

This study will occur over two phases. In the first phase I will ask you to take a short test that will assess your level of literacy. This test will take approximately 30 minutes and is not meant to be evaluative in any way. This test will not be scored, and the results will not be seen by anyone other than my supervisor and me. Your real name will never be used in this study and
no one in this village will know anything about your participation other than the witness. Once you have completed this test, I will interview you to learn more about the items mentioned previously (re-read items if requested). This interview will be digitally recorded.

Upon completion of the interview I will ask you to allow me to accompany you on a typical workday. The purpose of this is so that I can learn more about how you use your mobile phone as you go through a typical day of work. During this observation period I will do my best so as to not interfere with your work, however, at some points if something is unclear to me I may ask you questions, especially regarding how you use your mobile phone. Your answers to these questions will be noted in a notebook that I will carry with me. Again, only I will see these answers and your real name will not be used.

Involvement in this research project is voluntary and will not pose any risks for you. At any time in the study you can choose to ignore any question. Confidentiality will be maintained at all times. The transcripts and digital recordings will be stored in a safe and confidential location and will be destroyed three years after the completion of the study. If you participate in the interviews and classroom observations, you will have the opportunity to read the transcripts and field notes to check for accuracies (Note: in the hard copy, a code name will be used instead of your name). No one other than the researcher will have access to the raw data. If you participate in the interview you will have the opportunity to read the transcript of your interview to check for inaccuracies (Note: in the hard copy, a code name will be used instead of your name). I will write a report of this study and submit it to OISE/UT to complete the requirements for my doctoral dissertation. I will also use the data from this study to write scholarly papers on teacher education. These papers will be submitted to academic journals for publication and to academic conferences for presentation. I would like to use the data from this study for my future writings on teacher education. Once again, in the report and papers pseudonyms will be used and participants and their institutions will not be identified in any way.

You have the right to refuse to participate without having to give a reason and without any adverse consequence. You have the right to withdraw at any time without having to give a reason. There will be no compensation for agreeing to participate. You may keep a copy of this consent letter. If you have further questions about your rights as a research participant, you can
contact the University of Toronto’s Office of Research Ethics at ethics.review@utoronto.ca or phone 001 416 946 3273.

If you choose to participate in this study, please sign or make a mark on the attached consent form. Thank you for agreeing to participate in this research. If you have any questions at any point you may leave me a ‘missed call’ and I will call you back at my expense. My phone number is +8801741051330. If you feel more comfortable speaking to the witness you may contact him/her at …. You may also contact my faculty supervisor, Professor Jim Slotta, at jslotta@gmail.com or at (416)…. 

Sincerely,

Arif Anwar – PhD Candidate at OISE/UT

arif.anwar@utoronto.ca

8801741051330
Date:

Dear Participant,

My name is Arif Anwar and I am a PhD student at the Ontario Institute for Studies in Education at the University of Toronto, Canada. To complete my degree requirements, I am conducting a study on how the people of Radhanagar, despite not having traditional schooling, have learned to use mobile phones. My study is titled Exploring mobile phones use in alternatively literate adults in Bangladesh. My goal with this research study is to learn more about your background, your experiences with using a mobile phone, its impact on your daily life, and some of your day-to-day activities. I would like kindly request your participation in my study.

Some of the things I would like to know more about are:

Your background, including: any schooling that you may have received, the type of work that you are involved in, some details about your family, and your roots in this community.

This study will occur over two phases. In the first phase I will ask you to take a short test that will assess your level of literacy. This test will take approximately 30 minutes and is not meant to be evaluative in any way. This test will not be scored, and its results will not be seen by anyone other than my supervisor and me. Your real name will never be used in this study and no one in this village will know anything about your participation other than the witness. Once you have completed this test, I will interview you to learn more about the items mentioned previously (re-read items if requested). This interview will be digitally recorded.

Upon completion of the interview I will ask you to allow me to accompany you on a typical workday. The purpose of this is so that I can learn more about how you use your mobile phone as you go through a typical day of work. During this observation period I will do my best
so as to not interfere with your work, however, at some points if something is unclear to me I may ask you questions. Your answers to these questions will be noted in a notebook that I will carry with me. Again, only I will see these answers and your real name will not be used.

Following the day of observation I will supply you with a mobile phone. This mobile phone is yours to keep and use as you wish. I will supply you with an initial mobile pre-paid card so you can start using your mobile phone. I will leave a six months’ supply of mobile pre-paid cards with the witness. You may take up to two cards a week from this supply for the next six months. The witness will keep a track of how often you take cards, and this information will only be shared with me. This mobile phone is yours to keep forever, even if you choose to withdraw from this study.

Phase two of the study will take place in six months from the completion of Phase 1. During this period I will be in contact with you, and you will be free to use the mobile phone as wish. Once the six month period is over I will re-contact you. At this point I will request you to retake the literacy test. I will also ask you about your six months of mobile phone ownership, about how you learned to use it and its impact on your daily life. I will accompany you again on a typical workday and observe how you use your mobile phone. If at any point something is unclear to me I will ask you questions.

Involvement in this research project is voluntary and will not pose any risks for you. At any time in the study you can choose to ignore any question. Confidentiality will be maintained at all times. The transcripts and digital recordings will be stored in a safe and confidential location and will be destroyed three years after the completion of the study. If you participate in the interviews and classroom observations, you will have the opportunity to read the transcripts and field notes to check for accuracies (Note: in the hard copy, a code name will be used instead of your name). No one other than the researcher will have access to the raw data. If you participate in the interview you will have the opportunity to read the transcript of your interview to check for inaccuracies (Note: in the hard copy, a code name will be used instead of your name). I will write a report of this study and submit it to OISE/UT to complete the requirements for my doctoral dissertation. I will also use the data from this study to write scholarly papers on teacher education. These papers will be submitted to academic journals for publication and to
academic conferences for presentation. I would like to use the data from this study for my future writings on teacher education. Once again, in the report and papers pseudonyms will be used and participants and their institutions will not be identified in any way.

You have the right to refuse to participate without having to give a reason and without any adverse consequence. You have the right to withdraw at any time without having to give a reason. There will be no compensation for agreeing to participate. You may keep a copy of this consent letter. If you have further questions about your rights as a research participant, you can contact the University of Toronto’s Office of Research Ethics at ethics.review@utoronto.ca or phone 001 416 946 3273.

If you choose to participate in this study, please sign or make a mark on the attached consent form. Thank you for agreeing to participate in this research. If you have any questions at any point you may leave me a ‘missed call’ and I will call you back at my expense. My phone number is +8801741051330. If you feel more comfortable speaking to the witness you may contact him/her at …….

Sincerely,

Arif Anwar – PhD Candidate at OISE/UT

arif.anwar@utoronto.ca

8801741051330
Letter of Confidentiality

(Will appear on OISE/UT letterhead)

Date:

Dear (Witness/Research Assistant Name)..............................,

As part of the study titled Exploring mobile phone use in alternatively literate populations in Bangladesh, I will provide you with access to confidential and personal information concerning the participants of our study. In consideration of providing you with confidential information you are required to accept and comply with the following terms and conditions:

• You will maintain the confidential and personal information about participants in the strictest confidence and will not divulge any of the information to any third party without our prior written permission.

• You will not make use of the confidential or personal information other than for the purpose of the research study titled, Exploring mobile phone use in alternatively literate populations in Bangladesh.

You acknowledge that:

• The information and data collected in this study are highly confidential.

• Any use or outside knowledge of the confidential information collected may be damaging to the participants.

If you have any questions or would like more information about my study, please contact Arif Anwar at arif.anwar@utoronto.ca or phone 8801741051330.
Please indicate your acceptance of the above by signing and returning the enclosed copy of this letter.

Sincerely,

Arif Anwar
Doctoral Candidate
OISE/UT

Date:

Re: Letter of Confidentiality

I refer to your letter of confidentiality dated [ ] and agree to the terms listed in the above.

__________________________________________________________
Translator/Transcriber Name (please print)

__________________________________________________________
Translator/Transcriber Signature

__________________________________________________________
Witness Name (please print)
Witness Signature

Informed Consent (Advanced users)

(Will appear on OISE/UT letterhead)

Consent Form

Name: ____________________________________________________

Profession: _______________________________________________

Phone make/model: _________________________________________

I have read the attached letter and agree to be part of the research study Exploring mobile phone use in alternatively literate adults in Bangladesh. If I choose to participate in interviews and classroom observations, I agree to have these digitally recorded. If I choose to participate in workday observations, I agree to permit field notes to be taken.

Check One:

_____ Literacy assessment and interview only

_____ Literacy assessment, interview and workday observation
I agree to let Arif Anwar to use the data for purposes of research and to quote from interviews. I also agree to let him refer to research data gathered in this project for future work on mobile phone based adult literacy initiatives.

Name: ___________________________________________

Signature/mark: ________________________________________

Date: ____________________________

Please indicate the email address (if any) you would like us to use.

Email address: _____________________________

If you would like to receive results of the study, copies of the transcripts, and/or a final report, please indicate an email address OR postal address where they can be sent.

Email address: _____________________________

Postal address: ____________________________________________
Informed Consent (Basic Users)

(Will appear on OISE/UT letterhead)

Consent Form

Name: ____________________________________________________

Profession: _______________________________________________

Phone make/model: _________________________________________

I have read the attached letter and agree to be part of the research study Exploring mobile phone use in alternatively literate adults in Bangladesh. If I choose to participate in interviews and classroom observations, I agree to have these digitally recorded. If I choose to participate in workday observations, I agree to permit field notes to be taken.

Check One:

_____ Literacy assessment and interview only

_____ Literacy assessment, interview and workday observation
I agree to let Arif Anwar to use the data for purposes of research and to quote from interviews. I also agree to let him refer to research data gathered in this project for future work on mobile phone based adult literacy initiatives.

Name: ____________________________________________

Signature/mark: ____________________________________________

Date: ______________________

Please indicate the email address (if any) you would like us to use.

Email address: _____________________________

If you would like to receive results of the study, copies of the transcripts, and/or a final report, please indicate an email address OR postal address where they can be sent.

Email address: _____________________________
Postal address: ________________________________
13 Appendix 5: Interview questions

Interview questions (Advanced/Enthusiast users)

1. Please tell me about your parents’ lives.

2. Please tell me about your grandparents’.¹

3. Please tell me about your brothers and sisters (age, education, marital status, their relationship with the interviewee)

4. How long have you lived in town?

5. Where did you live before?

6. Please tell me a little bit about where you grew up.

7. Did you ever get a chance to attend school?

8. How do you feel about attending/not attending school?

9. What do you do currently?

10. How did you come about your line of work?

11. Do you own a mobile phone?

¹ Also inquire about their lives before and after marriage, including important events in their life, their childhood, education, occupation, ethnic and religious background. Any parent/grandparent if they have left them out.
12. If yes, please tell me a bit about it: the model, make, language used.

13. When did you get it? How?

14. Has the mobile phone helped you in line of work? How?

15. Has the mobile phone ever hindered you in your line of work? How?

16. When you first got your mobile phone, did you know how to use it?

17. How did you learn how to use it?

18. Did anyone help you?

19. How many calls do you get a day?

20. How many calls do you make?

21. How do you know who is calling when you get a call?²

22. How find the person on the phone when you make a call?³

23. What else do you use it for? (ie. texting, flashing, other)

² Go into detail about how they learned this
³ Go into detail about how they learned this
Interview questions (Basic Users)

1. Please tell me about your parents’ lives.

2. Please tell me about your grandparents’.*

3. Please tell me about your brothers and sisters (age, education, marital status, their relationship with the interviewee)

4. How long have you lived in town?

5. Where did you live before?

6. Please tell me a little bit about where you grew up.

7. Did you ever get a chance to attend school?

8. How do you feel about attending/not attending school?

9. What do you do currently?

10. How did you come about your line of work?

11. Do you own a mobile phone? Why not?

12. Would you like to own a mobile phone someday? Why?

13. Do you think a mobile phone would help or hinder you in your line of work? How?

* Also inquire about their lives before and after marriage, including important events in their life, their childhood, education, occupation, ethnic and religious background. Any parent/grandparent if they have left them out.