MOBILE ENGLISH LANGUAGE LEARNING FOR YOUTH EMPOWERMENT: AN ACTION RESEARCH STUDY IN DHARAVI, MUMBAI

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ABSTRACT

With reach of the mobile phone in the developing world unsurpassed by any other form of information communication technology, and its potential as a means to support learning widely recognised and the subject of a range of exploratory interventions, researchers, policy makers and practitioners have turned to the challenges of making mobile learning initiatives more scalable, more sustainable and more sensitive to the needs and circumstances of learners. At the same time, there is a call for a critical approach to the use of technology that serves to expose immanent knowledge and to challenge unequal power relations within educational settings, in order to identify ways in which educational technologies can be used in fairer and more equitable ways.

This study employs action research, a methodological approach that I argue is appropriate to address such an agenda. This thesis sets out the study of collaborative attempts to design and implement a mobile English language learning resource in partnership with a Non-Governmental Organisation (NGO) in Dharavi, Mumbai. Through three iterative action research cycles, conducted in a participatory manner with NGO leaders, teachers and students, this study investigates how the use of a mobile learning resource can provide a sustainable means of enhancing the learning of disadvantaged young adult participants enrolled on the NGO's Youth Empowerment Program.

The design and use of a mobile learning resource is framed against a complex picture of young people's access, ownership and engagement with mobile technology, closely linked to gender, life stage and economic circumstance; as well as the NGO's shifting English language curriculum priorities and strategic change. The study reflects upon the nature of student learning experiences, through the use of the activities within the mobile learning resource itself, through broader strategies of digital engagement and through the participatory research process. Finally, the study identifies issues that constrain the sustained use of the mobile learning resource, including lack of flexibility and control over pedagogical content and the absence of continuing technical support.

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DECLARATION

I declare that this thesis is a presentation of my original research work and has not previously been submitted for a degree from any other university. To the best of my knowledge, this thesis does not contain any material previously published or written by another person except where duly acknowledged in the text.

TABLE OF CONTENTS

– STUDY RATIONALE AND DESIGN –

– STUDY FINDINGS –

– DISCUSSION AND CONCLUSIONS –

LIST OF TABLES

LIST OF FIGURES

LIST OF ABBREVIATIONS

BMC	Brihanmumbai Municipal Corporation
BYOD	Bring Your Own Device
FB	Facebook (an abbreviation used colloquially by study participants)
ICT	Information and Communication Technology
ICT4D	ICT for Development
MILLEE	Mobile and Immersive Learning for Literacy in Emerging Economies
NGO	Non-Governmental Organisation
OLPC	One Laptop Per Child
TRAI	Telecom Regulatory Authority of India

FOREWORD: A PORTRAIT OF DHARAVI

The popular imagination would depict Dharavi as a place of squalor and sin, choked with the filth of industry and traffic; the hiding place of money swindlers and Bollywood villains. My landlady, from her position of relative privilege, scoffs at my insistence on taking the short train journey from prosperous Bandra and into Asia's largest slum. 'So much crowd,' she says in her own particular version of English and with an illustrative expression of disgust. 'So dirty! Why you foreigners working there?' Our stilted exchanges mean she never fully understands my business in Dharavi, but each morning she stands by the cluttered kitchen stove, waving me off with a bewildered smile and pointing to the glittering plastic sign on her wall that reads "Good Luck" (the English words spelt out phonetically in Hindi script), as though I will need it.

The journey is punctuated daily by a visual shock. Amidst the recognisable global chains - Starbucks, Domino's Pizza, Subway - and the expensive beauty salons along Bandra reclamation, there remain signs of abject poverty. Beggars and pavement dwellers illustrate starkly the juxtaposition of rich and poor for which Mumbai is well known. There are shocks to the other four senses too: the continuous din of the traffic, punctuated with the ear-piercing honk of car and rickshaw horns (sounded, in my opinion, without much necessity other than enthusiasm for being on the road); the stench of steaming baskets of shrimps straight from Sassoon Dock; the humid touch of bodies in the street; and the pungent aroma of garlic chutney on morning *vadapav*[1] sandwiches. A sharing rickshaw takes me on the hair-raising journey to Bandra train station for ten rupees[2]. Wedged together on the back seat, my fellow passengers stare unashamedly at their fair-skinned travel companion.

The train pulls away from Bandra station and heads south along Mumbai's Western Railway. While the women in my compartment manage to keep themselves within the boundaries of the carriage, men dangle precariously out of the open doors. Some are pushed so far out by the heaving masses inside that it isn't quite clear how they stay attached, but their smiling faces suggest this is quite normal. It is rush hour, after all. Yet the dangers of Mumbai's overcrowded railways are well documented, and an alarming number of accidents and fatalities are reported each day (see, for example, Times of India 2014).

The high-rise blocks and advertising boards of Bandra Reclamation loom ahead – clear signs of recent growth in foreign investment in the city – yet such symbols of prosperity are quickly left behind as the tracks pass over the glassy black waters of Mahim Creek. Long before the

[1] A popular spicy vegetarian fast food dish native to the Indian state of Maharashtra.
[2] During the periods of fieldwork, the exchange rate varied between 85 and 95 Indian rupees to the British pound.

city was founded, Koli fishermen, who derived their livelihood from the fish in the once fertile waters, inhabited the land beside this waterway. In the early 1800s, a massive landscape manipulation - which joined Parel and Mahim into the new, connected peninsula - disturbed the ecosystem of the creek. The biotype changed, and mangroves started to grow. The establishment of nearby tanneries finally killed the remaining fish through chemical contamination, so the Koli fishermen no longer had their traditional source of income. Today the sulphurous fumes from the creek are an acrid reminder of the decline of an old fishing village and the pollution that chokes Mumbai's waterways. Each morning, I watch as women make their own contribution, dropping their rubbish bags into the murky depths as the train passes over the railway bridge.

On the other side of the creek, a patchwork of corrugated iron shacks lines the railway track. People are busily getting ready for the day ahead: brushing their teeth, eating breakfast in the colourful, illuminated interiors and squatting on the railway track with buckets and bottles in tow. Such an area of informal housing, that many would call a 'slum,' is a familiar sight across the city. Mumbai has both the highest absolute number and the highest proportion of slum dwellers of any city in the world (Iyer *et al.* 2009), with an estimated five million people (accounting for approximately 40% of total population) spread across 2000 slums (World Bank 2006). These statistics have caused the leading activist Sheela Patel to subversively rename the city 'Slumbai' to reflect the slums' dominance of the landscape. The urban poor are inescapably visible as I make my commute: five to ten percent of the city's population are pavement dwellers (Appadurai 2000; The Hindu 2013) and there are approximately 250,000 street children (Nijman 2009) in Mumbai, many of whom can be seen clambering over the railway tracks. For me, this remains a distressing and unfathomable reality.

Outside Mahim Station the pavement dwellers are cooking their breakfast and folding their blankets, clearing the walkways for the swell of commuters emerging from the station gate and pouring onto the bridge over the railway line. From the top of the bridge comes the first glimpse of Dharavi, an area of 1.75 square kilometers bordered by the Central and Western railway lines. Now a sprawling mass of corrugated iron shacks, punctuated by the occasional high-rise housing block, this was an area ignored by the authorities for decades, swampy and waterlogged, like no-man's-land in the middle of a roundabout (Dyson 2012). Deemed of no economic value, the land of the old fishing village was left vacant and unregulated, so here people settled in hoards from all over India (*ibid.*). Muslim tanners from Tamil Nadu migrated and set up the leather tanning industry. Similarly, potters from Saurashtra, Gujarat, were allocated land in Dharavi to establish what is still called 'Kumbharwada' or 'Potters' Colony'. Today, Dharavi is a bustling collection of contiguous settlements, each with its own distinct identity and history (Sharma 2000).

Estimates of the population vary considerably: a Harvard Business School review estimates a population of 700,000 people (Iyer *et al.* 2009), although media reports frequently state an excess of 1,000,000 (see Blakely 2009; Richardson 2009). Chatterji (2005) suggests this variation is dependent on how one draws its boundaries. Indeed, Sharma (2000) notes the considerable gap between 'official' and 'unofficial' population figures because of the large, unregistered, floating population of informal workers. Nevertheless, such estimates mean that Dharavi's population density is likely to exceed 400,000 people per square kilometre, nearly ten times the density of daytime Manhattan (Dyson 2012), and holds the dubious title as 'the largest slum in Asia' (Sharma 2000).

Yet Nijman (2010) argues that the traditional use of the term 'slum', with its primary emphasis on housing, shelter and infrastructure, is inadequate to describe and explain Dharavi's complex reality. Dharavi is characterised by a hybrid social structure that is both urban (e.g. work and income) and rural (e.g. the preservation of social and cultural affiliations with rural 'native places' or places of origin) (*ibid.*). Its inhabitants, Sharma (2000) argues, pursue a strategy of adaptation, survival and livelihood aimed at securing and maintaining a place in urban society:

> "[Dharavi's story] is a story of ingenuity and enterprise; it is a story of survival without subsidies or welfare; it is a story that illustrates how limited is the term 'slum' to describe a place that produces everything from suitcases to leather goods, Indian sweets, papads and gold jewellery. Every square inch of Dharavi is being used for productive activity." (*ibid.*:78)

Annual turnover has been estimated at $665 million (Patel and Arputham 2007), which is generated by 10,000 manufacturing units, with 80 percent of Dharavi's residents employed in industries within the slum (Engqvist and Lantz 2008:49). This sits in sharp contrast to Mumbai's other slums, where Sharma (2000) estimates less than 10–15% of residents are employed within in the slum itself. Dharavi's enterprise is evident immediately as I make my way from the station. Workshops and factories spill onto the streets and narrow lanes. It is still early in the morning, so workers are spared the choking traffic; their activities only disturbed by an occasional goat, chicken or stray dog.

It is clear, however, that there are serious social problems to be addressed in Dharavi's community. The major part of Dharavi remains badly in need of organisation, of sanitation, of adequate and clean water, and of decent housing (Nijman 2010). Collected by municipal authorities only once every month, rubbish is piled high in every corner, steaming and crawling with rats. I pass a public ground each morning, just in time to see dozens of children squatting to relieve themselves. The public lavatories cost two rupees a go – a seemingly

minimal charge – but low household incomes and large families mean the daily use of facilities is simply too expensive.

However, alongside such apparently inadequate living conditions, Dharavi's landscape is adorned with signs of technological advance. Lining the major walkways, glass cabinets proudly display the latest Samsung smartphones in pristine boxes. Off the main streets, Rangaswamy and Nair's (2010) description of the 'archetypical' mobile phone store rings true:

> "a bricolage of grey real estate (space), infrastructure (electricity), and hardware. The latter is a motley collection of SIM cards; recharge coupons; branded, spurious, used, recycled, and stolen handsets; batteries; chips; memory cards; and other accessories" (Rangaswamy and Nair 2010:63).

These eclectic stores are found with great frequency in the streets behind the community centre in Dharavi, and I have got to know many of the proprietors. Indeed, the dominance of local businesses dealing with the sale, repair or accessories of mobile phones is striking - almost as common as businesses selling basic groceries. A local guide informs me in the early days of fieldwork that this is a community where mobile phones are 'a basic need.'

And, numerous brightly coloured signs clutter the streets, boldly promising clients rapid improvement in their English language skills, leading to 'better jobs', even 'better lives'. Despite the questionable quality of the tuition provided at such institutions (Graddol 2010), their presence in abundance shows the existence of a large market for language tuition, and the association between English and upward mobility in this community.

After months of walking along the same winding route through Dharavi, I have grown accustomed to the calls of *gori, gori* (fair girl) from the Milk Centre on the corner of 90ft Road. Any attempts to disguise myself in an Indian kurta have been in vain. My height, pale skin and blonde hair mean I am inescapably conspicuous in this community. Expressions of amusement, curiosity and, at times, animosity, are to be expected. School children dare each other to ask 'What is your name?' and 'How are you?' and my responses, in a resoundingly British accent, send them into fits of giggles. The braver ones try to imitate the unfamiliar vowel sounds before collapsing into laughter once again. Sometimes children's approaches are not so benign. Young groups of boys come to try their luck by shaking my hand. The first few times, not wanting to seem unfriendly or aloof, I oblige, but I feel little tugs on my rings, or I hear 'money, money' from the other members of the group, and I quickly withdraw. This association (if you are white and from the West you are wealthy) is by no means an association that is maintained by all the people I get to know in Dharavi, but one that I deeply resent.

Yet this is a community that is not short of exposure to the foreigner's gaze. Since 2004, Reality Tours and Travel has offered tours of Dharavi to curious 'outsiders', both international tourists and, increasingly, residents of wealthier parts of Mumbai. Every day of the week, enthusiastic local guides lead walking tours that promise to show outsiders the 'real India'. The tour first constructs a 'typical Western' image of slums as an unduly negative and false representation of the place, from which it then positions its contrary perspective – a positive and 'realistic' image (Dyson 2012). The crux of the message is that, despite contrasting lifestyles, the tour-goers should feel an affinity with the people of Dharavi, who are framed as 'normal people, with normal problems: they love their family, and are looking to better their lives' (*ibid.*).

With groups of tourists traipsing through Dharavi's lanes each day and often enquiring about my work, I take time to reflect on the controversial nature of so-called 'slum tourism'. While critics highlight the way in which it can be exploitative of marginalised communities, 80% of profits from Reality Tours are used to fund the social endeavours of its partner charity, Reality Gives – the organisation with which I am working. An ethical debate about whether this model can be morally justified is largely beyond the scope of this study, but such concerns nevertheless overshadow the work of Reality Gives and thus serve as an important contextual consideration in this research.

The outside of the Ashayen community centre is adorned with a colourful sign; a prominent Reality Gives logo provides an incongruous but helpful marker in the otherwise indistinct maze of sewer-lined alleys. The centre is on the first floor, accessible via a rusting iron ladder. It is always a relief to escape the unpleasant odours from the public bathrooms below. Removing shoes is compulsory, of course, and they are stored on a rack by the door. My shoes have a habit of disappearing over the course of the day and reappearing in unexpected places (the rubbish bin being a particular favourite): a local joke at my expense to emphasise my apparently bizarre taste in footwear. Inside is a modest space, with a small, untidy library to the right hand side and a larger classroom area ahead. Lines of benches and desks, once painted in the trademark Reality Gives green, are now chipped and covered in student doodles. Ceiling fans work furiously to keep the temperature bearable, but even local Indian foreheads are beaded with perspiration by mid-afternoon. Motivational mantras in interesting variants of English adorn the centre's walls: "Honesty is a best policy;" "Those who respects time, world respects them;" and "Practice makes man perfect."

Six dated computers line the right hand side of the classroom. They look in a terrible state of repair, but are used nevertheless by community members in a range of different community computer classes. There are frequent and bitter complaints about lack of reliable power,

broken keyboards, mouse cords that have been gnawed and frayed by mice, and the highly unreliable internet connection, and as a result the upgrading of this technology is a frequent issue for discussion while I am in Dharavi. Yet, despite such frustrations, there is a bustle about this space. It really feels like an important part of the community; appropriately disheveled; frequented by adults, adolescents and young children alike from dawn til dusk.

The community centre is also an important station on the tourist trail: from here, Reality Gives operates its flagship, longest-standing social initiative: the Youth Empowerment Program[3] (YEP). Tourists climb the rickety steps with great regularity to see the initiative in action. The Youth Empowerment Program's original vision was to assist teenagers and young adults who have disengaged from the mainstream education system, or who are struggling to find employment and require English language skills to access opportunities across Mumbai. And it is in this context, alongside the Youth Empowerment Program, and in collaboration with Reality Gives representatives, its teachers and students, that I situate this study.

[3] The Reality Gives use the American spelling 'program' to denote their educational programme, and so this will be kept consistent in this document. It should not be confused with a computer program.

STUDY RATIONALE AND DESIGN

1 INTRODUCTION

A rationale for this study

The number of mobile phone subscriptions has increased across emerging economies at a rate unsurpassed by other information communication technologies (ICTs)[4] (Castells *et al.* 2007: UNESCO 2013). Mobile phones are relatively inexpensive, can run without constant access to reliable electricity, and can be used by low-income populations who do not possess high levels of education or literacy (Tenhunen 2008). Many therefore see the mobile phone as vital to a nation's development: a way to reach marginalised communities and to address disadvantage, from the provision of mobile banking, to democratic participation, women's empowerment and, of particular interest to this study, education and social justice. The mobile phone's promise as a means to support learning has thus been widely recognised and is the subject of a range of exploratory interventions. Yet such interventions, and the research that has studied them, have been subject to a range of criticisms. Three, interrelated critiques form the rationale for this study.

First, there is a dearth of "realistic, in situ, context rich analyses of the social conflicts and politics that underpin the use of technology in educational settings" (Selwyn 2009:1). As Selwyn and Facer (2013) have recently noted:

> "despite a long history of eagerly anticipated but largely unrealised technological transformation, many studies in the field continue to focus on the "what ifs" and "best case" examples of education and technology—often producing persuasive evidence of educational potential, but only on occasion acknowledging the individual and institutional "barriers" that are presumed to be restricting the realisation of this potential *in practice*" (2013:3; emphasis added).

Selwyn and Facer (2013) conclude that such research is "ill equipped to support the building of an achievable political or institutional project to realise *desirable change*" (ibid: emphasis added). It follows, therefore, that we need better understandings of the social, cultural, political, historical and, crucially, practical dimensions of projects employing technology for education (see, for example, Unwin 2009), and an acknowledgment of the importance of the knowledge derived through practical experience in a particular educational context (Pegrum 2014).

4 This document adopts the definition of ICTs used in the United Nations Development Program research paper on information and communications technology for development, where ICTs are 'tools or techniques that allow recording, storing, using, diffusing and accessing electronic information' (World Bank 2002).

Second, and building on the first critique, is the accusation that many ICT for development (often denoted with the acronym ICT4D) programmes and strategies are not designed to be sustainable in the longer term (Avgerou 2008; Heeks 2002; Maye and McGrath 2010; Unwin 2009). They are often initiated by the private sector or civil society organisations, full of enthusiasm to use ICTs to deliver practical solutions. However, there is a lack of thought paid to the local contexts within which the project is implemented or to the actual information and communication needs of the intended beneficiaries. As a result, once external funding dries up, or a project is 'completed,' such initiatives lose local commitment of resources and, as a result, do not continue (Avgerou 2008; Heeks 2002; Maye and McGrath 2010). In other instances, managers must maintain the difficult search for new resources to maintain the operation of projects, distracted from other potentially beneficial activities (Unwin 2009; Traxler 2011).

This is not to say that all projects have been unsuccessful in this regard. Indeed, this thesis will go some way to outline some of the interventions that employ mobile phones to support language learning that have generated longer-term engagement with marginalised communities. However, Heeks (2010) maintains that many ICT4D projects, which could be said to have had an 'impact', have rarely extended beyond their specific contexts or 'survived' beyond the terms of their funding. Similarly, Unwin (2009:3) suggests that "despite all the rhetoric of success, very few ICT4D activities…have yet proved to be sustainable."

As such, several authors call for research to examine issues related to sustaining ICT-based development initiatives (May and McGrath 2010; Heeks 2010). Considerable attention is now being paid to the identification of means by which initiatives can become self-supporting, without continuing external inputs. Such efforts tend to involve the bringing together of those who know about the potential benefits of different kinds of ICTs and the intended users, in a 'participatory' manner, so that they can jointly shape effective and 'appropriate' programmes.

This brings us to the third critique. Community participation, with histories in both Development Studies and Information Systems Design, is often assumed to inevitably lead to more sustainable outcomes, and the empowerment of marginalised participants from the local community who stand to derive benefits from (see, for example, Haiken and Duncombe 2013). However, such participatory endeavours, have long been subject to a number of critiques. Masschelein and Quaghebeur (2005) argue that official notions of 'participation and involvement' can be seen as conforming to official expectations of what it is to learn productively or to gain skills in relation to the contemporary economic order. In other words, they argue that under many forms of educational ICT4D the individual 'participant' is not

actively self-determining (and self-empowering) but rather must conform to official agendas of what it is to be a learner, a technology-user or a 'productive' participant in the knowledge economy (Selwyn 2013). Indeed, it is unclear whether 'socially inclusive' benefits are especially desirable – or even that advantageous – for the individuals in the low-income contexts who are supposedly being 'developed' and advantaged. Zembylas (2009) argues that efforts to employ technology in education could be seen as "diverting attention from social and power structures that perpetuate many forms of inequality and social exclusion." (2009:18).

Selwyn and Facer (2013) position a deliberately critical approach to educational technology as a response to such critiques. The authors suggest that educational technology should be framed:

> "within the analysis of unequal relations of power in society, within the lived realities of dominance and subordination that are currently ongoing, and within the conflicts that are generated by these relations" (Selwyn and Facer 2013:4)

In this context, they call for settings that employ educational technology to be understood as a site of 'negotiation' and 'struggle' between a number of different actors or organisations. Such negotiations take place across a number of fronts: across the allocation of resources; across the design of curriculum; across engagements with the technology itself; across from the maximising of profit and political gain and across attempts to empower excluded or marginalised communities (*ibid.*).

I argue throughout this thesis that action research is a methodological approach that offers ways to address all three of the above critiques. Defined by Ebbutt (1985) as "the systematic study of attempts to change and improve practice by groups of participants by means of their own actions and by means of their own reflection upon the effects of those actions" (1985:156), action research is argued to offer: a) a highly contextualised exploration of the facilitators and barriers to using technology to support learning, deriving and validating knowledge through practice (eg. McAteer 2013); b) an assessment of the sustainability of a mobile learning intervention, through which it is possible to derive and test strategies to make it more sustainable in the longer term (see Kemmis 2010); and c) participatory approaches to expose and address underlying (and unequal) social, political and institutional structures (see Carr and Kemmis 1986). Such an ambitious agenda is necessarily fraught with practical difficulties and methodological limitations, and these will be the subject of discussion and reflection throughout this thesis.

Establishing a context and a collaborative partnership

Thus far, I have presented a rationale for the use of action research as a methodological approach in the context of mobile phones, learning and development. I now turn to the particular initiative that is the subject of this study. As action research offers a highly contextualised and highly personalised account of the research process (McAteer 2013), I should first state my own intentions. From previous practical experience and exposure to the research literature, I believed that mobile phones – with associated software – offered opportunities for learning and social inclusion for marginalised communities. I had particular experience in supporting English language learning of migrant families using language learning mobile software. This software, a compilation of simple, interactive activities testing a range of language skills, could be built using a web-based content creation system. This system was available for me to use in this study, and although I do not have a background in computer programming, I had access to some additional development support via my former employer. Whilst this system lacked the pedagogical sophistication of some more recent mobile language learning initiatives, facilitating the production of traditional, behaviourist rather than more innovative social constructivist learning activities, there remained flexibility over a range of content features that could be adapted for a particular learning context.

I understood that mobile phones, deemed widely accessible and affordable, had already been the subject of ethnographic studies in Indian urban slum areas, and found to be integral to the lives of young people, for communication, entertainment, and to support enterprise (see, for example, Rangaswamy *et al.* 2010).

I also understood that there was a high demand for English language skills in disadvantaged urban India. Faust and Nagar (2001), for example, highlight English language skills as "a ticket to vertical mobility in Indian society" (2001:2878), where those with English language skills can access better employment opportunities. Indeed, Graddol (2010:10) argues that the rise of English as a global lingua franca simultaneously makes English more useful in that it can now be used to communicate to people from almost any country in the world – but at the same time this ultimately erodes the competitive advantage that it brings its speakers:

> "When English becomes universal, no one gains advantage by having it. Rather, anyone without it suffers. We are fast moving to a world in which *not* to have English is to be marginalised and excluded" (*ibid.*; emphasis added).

In an environment where opportunities for young people to learn English are scarce, I could hypothesise that mobile phones, and associated software, might provide an appropriate means to support disadvantaged young people to learn English.

At the same time, I maintained a degree of skepticism about the extent to which the affordances of a mobile phone could be translated into culturally appropriate, meaningful learning. It is with the intention to explore these broad assertions that I embarked on the search for a suitable research context and a local partnership. Avison *et al.* (2001) would argue that this was therefore a research-driven intervention, because I was looking to employ a particular type of practice in a context that was characterised by a particular problem.

Despite the high profile activities of multi-national corporations, national governments and intergovernmental organisations, I was aware that much educational ICT4D work is initiated and delivered through groups of smaller non-governmental organisations (NGOs) alongside other not-for-profit and charitable organisations. Selwyn (2013) notes that these groups constitute:

> "a prominent feature of education provision and practice in developing nations – taking responsibility for channelling the funding that comes into countries from international aid organisations, as well as financing their own initiatives and projects. These organisations seek to complement the efforts of national governments, while on occasion also offering alternatives to state provision or supplementary educational opportunities." (2013:116)

In January 2011, I therefore made contact made with a number of Mumbai-based NGOs about the possibility of working in collaboration to research the use of mobile phones to support learning. It was my intention to visit these organisations, learn something of their existing work and explore possible partnerships during my stay. I quickly became aware of the interconnected nature of NGOs working in disadvantaged areas of the city. In a meeting with partner organisation Atma[5], it was recommended that I make contact with Reality Gives and consider Dharavi as a suitable research context. I was sent on a tour run by Reality Gives' sister tour group: Reality Tours and Travel. And so my first exposure to Dharavi might well be considered a controversial one: as a Western tourist and a consumer of the so-called 'slum tourism'.

I encountered a range of portrayals of Dharavi as a social space: the Dharavi of the popular imagination: a dirty, crime ridden place; the Dharavi as portrayed by Reality Tours and Travel: a place of diversity, of intense productivity and of surprising contentment; the Dharavi in the local media: a space at the centre of longstanding political dispute over redevelopment; and the Dharavi as portrayed by the NGO workers: a place of poverty and disempowerment. Dharavi has been the subject of numerous written volumes, TV documentaries and has featured in globally-recognised Hollywood movies.

[5] An umbrella organisation supporting a range of educational NGOs in Mumbai.

The exposure and discursive reworking of Dharavi as a space and a community deserves particular attention when it comes to its choice as the context for this study. Dharavi is not a 'typical' slum. It could be argued, therefore, that inferences and analysis drawn from a study in this context lack "generalisability" to other localities and communities. To defend such a choice, Mills and Morton (2013) suggest that researchers should emphasise the value of:

> "nuanced, detailed and fine-grained analyses that bring out the complexity and singularity of social worlds…A case is never typical or atypical. Instead it is chosen for the insights it offers into more general issues." (2013:127)

Indeed, Stake (2005) argues that "potential for learning is a different and sometimes superior criterion to representativeness" (2005:451). As I discovered, through online research, email enquiries and, in due course, Skype discussions with representatives of Reality Gives once I had returned to the UK, there were a number of clear advantages to working with this organisation. It had a strong commitment to providing English language learning opportunities and computer skills and a belief that, combined, such skills could lead to the 'empowerment' of young people. It was a small, international team offering access to the community and experience of sustaining a range of partnerships with international volunteers. I was therefore encouraged to pursue this potential collaboration over the following months.

What followed was a face-to-face 'vetting' with a former volunteer in London:

> A darkened pub in Kings Cross was the setting for our meeting. He was younger than the experienced tone of his emails suggested, and the way he spoke of Dharavi was authoritative and passionate, yet pained. 'I only agreed to meet because of your perseverance,' he began. What followed was a stream of questions about my intentions, my position, my character. He was testing my credibility. At great length, and with varied insights into his own experiences as a British English teacher and advisor in Dharavi, he emphasised that what I was proposing was an exciting but demanding task. The heat, the cultural challenges of being a white woman in a culturally complex and diverse environment, and the organisational and emotional complexities of working on an expensive development project with unpredictable consequences would all be demanding. I remember feeling deflated and a little defensive. (Reflective diary; February 2012)

I was required to give a demonstration of sample mobile learning software, which had been created using the technical system for a previous project, and to leave it with him for consideration. It seemed that he had been convinced that a partnership could be of potential value for Reality Gives' Youth Empowerment Program. However, he suggested it would take some exploratory work to plan the most appropriate and feasible way to bring the study to fruition. His view was consistent with my own and that of much of the action research literature: this is a study that could and should be done through gaining a greater understanding of the context, in situ, in collaboration with staff, students and NGO representatives.

Through a process of action research, I attempt to understand how the mobile phone - an apparently familiar and accessible technology within this community - along with collaboratively informed language learning software, can be used to sustainably enhance the English language learning of Dharavi's young people. The central research question will thus be as follows:

> How can the use of a mobile learning resource provide a sustainable means of enhancing the learning of disadvantaged young adult participants in an English language program in urban India?

Chapter outline

This thesis is presented in three parts. The first part (Chapters 1, 2, 3 and 4) presents a critical review of the literature that provides a conceptual and contextual framework for this study and presents action research as the framework for the study design, and gives a detailed account of the process of carrying out the action research in context. The second part (Chapters 5, 6, 7) presents the study findings and some initial discussion that draws on wider literature. The third part (Chapters 8 and 9) provides a synthesis of the findings, draws on relevant literature to develop theoretical propositions and presents some policy recommendations. The focus of each chapter is briefly outlined below.

1.1.1 Study rationale and design

Chapter 2 sets out to critically analyse the many projects that have employed ICTs in general, and mobile phones in particular, as educational tools in infrastructure-poor, remote and disadvantaged areas of the world (see, for example, Kam *et al.* 2009; Kumar *et al.* 2010; Power and Shrestha 2010). Drawing on pedagogical and theoretical perspectives on mobile learning, this chapter will argue there now is a need to promote the use of mobile technologies for learning in the long term and at scale, and to understand the ways in which such interventions intersect with local social, cultural, commercial and political factors. I also present a critical view of the use of participatory approaches to achieve such goals.

Chapter 3 provides an argument for the employment of action research as a methodological approach. Drawing on important commitments of the action research tradition – including a commitment to improving practice, a cyclical and recursive design, collaboration and critical reflection – this discussion will explain their relevance and appropriateness to the present study. It will then address the ways in which these commitments are translated into a study design, the formulation of research questions and the definition of action research cycles.

Chapter 4 addresses each action research cycle in turn, reflecting on the methods for data collection and the decisions that determined the direction of the study at each stage. In particular, the chapter addresses issues of positionality, some challenges presented by changes in participatory methods and the use of translators in a linguistically diverse environment. It presents an outline of emerging findings and the implications for the design and delivery of the mobile learning resource for each cycle. This narrative provides a framework on which the subsequent findings chapters will build.

1.1.2 Study findings

Chapter 5 addresses the first subsidiary research question:

> What are young people's existing practices using mobile technology, and what are the resulting implications for the design and implementation of a mobile learning resource in this setting?

The discussion first draws attention to the presence of predictable discourse emerging from participant responses: excitement about the potential of technology to empower and to provide opportunity to a marginalised community. However, beneath this discourse, data analysis reveals a complex picture of access, ownership and engagement with mobile technology for the young people enrolled on the Youth Empowerment Program. Through an examination of a number of 'ethnographic portraits' of young people, this picture is argued to be closely intertwined with gender, life stage and socio-economic circumstance, and influenced by a rapidly shifting local mobile economy and institutional notions of trust and responsibility within the community. The mobile phone, therefore, is far from a neutral device that can 'deliver' educational content. Rather, as a piece of technology, it is serving to both reinforce and challenge social norms and expectations for the students of the Youth Empowerment Program.

The chapter then reflects on three important implications of these findings for the mobile learning resource: choosing a mobile platform; negotiating the cost and moral associations of mobile networks; and encouraging responsible use of mobile devices.

Chapter 6 addresses the second subsidiary research question:

> What are the motivations for and challenges presented by learning English for the young people, and what are the resulting implications for the design and implementation of a mobile learning resource in this setting?

The discussion draws attention to the variability in the students' experiences of learning English at school and in college (or, in some cases, by other means), and their reflections on the importance of English language skills for their futures, particularly for employment and

further education. There is an examination of the particular challenges faced by young people seeking to improve their English skills, especially given the multi-lingual nature of Dharavi's community, and the debates surrounding the nature of an appropriate English language curriculum for the Youth Empowerment Program. Finally, this chapter examines the process by which a mobile learning resource can be collaboratively conceived and constructed within the constraints of an existing technical system.

Chapter 7 seeks to address the third subsidiary research question:

> In what ways do use the mobile learning resource to support their language learning?

Combining an analysis of software logging data, interviews and observation, this chapter presents a typology of learning strategies to illustrate the different ways in which students have engaged with the mobile learning resource, the difficulties they have faced, and the extent to which they feel the mobile learning resource has enhanced their learning of English. For some students, there is a clear and growing sense of agency as English language learners. Through using the mobile software, some students do not just see themselves as passive recipients of material; rather, they are willing to engage with technology as a tool for independent language learning and demonstrate increased skills and agency in both language learning and the use of technology. By contrast, some students indicate that the mobile learning resource is either inappropriate or irrelevant to their lives. Others still highlight the learning that has taken place through the process of participation in the action research project, rather than from the mobile learning resource per se.

1.1.3 Discussion and conclusions

Chapter 8 provides a synthesis of study findings that draws on the literature to serve two principal purposes. First it presents the ways in which findings challenge immanent knowledge or ideology in the study context, including simplistic notions of access and empowerment surround mobile phones, and linguistic assumptions about the Youth Empowerment Program students. Second it will directly address the final subsidiary research question:

> What are the enablers for and constraints to using a mobile learning resource to support English language learning in this setting in a sustainable manner?

To this end, challenges relating to choice of and funding for hardware, staff training and implementation, and difficulties in sustaining support of the technical partner will be discussed in the context of the sustainability of the intervention. I will also discuss the social acceptability of the mobile learning resource, and the pedagogical tensions that surround the

design of mobile language learning software. Finally, the shifting personnel and priorities of the NGO present both barriers to and opportunities for the continuity of such an intervention. This discussion will seek to contribute to more general debates about the sustainability of ICT for development projects, and efforts to define and monitor the impact or 'success' of such interventions in complex social contexts. Indeed, the chapter will consider whether sustainability is always a desirable quality of a mobile learning intervention.

Chapter 9: Conclusion and policy recommendations

This final chapter will seek to draw conclusions about the nature of the language learning experiences that were facilitated using a mobile phone in this context. There will be a summary of the identification of enablers and constraints to the use of this mobile phone resource for the young people in Dharavi, and the development a set of hypotheses about what makes such an initiative sustainable (or, indeed, unsustainable). It is hoped that these hypotheses will present theoretical contributions that can be tested and developed by others working in similar settings. Attention will necessarily be paid to the challenges of discerning and incorporating incremental learning into practice during an action research study, and the extent to which, on reflection, this has been successfully achieved. It will also be necessary to reflect on the nature of participation in the action research process, and the implications of this for action research's claims to knowledge.

2 MOBILE PHONES, LEARNING AND DEVELOPMENT

Introduction

The promise of mobile phones, and other information and communications technologies (ICTs) to be used in education initiatives in developing countries constitutes a major point of debate amongst researchers from the fields of education and development alike. On the one hand, ICTs have been, and continue to be, presented as a means to acquire knowledge, providing opportunities for disseminating information, participating in decision making and reducing levels of social exclusion for disadvantaged communities (see, for example, Vrasidas *et al.* 2007). International organisations and national governments have thus worked to integrate the use of ICT in education policies and strategic plans, are often linked to three linked and ambitious development agendas: supporting economic growth, enhancing twent-first century skills and promoting social justice (Pegrum 2014).

On the other hand, scholars warn that the use of ICTs can exacerbate preexisting divisions and inequalities between the haves and the have-nots (Selwyn *et al.* 2001; Harris 2004). Harris (2004) notes that it is not only a matter of access to technology, which remains distinctly uneven across the globe at a range of geographical scales (Castells *et al.* 2007), but also a matter of being able to use the technology and having the skills to make the most of the information it makes accessible. Scholars have thus worked to reconceptualise what it means to have meaningful access to ICTs (see, for example, Selwyn 2001; van Dijk 2006; van Dijk and Hacker 2003) and to provide a more nuanced understanding of digital inequality across the world. In addition, commentators have argued that ICTs are not value-neutral, but carry particular cultural and political assumptions of Western power and knowledge (Schech 2002; Ananny and Winters 2007) that position those in developing countries as poor and 'underdeveloped' subjects (Escobar 1995 in Schech 2002). The use of ICTs is inextricably linked with the interests of major ICT corporations in the educational market, who seek to increase their market share, promote brand loyalty, influence public opinion or even create dependence on a product line (Leye 2007). Indeed, there are multiple actors and groups involved in decisions made about ICT and development, who may identify different problems, have different goals, and who bring conflicting interests into the decision-making process (see, for example, Mollinga 2010; Selwyn 2013).

It is therefore important in the context of the present study to acknowledge the controversy that underlies the many projects that have employed ICTs in general, and mobile phones in particular, as educational tools in infrastructure-poor, remote and disadvantaged areas of the

world. This introductory chapter will first address the contested definitions of important terms that frame the study. It will then turn to the complexity of access to mobile devices, the means by which they may address equity in access to and engagement with educational opportunities and, in particular, language learning, and it will identify a need for a critical, participatory approach to education technology projects in developing countries.

Terminology

Before moving into the body of the literature review, it is first important to consider the complex and contested nature of some of the key terms that frame this study.

2.1.1 The 'developing' world

This chapter makes reference to 'developing' countries in the context of 'development' initiatives. However, is necessary to acknowledge the limitations of using labels such as 'development' and 'developing' – not least the implication of delayed progress towards a more advanced level of being a 'developed' nation (Nordtveit 2010; Selwyn 2013). Using these labels serves to oversimplify the economic, political and cultural contexts of societies, as well as falsely positioning particular regions as a form of subordinate 'other' (*ibid.*). Indeed, there is a lack of consensus over what the process of development itself entails. Unwin (2009) suggests that, for some, it has been viewed as relating primarily to economic growth. Development initiatives are therefore concerned with making economic systems more efficient or effective (see Easterly 2002; Sachs 2011). For others, however, development initiatives relate more to participation and empowerment of communities (see, for example Arce and Long 2000 or Unwin 2007).

The term 'majority world' is an alternative to 'developing world', and other out-dated terms including Third World and Global South. Coined by Shahidul Alam, 'majority world' emphasises that these countries comprise the majority of humankind and that the group of eight countries—whose decisions affect majority of the world's peoples—represent a tiny fraction of the global population. 'Majority world' defines the community in terms of what it is, rather than what it lacks, and is an increasingly adopted expression in development literature (see, for example, Winters 2013). However, Selwyn (2013) notes that even the most carefully worded distinction between nations will incur some element of inaccuracy and reductionism. The rest of this thesis will make reference to 'developing' or 'low income' nations but will acknowledge accordingly that these should be viewed as flawed and unsatisfactory terms (Nordtveit 2010) that should be interpreted to reflect the social and political inequalities that persist between and within these countries.

2.1.2 Sustainability

The meaning of 'sustainability' has long been debated in the development literature. 'Sustainable development' was initially defined by the World Commission on Environment and Development in 1987 as development "meeting the needs of the present without compromising the ability of future generations to meet their own needs" (Burton 1987). More recent discussions of sustainability in the context of specific development initiatives, particularly those involving the use of ICTs, have focused on the extent to which an initiative can continue without ongoing external inputs (see Hemmati 2002; Harris 2004; Horton *et al.* 2009).

At a minimum, a project is viewed to be sustainable when it continues to function and the ICT remains in use beyond its initial implementation (Pouezevara *et al.* 2014). Yet Ali and Bailur (2007) argue for a broader and less technocentric conceptualisation, favouring the planning for and supporting of capacity to innovate and respond to change in a constantly evolving environment. Indeed, Haiken and Duncombe (2013) have noted the different meanings attached to the concept of sustainability by those working in ICT for development projects. These include extending to a wider group of end-users, the financial capacity to continue delivery, or the empowerment of the community to continue to develop the initiatives unaided. Such issues form crucial considerations in this study. Ali and Bailur (2007) suggest sustainability might helpfully be examined in five broad categories: financial, social, institutional, technological, and environmental sustainability.

Economic or financial sustainability refers to the long-term ability of ICT projects to generate or source from elsewhere sufficient income to meet their operational and maintenance costs, as well as an adequate surplus for renewing broken and obsolete equipment (see, for example, Mukerji 2013). Ali and Bailur (2007) suggest that financial sustainability is often one of the greatest challenges for many of the ICT projects, which tend to be funded by government and non-governmental organisations for a finite period (Kumar and Best 2006; Harris *et al.* 2003). As this thesis will make clear, discussions of economic sustainability should be extended to consider what happens when beneficiaries use their own technology as part of these projects.

Technological sustainability includes consideration of the extent to which a technology can exist for a long period of time without major shifts in hardware or software affecting its availability or durability (Misund and Hoiberg 2003; Pouezevara *et al.* 2014). This also includes the availability and capability of technical and managerial personnel and other local technical expertise (*ibid.*). Such considerations are necessarily linked financial sustainability, as technical equipment usually comprises a large proportion of both capital and recurrent

costs, and if the technology is not updated, it may be (but not necessarily) less user-friendly and therefore less likely to be used (Ali and Bailur 2007).

Social sustainability relates to the extent to which the use of ICT takes into account local needs and traditions, and achieves user buy-in and participation. Such participation should, they argue, consider differences within communities, empower marginalised groups, and align project goals with those of local people (Kumar and Best 2006). Regardless of technology choice, Pouezevara *et al.* (2014) emphasise that there will be different levels of access, capability and expertise among target groups, and the use of technology in education requires careful attention to initial and ongoing training and support, covering technical, pedagogical and content knowledge. As such, an assessment of social sustainability must necessarily consider issues of managing the expectations and experiences of participants and providing adequate training (*ibid.*)

Furthermore, a consideration of social sustainability should encompass the way in which social interventions are able to adapt to evolving community needs (see also Harris *et al.* 2003; Haiken and Duncombe 2013; Pouezevara *et al.* 2014). Indeed, Cisler (2002) has linked successful projects to the degree to which a community takes responsibility for them. Similarly, Adam *et al.* (2011) emphasise the connection between top-down, imposed technology, lack of a sense of ownership, and high levels of waste and disengagement.

Institutional sustainability has been argued to depend upon the buy-in of key institutional actors (Madon 2005; Kumar and Best 2006; Harris *et al.* 2003). ICT for development projects entail inherently political processes, often involving a multitude of different actors (Kuriyan *et al.* 2006; Selwyn and Facer 2013). According to Cisler (n.d.), political dimensions of sustainability involve ensuring support for the project through local politics, policies, and individuals. This can be accomplished, in part, through promoting achievements and successes. Strigel *et al.* (2008), for example, noted that raising awareness and generating project champions had an important effect in Samoa. Such institutional and political considerations will be central to discussions in this thesis.

Finally, Ali and Bailur (2007) suggest the sustainability of ICT for development projects should include an environmental component. For Kumar and Best (2006), for example, there are environmental issues when a large number of ICTs are used "without plans for their eventual disposal or reuse when they reach the end of their effective life" (2006:11).

In the context of development initiatives that employ mobile phones to support learning, these dimensions of sustainability arguably provide a useful framework for analysis upon which this study can build.

2.1.3 Participatory development

The notion that local people should be given 'ownership and control' over their own development has its roots in Freire's ideas of conscientisation and the alternative development movements of the 1960s (see, for example, Williams 2004), and is also linked to community development activity of colonial administrations (Hickey and Mohan 2004). It has experienced widespread adoption since the 1980s, primarily due to the emergence of Robert Chambers' work on Participatory Rural Appraisal (PRA) (see, for example, Chambers 2010; 2012), and as a response to the perceived problems of 'traditional' development's "top-down, externally-imposed and expert-oriented approaches" (Cooke and Kothari 2001:5). Participatory development has grown out of a recognition that knowledge is derived from embedded practices that are locally situated, and that lasting development should be achieved through consensus, namely communication, social interaction, dialogue, and mutual understanding (see, for example, Chambers 2010; 2012). Hemmati (2002) presents a view of participatory development as:

> "a process of dialogue and ultimately consensus building of all stakeholders as partners who together define the problems, design possible solutions, collaborate to implement them, and monitor and evaluate the outcome" (2002:40).

Participatory approaches of this type have been criticised on both technical grounds, such as the use particular methods and techniques, and political grounds, including fundamental problems with the nature of group-decisions and failure to engage with imbalances of power (Kothari 2001; Cooke and Kothari 2001). As Zheng (2009) and Kothari (2001) caution, it is possible that participatory methodologies may reify existing inequalities and affirm the agenda of elites and other more powerful actors. Such criticisms of participatory approaches hold important currency throughout this study.

2.1.4 Empowerment

Empowerment has become a popular development concept that has been conceived as both a 'means' and an 'end' in the development process (Ackerson and Harrison 2000). As a 'means', Kilby (2011) argues that the empowerment of beneficiaries in a development programme can lead to particular outcomes such as the improved management of community resources, or greater sustainability. Empowerment can also be an 'end' in a development intervention, in that the purpose of a programme may be the empowerment of a particular group of people who would otherwise remain disempowered. The empowerment of women is probably the most common in this category. Such activities are seen as important in that "empowered people are able to participate in development programmes, assert their rights and

be in a better position to demand services from government and other service providers" (Kilby 2011:33).

However, some authors argue that the definition of the term empowerment is becoming less clear, to the point that it seems to have become another buzzword in development practice, and a way to repackage old aid programmes to obtain funding (Batliwala 2007; Cornwall and Brock 2005).

Whilst Kilby (2011) emphasises the fundamental notion of empowerment relates to power, agency, and the expansion of individuals' choices and actions, primarily in relation to others (2011:33), development agencies often use the term 'empowerment' to refer to a broader range of activities. Many of these activities have little to do with addressing the power relations among the various actors or groups in society. Indeed, Cheater (1999) suggests that the term has often been used to:

> "screen off power relations from the public discourse and obscure hegemonic relations. ... This conception of power as post-modern warm fuzzy expansible, not only conceals its hard edge; this cloak of opacity also discourages nasty questions of who benefits and how, and runs the danger of collapsing objectives, processes and outcomes alike into undifferentiated rhetorical empowerment. (Cheater 1999: 7)

It is important to note at this point that empowerment is related to but distinct from 'participation' (when talking about changes in the relations of groups and individuals with each other and external agents). Empowerment looks at participation in terms of expanded choices and action in community life (Kilby 2011), while the notion of participation is very broad and encompasses actions ranging from the mere provision of information, consultation, through to local control and partnerships (see Arnstein's (1969) ladder of participation). Such distinctions will be important considerations in this thesis.

2.1.5 Mobile learning

Pegrum (2014) and many others have highlighted the difficulty in defining the nature of mobile learning, with its evolving technologies, emerging uses and varying cultural settings, in a way that is both succinct and comprehensive.

Mobile learning has often been discussed in relation to (and contrasted to) e-learning, through which interaction typically "takes place in a bubble, and in dedicated times and places where the user has his or her back to the rest of the world for a substantial an probably premeditated episode" (Traxler 2010:5). Mobile devices can, of course, be used in fixed places and at fixed times, as well as over extended periods, but this is argued to replicate e-learning on smaller

screens. Consequently, "desktop technologies operate in their own little world while mobile technologies operate in *the* world" (*ibid:* emphasis in the original).

Pegrum (2014) thus argues that "it's only when we shift away from fixed places and times that we begin to fully exploit the affordances of mobile devices" (2014:26-27). At this point, it is important to emphasise that the idea of an 'affordance' gives insufficient recognition to the importance of social practice, meaning and knowledge in this context, focusing on the appearance and functionality of devices and arguably underplaying the role of meaning and learning in the way that technology is taken up (Derry 2007; Oliver 2011).

Definitions of mobile learning has thus been separated from e-learning to encompass "any sort of learning that happens when the learner takes advantage of the learning opportunities offered by mobile technologies" (O'Malley *et al.* 2005). Sharples *et al.* (2007) took the emphasis away from the devices themselves, arguing that m-learning was "the processes of coming to know through conversations across multiple contexts among people and personal interactive technologies" (2007:225). Pegrum (2014) suggests that it might, then, be more sensible to view mobile learning as:

> "a fuzzy concept which allows for different degrees of mobility of the devices, the learners and the learning. The greater the overall degree of mobility, the more conspicuous the example of m-learning" (2014:27).

Mobile learning interactions might be described in a variety of ways, often as bite-sized (Klopfer 2011; Traxler 2007), granular or in chunks (Woodill 2011). If such interaction occurs during an unrelated activity, scholars might argue that this is displaced e-learning, such as using an app to revise vocabulary during a bus journey home, where a mobile device may add flexibility and efficiency (Pegrum 2014). However, when the interaction occurs during a related activity, that is, when the context is drawn into the learning experience, or when the learner establishes their own user-generated context that incorporates elements of their real-world, this is increasingly argued to 'essentialise' mobile learning (*ibid.*) The question of the sort of learning interactions that have been facilitated must necessarily form a central discussion in this thesis.

Access to mobile phones: Conceptualising digital inequality

The near "ubiquity" of mobile devices is often celebrated as a means to justify mobile learning interventions in developing countries:

> "There are over 3.2 billion unique mobile phone subscribers worldwide, making mobile phones the most widely used interactive ICT on Earth. In developed countries 4 out of 5 people own and use a mobile phone, and while this ratio is significantly lower in developing countries (2:5), these countries are also experiencing the fastest growth in penetration rates. By 2017, it is estimated that approximately half the people living in developing countries will have at least one active mobile phone subscription" (UNESCO 2013a:8).

India, the national context for this study, represents one of the fastest growing populations of mobile subscribers, partially attributable to the fierce competition between service providers that has driven down the cost of using a mobile phone to some of the lowest tariffs in the world relative to the cost of living. The Telecom Regulatory Authority of India (TRAI) estimates that in February 2015, 78.73% of the population had an active mobile subscription (TRAI 2015).

It should be noted, however, that the number of mobile phone subscriptions is not the same as the number of mobile users. Gillet (2014) emphasises the need to disentangle 'subscribers', 'mobile phone owners' and 'users'. Numbers of mobile subscriptions are misleading because they actually represent the number of SIM connections registered on a mobile network rather than people (*ibid.*). Ethnographic studies of low-income populations (such as Rangaswamy *et al.* 2010) highlight the extensive use of multiple 'pre-pay' mobile SIM cards, which allow economically constrained users a greater degree of financial flexibility by switching between different mobile tariffs. Similarly, a GSMA survey in India found that the number of phones per respondent (1.62) to be lower than the number of SIM cards per respondent (1.88), which suggests that consumers in emerging markets tend to own more SIM cards than phones and adopt 'device sharing' strategies. Such usage patterns, however, are far more difficult to capture in official statistics (Gillet 2014).

It is useful to draw distinction between 'smart' and 'non-smart' mobile devices and their respective functionality. The World Bank proposes two categories of non-smart mobile phones: basic phones, which have voice telephony and SMS as their main functions; and feature phones, which typically add Multimedia Messaging Service (MMS) functionality as well as a still camera and MP3 music player, have some internet access, and may be able to run some apps. More commonly, basic and feature phones are grouped together in a single feature phone category, as in this thesis, but it is helpful to remember that it covers a wide

spectrum of functionality. In India, and worldwide, feature phones still constitute the largest proportion of devices in use (Woodill 2011; Statista 2015).

However, 'smartphones' which run mobile device operating systems such as iOS, Android, Windows Mobile and Blackberry, are taking an increasing portion of the mobile market across the world. Smartphones offer advanced functionality, allowing access to the web, e-mail, documents etc. and are, as a result, the preferred platform for mobile learning developers (Woodill 2011). These functions come at a higher price, and smartphones have thus often been deemed beyond what is affordable for disadvantaged communities.

Yet, there remains a great deal of optimism about the future, both in terms of access to and affordability of mobile phones:

> "As the price of mobile phone ownership continues to decline, more and more people, including those in extremely impoverished areas, are likely to own and know how to use a mobile device." (UNESCO 2013a:10)

GSMA (2015) asserts that by 2020, around two thirds of all connections globally will be smartphones, illustrating the rapid shift away from the basic and feature phones, which comprised half of global connections in 2014 (*ibid.*). The wider availability of more affordable smartphones is an important factor behind this trend. However, the availability of low-cost smartphones (below the $50 price point) is still limited (*ibid.*).

Indeed, some commentators would argue that is it dangerous to make too many assumptions about the future trajectory of technology use (see, for example, Traxler 2013b), and, in the context of mobile learning opportunities, there remains an imperative to ensure equality of provision *now*:

> "While governments should seek to enlarge learning opportunities for the huge number of people who own a personal mobile device, *they also need to ensure mobile learning opportunities remain open to learners who do not have a device*." (UNESCO 2013a: emphasis added)

When considering the use of mobile phones for educational purposes, it is also important to consider access to mobile broadband, which facilitates some of the more complex functionality and pedagogical affordances. While mobile broadband uptake continues to grow rapidly, the number of subscriptions currently stands at 2.3 billion worldwide (ITU 2014), with 55% from developing countries. It was predicted that globally, mobile broadband penetration would reach 32% by the end of 2014 (which is double the penetration achieved in 2011). However, while mobile broadband penetration has reached 84% in developed countries, this figure is as low as 21% across developing regions (ibid).

This discussion already indicates considerable complexities relating to access to mobile phones, in terms of the number of mobile subscriptions, the types of device, and access to mobile broadband, all of which have implications for this study (see also Castells *et al.* 2007). A report by UNESCO comments that we should not ignore:

> "a highly uneven and deeply inequitable landscape. To be clear, not all people have mobile phones and far fewer have access to smart phones and the broadband connections that make them so useful. Across and within countries, inequity exists—in terms of types of handsets, purchasing power of users, literacy levels of users, and mobile infrastructure" (UNESCO 2011:1).

Indeed, access to technology is often conceived solely as the provision of physical artefacts and Selwyn (2004) argues:

> "this notion of access in terms of whether technology is 'available' or not obscures more subtle disparities in the *context* of ICT access…Issues of time, cost, quality of the technology and the environment in which it is used, as well as more 'qualitative' concerns of privacy and 'ease of use' are all crucial mediating factors in people's access to ICT" (2004:7)

A number of scholars have worked to reconceptualise what it means to access technology. Harris (2004) and van Dijk (2003) note that a range of dimensions make up the so-called 'digital divide', including differences in service availability, awareness to use ICTs, opportunity to learn and use new data, mastering of technologies, experience, skills, support, attitudes, content, cultural attributes, disability, linguistic, gender and empowerment of civil society.

Van Dijk (2006) has offered a model of successive forms of access to digital technologies, defined in terms of motivational, material, skills, and usage access. 'Motivational access' refers to an individual's desire to use the technology, determined, van Dijk suggests, by social cultural or psychological factors (e.g., low levels of income, low levels of education, computer anxiety, lack of time). 'Material access' refers to the physical access to digital artefacts and networks. 'Skills access' is argued to encompass three types of skills: (i) operational skills: the capacity to work with hardware and software, (ii) information skills: skills to search, select, and process information in computer and network sources, and (iii) strategic skills: the capacity to use digital technologies to work towards particular goals and to improve one's position in society. Van Dijk (2006) suggests that information and strategic skills are "extremely unevenly divided among the populations of both developing and developed societies" (2006:181). The concept of 'usage access' refers the opportunities for meaningful use of ICTs in daily practices, and the contrast between active and creative uses of ICT rather than passive consumption of information and entertainment. Van Dijk (2006) argues that usage access is related to income and levels of education. Van Dijk and Hacker

(2003) suggest it would be naïve to believe that mental and material access are sufficient to improve skills or usage access, contrary to the underlying rationale of many policies that seek to address the digital divide.

In particular, access to mobile devices in many parts of the world has been found to be gendered, with men more likely to own a mobile device and have greater "usage opportunities" than women (see, for example, Doron 2012; GSMA 2015; Kleine 2013; Kleine *et al.* 2014).

> "While mobile phones have empowered women and girls in educational, social and economic ways, approximately 300 million more men own mobile phones in low to middle-income countries than women…Men are also more likely to know how to use mobile technology than women. The mobile phone gender gap is a symptom of broader gender inequalities, apparent in education as well as in the general use and ownership of ICTs." (UNESCO 2013a:33)

An increasing number of studies highlight the particular ways in which gender and poverty intersect with access and opportunity to use mobile phones. For example, a recent review of mobile learning literature by Kleine *et al.* (2014) noted how community leaders in India and Pakistan restricting girls' use of mobile phones. Parkes and Heslop (2011) present an analysis from Ghana, Kenya and Mozambique suggests that there are gendered inequalities are creating barriers to learning for girls, with girls missing out on learning opportunities because of household chores and childcare, farmwork, inability to pay school fees, or early marriage.

Indeed, there is a growing body of literature that suggests the use of mobile phones might be reinforcing gendered stereotypes by for example, reducing the need for women to leave the domestic sphere and failing to challenge social norms (Tyers 2012; Doron 2012). There is thus a need to explore the ways in which gendered cultural norms and expectations affect women's use of mobile phones in different regions, the extent to which these are challenged or reinforced by the use of mobile phones; and the ways in which digital inequalities can be addressed in a way that is culturally sensitive. Such a goal is a central concern in this study.

This discussion has provided a brief but critical overview of the complexities of conceptualising 'access' to mobile technologies. As Prahalad (2004) suggests, in order to design a use of mobile technology for a community, it is necessary to gain as full an understanding the multiple dimensions of local access to mobile phones, including both material and infrastructural issues access to electricity for charging the phones (and the associated costs), the ways in which mobile phones are used and valued within the local community, and the skills and usage opportunities that individuals have to employ them to their advantage.

Opportunities for mobile learning

The wide reach of the mobile phone has been argued to aid the provision of educational tools and materials to those communities who are geographically isolated or lacking in resources, in order to address educational inequity across the world. Initiatives working towards such an agenda must determine the type of technology through which to provide educational opportunities, the nature of the learning this technology can facilitate, and position of mobile learning interactions with wider educational institutions and structures. By discussing a selection of initiatives with a focus on literacy and language learning, I will present the variety of mobile learning approaches that have been explored in developing country contexts.

2.1.6 What sort of technology?

'One-to-One' programmes tend to supply participating learners with a device, which might be a laptop, a computer, a smartphone, a feature phone, or a non-networked device such as an iPod. Such devices may need to be returned after the 'completion' of the project. Perhaps the most well known One-to-One initiative, the One Laptop per Child (OLPC) programme, has been subject to multiple criticisms, including the accusation that it paid inadequate attention to the way in which teachers and learners could engage with technology, and associated software, in marginalised communities (for a more detailed critique of the OLPC initiative, see Ananny and Winters, 2007; Shah 2011). Yet, many more mobile learning initiatives in the developing world have adopted a One-to-One model.

For example, the Mobile and Immersive Learning for Literacy in Emerging Economies (MILLEE) project in India (see, for example, Kam *et al.* 2009; Kumar *et al.* 2010 Kam 2013), in which children used game based activities to improve their English language skills, provided preloaded apps on feature phones, loaned to users for the duration of the project. Similarly, the English in Action project in Bangladesh provided language activities and teacher training materials on pre-loaded iPods and low-end Nokia phones (English in Action n.d; Pegrum 2014). The UNESCO mobile literacy project for young women with low levels of literacy in Pakistan has supplied Nokia mobile phones and SIM cards to participants, who receive SMS messages that seek to reinforce literacy in Urdu and disseminate educational information and use a bespoke app designed to improved literacy and mathematics.

The decision to use One-to-One models can be driven by a range of issues. In the MILLEE initiative, researchers adopted a process of participatory design, developing specific software for the learners based on iterative, participatory methodologies. Kam (2013) notes the

advantages of developing such bespoke software for a single mobile platform rather than trying to deal with the plethora of operating systems and specifications that might be found in use within the community in question. Many One-to-One projects, like English in Action in Bangladesh still aim to provide One-to-One devices that reflect those which are available in and (relatively) affordable to the respective local communities. There is a problem with such strategies, however. UNESCO (2013b) suggests that:

> "the development and use of proprietary software (and sometimes hardware) that is often platform specific (e.g. Windows Mobile) or Java-based, and also often only has a limited "shelf-life", as the designed for devices go out of date quickly. The software is also usually task specific and hard to customise." (2013b:14)

Indeed, critics maintain that, like many of the problems identified in OLPC, some One-to-One initiatives have focused more on providing material access to technology than on adequate cultural acceptability or sustainability, and have not provided sufficient training for teachers and students in both pedagogy and digital skills. UNESCO (2013b) continues:

> "The projects balance investment in high levels of technology support and development against low levels of user training required (simple and task specific interfaces). These projects require high technical expertise (specialist mobile application programming knowledge) and are therefore often complicated and difficult to transfer to widespread adoption, or to pass over for local adaptation" (2013b:14).

This means there are often high costs associated with purchasing and maintaining a device for every student, and as such this presents further issues for the financial and technological sustainability of the initiatives.

By contrast, Bring Your Own Device (BYOD) initiatives are dependent upon learners having their own devices, which they can use as part of a mobile learning initiative. While the strategy has been most popular in countries and communities where smartphone and tablet ownership is widespread, some projects capitalise on less sophisticated student-owned technologies. For example, BBC Janala uses the audio and text functions of even basic phones to provide language learning resources to a large learning community across Bangladesh (BBC Janala n.d.; Khan 2012). Similarly, the British Council's Learn English SMS project in Sudan and Libya is a subscription service providing vocabulary, grammar and study tips via SMS messages that are 'pushed' to learners' own mobile phones several times per week. Such projects notably involve the challenge of working alongside mobile operators (see Ballantyne and Tyers 2012; Pegrum 2014).

When learners do not have access to a suitable device, there is an imperative for educational institutions or project funders to supply phones or subsidise their cost. This, once again carries implications for both project costs and management. UNESCO (2013b) notes other

important considerations in implementing BYOD programmes, including privacy issues relating to the personal nature of mobile phones, adequate professional development for teachers, learner support, and dealing with the disparity between students with sophisticated devices and those with less advanced devices or, indeed, none at all. These considerations are central to the discussion later in this thesis.

There are a number of projects which adopt a hybrid strategy, using a combination of One-to-One and BYOD depending on the circumstances of the learners or the stage of the project. As an example, Pegrum (2014) reports on the Casa Thomas Jefferson iPads for Access initiative in Brazil, which seeks to integrate English language and digital literacy opportunities for socio-economically disadvantaged young people. Funded by the US State Department (who provides the initial hardware) and Casa Thomas Jefferson (who provides infrastructure, teacher training), the project has secured partnership with local stores to provide them with discounted prices on Apple mobile technology purchases, with a view to encouraging the adoption of BYOD approach as the project moves into the next stage. This is an example of a project that seeks to learn from former lessons of less successful One-to-One projects, but is still vulnerable to similar critique, especially the accusation that such a top-down, technocentric approach to technology serves to promote and embed Western pedagogy and educational ideals (*ibid.*).

2.1.7 What sort of learning?

The choice of technology is necessarily linked to the nature of the learning experiences that can be facilitated by mobile devices. Mobile phones have been argued to be able to support a whole spectrum of pedagogical approaches, starting with traditional transmission and behaviourist approaches (see Kukulska-Hulme & Shield, 2008; Naismith et al., 2006; Oakley et al. 2012). Pegrum (2014) notes the shift towards a greater emphasis on social constructivist, contextualised learning activities (see, for example, Comas-Quinn and Mardomingo 2012; Cochrane 2014; Dikkers 2011; Melhuish and Falloon 2010; Kukulska-Hulme 2014; Bassendowski & Petrucka 2013).

A social constructivist approach, underpinned by the work of Vygotsky (1978), is broadly based on the understanding that individual learners actively construct their understanding through their experiences and interactions with others, as they integrate new knowledge with their existing knowledge base. There is a general consensus amongst scholars that the opportunities for learning that we create should be:

> "active and exploratory, social and collaborative, discussion orientated and reflective; authentic and contextualised; and, above all, student-centred. The role of teachers is thus not to command and lecture but to orchestrate and guide" (Pegrum 2014:40-41).

Thus, amongst the burgeoning mobile learning community that focuses on language learning (often referred to as Mobile Assisted Language Learning, or MALL) there is an implicit, pedagogical trajectory, whereby transformation essentially involves a shift in a social constructivist direction (Puentedura 2011).

However, the examples of mobile learning projects that I have discussed so far in this chapter illustrate the way in which innovations in mobile technologies have mostly centred on the creation and transmission of digital information or traditional behaviourist drills. These might be delivered via bespoke applications or in SMS messages, as illustrated by UNESCO's Mobile Literacy project in Pakistan. Dudeney *et al.* (2013) argue that these activities are pedagogically limited for language learning, since they do not typically involve real comprehension or communication (see also Hoppe *et al.* 2003; Quinn 2013).

Yet, such instructional or behaviourist drilling and practice approaches, which support repetitive drilling of vocabulary, spelling, grammar and pronunciation, and aim to consolidate knowledge through flashcard exercises, quizzes or simple games, constitute the vast majority of educational apps' language content (Pegrum 2014). This, we could hypothesise, is for three principal reasons: a) because the traditional pedagogy is widely recognised across the world and thus requires less teacher and learner support; b) because such activities are relatively simple (and therefore cheap) to design from a developer perspective and c) because they can be delivered through lower-end feature phones that remain widespread across developing regions. The dominant mindset across development projects, therefore, has often been to make content available to marginalised people in a format that lacks pedagogical sophistication.

There are two possible responses to such a state of affairs. First, to deem this form of traditional educational content devoid of value, in favour of more sophisticated socio-constructivist approaches, is to ignore the very real need for information and tangible educational opportunities for marginalised communities (Pegrum 2014). Indeed, Chi and Hausman (2003) highlight the ontological shifts required for both the learners' conception of learning and, where they are involved, the teachers' conception of teaching in order to embrace the more 'advanced' socio-constructivist pedagogical innovations. In reflecting on the five years in which the MILLEE project was operating in rural India, Kam (2013) notes the need for some adjustment of the original constructivist ideals to adapt to the more traditional view of learning espoused by their learners. Thus, Laurillard (2012) suggests that the variety of pedagogical approaches mentioned in this discussion should not be seen as incompatible, rather used in combination to suit the learning contexts.

Second, however, we must consider the implications of accepting that marginalised communities should be supported with socio-technical interventions that are less 'advanced' than those already being adopted in the West. As more sophisticated technology becomes available, designers of mobile learning initiatives must now find a balance between employing low-end mobile phones, often deemed the 'appropriate' technologies for marginalised communities, at the expense of pedagogical sophistication, and leveraging the potential of higher-end smartphones, which can facilitate much more complex software and more sophisticated learning opportunities and, arguably sustainable access in the long term (see UNESCO 2013b; Winters 2014). Without addressing such a balance, Winters (2014) suggests there is a risk of further embedding the very structural inequalities that well-intentioned mobile learning initiatives set out to address. Addressing this balance forms a central issue in this study.

2.1.8 Positioning mobile learning initiatives in a broader context

Finally, we must consider the ways in which mobile learning opportunities are situated within the broader educational and cultural contexts of the target learners. Some of the larger scale and, some would argue, more successful mobile language learning initiatives have employed mobile phones alongside other forms of educational provision. For example, BBC Janala includes a package of low-cost mobile subscriptions, television drama and game shows, and lessons in the leading national newspaper (Khan 2012). The Mobile Literacy Project in Pakistan is also part of an integrated programme: SMS messages are used to supplement three course books in Urdu and basic mathematics, and the project has also introduced a feature phone application called eTaleem, which contains Urdu literacy and maths lessons. Here, the purpose of the intervention is to maintain the skills and support further learning of women who attend six-month long, introductory face-to-face literacy courses. As such, the SMS messages are not standalone, but rather serve to supplement face-to-face teaching, books and a mobile application.

Such projects, UNESCO (2013b) suggests, improve educational equity by introducing:

> "new pathways for learning and improving existing educational offerings." These projects, therefore, *do not replace but rather complement existing educational investments* such as textbooks, infrastructure, hardware, training and content (UNESCO 2013:10; emphasis added).

However, as this discussion thus far has shown, the mobile language learning and literacy materials that are delivered on mobile phones are developed by others, for marginalised groups, and those responsible are often large international organisations such as, in the case of the Sudan and Libya SMS project, the British Council (see Bannatyne and Tyers 2012), and

seek to transfer such resources to other cultural contexts. The British Council's latest SMS project, for example. has been set up in Sri Lanka, using marginally adapted resources.

A number of commentators have also raised doubts about this approach because they argue that much imported content is not appropriate for excluded people for reasons of literacy, language or culture (see, for example, Unwin 2009 or Selinger 2010). Such scholars argue that the content should, at the very least, be reconfigured to their cultural context. Unwin (2009) therefore suggests that there could be a role for some community members to reconfigure external content for local 'consumption'.

Here, Greenwood and Day (2009) argue that such an approach offers not only the opportunity to preserve cultural knowledge for subsequent generations, but also that the very process of capturing knowledge encourages ownership (in Unwin 2009:342). In this way UNESCO (2013b) now encourages the development of platforms or software that educators to create or tailor mobile content *in situ*, and to promote the creation of mobile content that is relevant to local groups and accessible in local languages. These two goals are central to this study, and relate to the history of participatory approaches in development studies and in participatory design.

Participatory approaches

> "[For] platforms to deliver value to their end-user communities, hardware innovations must be accompanied by software that targets local conditions and needs, and this calls for participatory design with learners, teachers and other local stakeholders. Otherwise, contemporary efforts to extend the [mobile] technology revolution to these underserved communities are not likely to succeed – not because critics are necessarily correct that people in these regions have no need for the technology – but simply because we have not listened closely to them when designing technology for their needs' (Kam *et al.* 2006:32).

Such a view has informed a number of mobile learning initiatives across the developing world, including the various stages of the MILLEE project (see Kam 2013), mCHW, a project focusing on the design and evaluation of a mobile learning intervention for the training and supervision of community health workers in Kenya (mCHW n.d) and Mobigam, an exploratory project focusing on the use of mobile technology to support language learning in Gujarat, India (Mobigam n.d.).

However, experience in the use of such participatory methods in other areas of development and in participatory design, which emerged in Scandinavia and UK workplace contexts in the 1960s (Dearden and Rizvi 2008; Haiken and Duncombe 2013), suggests that simply 'doing participation' is problematic. There is a danger that participation can be undertaken badly, to be co-opted, have little effect or, in some cases, do more harm than good (see, for example,

Cooke and Kothari 2001; Heeks 1999). It is therefore important to learn lessons from the experiences of work in both participatory development, and participatory design. Key considerations are thus outlined below.

Cornwall (2003) suggests that, while participation is claimed to tackle issues of marginalisation, it is important to consider *who* participates. A participant might belong to a specific marginalised group but this does not necessarily mean that he or she represents all the issues and concerns of this group. In most cases, it is not practical for everyone to participate and so representatives must be chosen. Yet the choice of who represents each group can be profoundly political (*ibid.*). Indeed, there is a risk that the 'community' might be treated as a single entity with one set of goals – often referred to as the 'myth of community' (Heeks, 2010, 1999; Cornwall 2003) rather than a range of conflicting goals, interests, social structures and power relationships (Cleaver 2001; Cooke and Kothari 2001). In this context, reaching any sort of consensus may not be possible or even desirable, because more powerful groups or individuals may dominate, leaving weaker groups unwilling to challenge the status-quo. Participatory processes are at risk, therefore, of re-asserting the goals of the dominant minority (Cornwall 2003). Heeks (1999) also emphasises the external facilitator's role, noting their powerful ability to steer apparently participative processes, shaping decision outcomes.

Participatory design techniques have highlighted the importance of identifying different types of stakeholder, and working with them - both separately and together. This has the potential to avoid some of the problems with group dynamics discussed in relation to participatory development methods – especially avoiding the over-reliance on 'public sessions' (which are particularly susceptible to the power issues identified above) that are sometimes criticised in Participatory Rural Appraisal projects (Williams 2004; Cornwall 2003; Cooke and Kothari 2001).

Participants thus need both opportunity and motivation to participate, and scholars have emphasised that they must also have the skills and confidence to have a voice (Cornwall 2003). The structure of participatory activities thus needs to be such that participant voice may influence the intervention in question (Cooke and Kothari 2001). Mohan (1998) has noted the particular lack of input from women in participatory processes. Hickey and Mohan (2004) remind us that participatory methods generally demand a large time commitment from participants, and that we must therefore consider the cost of participants' time away from other activities (Hickey and Mohan 2004; see also Cornwall 2003).

In the context of projects which seek to employ technology, there is often an assumption that users or beneficiaries are prepared, skilled and motivated to participate; are aware of their own needs in relation to technology and how it might help them. In reality, this is not always

the case (Simonsen and Robertson 2012), especially in environments where the participants may never have used the technologies on which they are being asked to comment.

There is also a need to understand the influence of powers above and below the community level (for example at the level of the household, at local/national government or at the market level). A focus on the community ignores household-level power structures and may also overlook the role of the state in creating an environment that supports or inhibits local participation (Hickey and Mohan 2004).

Finally, in dealing with the political realities associated with participation, it is important to appreciate the need to build trust between researchers, or other 'external experts' and the local community. The external agent in an intervention may be considered as either pre-eminent or excluded and side-lined, with both options failing to recognise the value of the joining of Western and indigenous knowledge (Heeks 1999). Cornwall (2003) suggests that personal criteria such as trust, friendship and respect are vital, along with the need for experts' awareness and reflection upon the power and influence of their own role.

Such critiques should not, Kemmis (2006) argues, be reason to avoid participatory approaches altogether, but rather to raise awareness of the potential pitfalls. However, the nature of participation that is facilitated as part of this study must necessarily be subject to critical reflection.

Researching mobile learning

> "M-Learning is at a leading edge of learning technologies and is at present characterised by pilots and trials that allow mobile technologies to be tested out in a variety of learning contexts. *The sustained deployment of m-learning will depend on these pilots and trials, especially their evaluation methodology and reporting*." (Traxler & Kukulska Hulme 2006:143; emphasis added)

There has been a longstanding and general concern about the quality of research into mobile learning interventions in developing countries (Kukulska-Hulme & Traxler 2005; Vavoula & Sharples, 2009). In particular, it is challenging to undertake longitudinal research projects: a generation of mobile devices is short-lived, which may result in many technical aspects being lost when a new generation is introduced. As Pachler (2009) notes, it is not unusual to witness a particular model being replaced in the course of a research project, which makes longitudinal studies difficult. Indeed, the technology employed in studies more than a couple of years old can seem outdated. A number of publications (for example Kukulska-Hulme and Traxler 2007) have put large numbers of case studies documenting trials and pilots into the public domain. Where evaluation has taken place, it is expected to be 'rigorous' in the eyes of stakeholders in order to secure the necessary resources, funding and support (Traxler 2013),

and often 'rigour' equates to 'hard' or quantitative outcomes. Indeed, Selwyn (2013:118), argues that a "noticeably acritical" and confirmatory tone pervades many of the official studies and 'evaluations' that are conducted of educational ICT4D projects.

This problem is summarised very well by Traxler and Wishart (2011):

> "The community needs evidence that demonstrates relevance, significance and impact. Mobile learning researchers and developers have not always had the time, resources and expertise to generate credible and appropriate evidence. Evaluations focus inappropriately on hard objective outcomes because short-term projects do not give time for the technology to bed in reliably and for the novelty to wear off." (Traxler and Wishart 2011:10).

Commentators now call for a way to bridge the gap between descriptive small-scale research and broad visionary research, by evaluating, reflecting and trying to provide explanations (Wingkvist and Ericsson 2009; 2011). There is also an explicit recognition that technologies are likely to undergo unintended changes and twists, including chance, trial and error, tinkering, and even negligence, resulting in the eventual artefacts (Markus 2000). We should "accept co-existence with the messiness of the worldly routines and surprises without panicking" (Ciborra 1994:13). This thesis will argue in due course that action research offers a way to incorporate such reflection and uncertainty into mobile learning research.

A critical approach to education, technology and development

> "The use of digital technology in education introduces a complex mix of public and private actors into the education arena. These include the designers and developers of new tools, the multinational corporations that they often work for, new networks of consultants and advisors, along with new generations of ostensibly "digitally active" young people, the businesses and practices of digital youth cultures, and the families and communities within which young people lead their lives" (Selwyn and Facer 2013:5).

Whilst the discussions of mobile learning interventions in this chapter thus far have not engaged extensively with political issues, many commentators now acknowledge that ICT4D projects, programmes and initiatives are located with complex sets of differentiated power relations and social structures which can, they argue, mitigate *against* the empowerment of the 'disadvantaged' people that such interventions seek to reach (see, for example, Selwyn 2013; Unwin 2009).

Zembylas (2009) has argued that ICT4D initiatives have often viewed digital technology as a key means of economic "development spreading from the West to the rest of the world" (2009:19). Annany and Winters (2007) have similarly suggested that digital technologies can be framed as 'carriers' of cultural ideas to still-developing countries – "tools through which

traditionally impoverished nations can acquire the content, if not the epistemologies, of Western technologists" (2007:108).

Here, Selwyn (2013) notes the implicit assumption that:

> "a range of political and economic competencies – as well as more general cultural dispositions - can be demonstrated and disseminated through 'advanced' Western information and communication technologies." (2013:120)

Selwyn and Facer (2013) argue that a critical study of educational technology should frame technology use in terms of its complicated and often unjust connections to the larger society. Its goal, they argue, should be to develop suggestions about how structural inequalities and dominant hegemonies may be countered, striving for the use of educational technologies along fairer and more equitable lines (*ibid.*).

A critical approach to education technology might then draw on a long history of critical social theory, inspired by theorists such as Habermas, and employed in a range of education and information systems research. Critical social theory is argued to be a framework that questions assumptions and ideologies underlying social phenomena to address the emancipatory interests of research subjects (see, for example, Carr and Kemmis 1986) to expose, through critique, the illusions and contradictions within educational settings. It is through the exposure of such contradictions, that critical theorists intend to encourage social change. According to Howcroft and Trauth (2005), critical theory in information systems research has generally drawn on four key themes:

> 1. Emancipation - freeing individuals from power relations and causes of alienation and domination.
>
> 2. Critique of tradition - disrupting the status quo by providing alternative and radically different views of the world, emphasising positive change.
>
> 3. Critique of technological determinism - placing technological development, adoption, and use in context of broader social and economic changes.
>
> 4. Reflexivity - reflecting on the role of a researcher and in selection of research topics. That is, the research process is not neutral.

In this way, Avgerou (2005) advocates the explicit critical examination of the researcher's own tacit knowledge, emotionally charged preconceptions, political convictions and moral values, and empathy with research subjects in building highly contextualised understanding and knowledge. Such a framework necessarily informs this study's design and epistemology.

Moving forward

> "Despite the increasing ubiquity of mobile devices and a growing appreciation of their potential to improve education, widespread and sustained mobile learning in formal settings remains mostly an aspiration. Most mobile learning projects to date have been experimental in nature, focusing on exploring how mobile technologies can support new and innovative teaching and learning practices. These initiatives are usually short-term, small-scale pilot projects, which lack the capacity to reach large numbers of learners over long periods of time. In order for mobile learning to have a widespread impact, feasibility and scale are essential. One key challenge is to better ensure that projects acknowledge the *realities and limitations of existing education and ICT infrastructures*, as well as the *social and cultural contexts of different countries and regions, in order to support project sustainability over time*. (UNESCO 2013b:13; emphasis added)

Through an examination of a number of bodies of literature, I have presented an argument that there is a need for a more critical, politically and socially grounded approach to research into the use of mobile learning technologies that entails the sensitive participation of the marginalised communities that initiatives seek to support, and an increased emphasis on pragmatic reflection on the power structures that are embedded and negotiated in these educational settings. Chapter 3 now offers a justification for action research as a methodological approach that can effectively support such aims.

3 ACTION RESEARCH: STUDY DESIGN

Introduction

> "[Action research is] the systematic study of attempts to change and improve practice by groups of participants by means of their own practical actions and by means of their own reflection upon the effects of those actions" (Ebbutt 1985:156).

Action research is argued to be an approach well suited to the investigation of questions about how people can together realise desired aims, or about the constraints that make this difficult or impossible (McIntyre 1992). In this chapter I will propose that action research provides a methodological framework that is appropriate for, and sympathetic to, the goals and challenges of this study, in answering the central research question:

> How can the use of a mobile learning resource provide a sustainable means of enhancing the learning of disadvantaged young adult participants in an English language program in urban India?

Although it is an approach which has evolved into a number of distinct strands, I argue that action research's broad commitments to collaboration, reflection and theory development offer an answer to the call for a critical, political and participatory approach to the use of technology and education for development that has been presented in Chapter 2. Indeed, the emancipatory goals of action research align well with efforts to empower marginalised communities. Through this discussion, I will provide a justification for the overall study design. I will also seek to acknowledge some methodological limitations of action research and offer consideration of important ethical issues. A detailed account of carrying out the study in context is reserved for Chapter 4.

In action research, methodological decisions are inextricably linked to the research findings at different stages of the study, and so I will indicate the relevant findings chapter sections where appropriate. This should not, however, give the impression that a linear process has governed this study. On the contrary, the very nature of action research is iterative and, to a certain extent, unpredictable (McNiff 2013).

Improving and sustaining practice

Action research should begin with an imperfectly understood concern and a desire to take action - a general idea that some kind of improvement or change is desirable in an existing system (Cohen and Manion 1989; Baskerville *et al.* 2004; Kemmis and McTaggart, 1988; McTaggart 1991). In the current study, such a commitment to improve practice is reflected in a collective desire to improve young adults' access to – and engagement with - English language learning as part of the Youth Empowerment Program in Dharavi, and the

proposition that a mobile learning resource might be an appropriate means to achieve this. Yet, at the outset of the study, the particular challenges facing the young people, in terms of their motivation and ability to learn English, are not fully understood. Nor is it possible to know in advance the ways in which young people are already engaging with mobile phones, and the most appropriate and sustainable ways to design and deliver a mobile learning resource using mobile devices. Action research is a methodological approach that is argued to deal well with such uncertainty. Rather than a simply being a problem-solving, responsive strategy, McAteer (2013) suggests that it is:

> "problem-posing…continually subjecting practice to critical inquiry, challenging the 'taken for granted' and consciously seeking alternative perspectives as a means through which to generate the understanding that will bring practical improvements into being" (2013:17).

Such an agenda aligns with and, indeed, has been informed by critical social theory's agenda to expose and challenge immanent knowledge within an educational setting (see Carr and Kemmis 1986).

Defining the research questions

At the beginning of an action research study, Kemmis and McTaggart (1981) suggest that a general form of the overarching research question is thus: "I intend to do X with a view of improving Y" (1981:12). A researcher's action is then based on the assumption that one is dealing with a situation of type Z, and it is in order to achieve some particular outcome of general type Y that one is proposing to implement a hypothetical solution type X (ibid). In the present study, this expression might be presented as follows:

> I intend to introduce an English language mobile learning resource to students of the Youth Empowerment Program, with a view to enhancing the English language learning of disadvantaged young people in Dharavi, Mumbai in a sustainable manner.

The overarching research question of this study therefore asks:

> How can the use of a mobile learning resource provide a sustainable means of enhancing the learning of disadvantaged young adult participants in an English language program in urban India?

This question makes a number of assumptions. It implies some understanding of what is happening already; it assumes that any improvement can be monitored in some way; and most important of all, it envisages an evolution of understanding in concern with an improvement of practice as the action is implemented and refined in practice (Kemmis and McTaggart 1981). These assumptions must necessarily be broken down in a number of subsidiary research questions.

First, the understanding of what is happening already and the 'problem' at hand is incomplete. The first two subsidiary research questions thus seek to improve such an understanding:

> What are young people's existing practices using mobile technology, and what are the resulting implications for the design and implementation of a mobile learning resource in this setting?

> What are the motivations for and challenges presented by learning English for the young people, and what are the resulting implications for the design and implementation of a mobile learning resource in this setting?

Next, Kemmis and McTaggart (1981) suggest that each action research cycle should address in what ways the desired outcomes were achieved, and whether it was achieved through the proposed action or intervention. These issues will be addressed through the following subsidiary research question:

> In what ways do students of the Youth Empowerment Program use the mobile learning resource provided to them to support their learning of English language?

Kemmis and McTaggart (1981) argue that if one has got encouraging answers to such questions, then the evidence supports the validity of one's action. Even if this is so, however, it is useful to ask what other consequences there were as a result of one's actions (both positive and negative), and the circumstances under which positive outcomes might be sustained. To this end, McTaggart (1994) suggests that the point of doing action research is to collectively find more sustainable – or, more precisely, less unsustainable – ways of acting. Here, McTaggart (1994) argues that 'sustainability' offers a criterion for considering how well action research initiatives contribute to the settings in which they are conducted. Such an approach aligns well with discussions of sustainability in the development literature (as set out in Chapter 2).

Issues of sustainability for this study will thus be addressed with a final research question:

> What are the enablers and constraints to using a mobile learning resource to support English language learning in this setting?

The answers to this question will comprise a synthesis of the findings from the study and detailed reference to relevant areas of literature. Where constraints are identified, a reflective discussion will examine how these barriers might be overcome.

As this section has argued, the research questions for this study have been devised to be sequential, with answers from each question feeding into subsequent action. The research questions, and the findings chapters that address each one, are summarised in Table 1.

Table 1. The research questions and relevant findings or discussion chapter

Research question	Chapter
How can the use of a mobile learning resource provide a sustainable means of enhancing the learning of disadvantaged young adult participants in an English language program in urban India?	
a) What are young people's existing practices using mobile technology, and what are the resulting implications for the design and implementation of a mobile learning resource in this setting?	5
b) What are the motivations for and challenges presented by learning English for the young people, and what are the resulting implications for the design and implementation of a mobile learning resource in this setting?	6
c) In what ways do students of the Youth Empowerment Program use the mobile learning resource provided to them to support their learning of English language?	7
d) What are the enablers and constraints to using a mobile learning resource to support English language learning in this setting?	8

Research participants

While Kemmis and McTaggart (2005) concede that a single researcher can undertake the methods employed to carry out action research, they emphasise that action research is necessarily a collaborative social process with a focus on social practice. People involved in 'collaborative action research projects', a label that could certainly be applied to the current study, should be:

> "an open and inclusive network in which the facilitator can be a contributing co-participant, albeit with particular knowledge or expertise that can be of help to the group. Moreover, at different times different participants in some groups can and do take the facilitator role in relation to different parts of the action being undertaken." (2005: 594–595)

Whilst I see myself as the initiator and primary facilitator in this study, there are necessarily times in which other members of the action research group are required to take responsibility for the action being taken, especially during the periods I spend away from the field. The key participants in the action research collaboration are now outlined below:

3.1.1 The NGO

Reality Gives is a Non Governmental Organisation (NGO) that provides a range of educational support in Dharavi. Its activities are largely funded by a partner tour company,

which seeks to provide educational tours to outsiders about life in the slum. Part of Reality Gives' original vision was to assist teenagers and young adults who have disengaged from the mainstream education system, or who are struggling to find employment. Its Youth Empowerment Program[6] (YEP) is an initiative that aims to help young adults in building skills for employability[7] through English language skills, computer skills and soft skills, which seek to build confidence and prepare young people for the working world. The programme offers 100 day-long courses throughout the year to up to 30 young people recruited from the Dharavi community in a small community centre. It should be noted that Reality Gives did not provide any financial sponsorship to this research, but facilitated access to groups of learners and took an interest in the development of a mobile resource that will benefit their learners in the future. During various stages of the study, the organisation's Founders, Executive Director, Operational Manager, and Community Centre Manager have participated in the action research process.

3.1.2 The teachers

At the outset of the study, there were four teachers involved in the running of the YEP. Two of these teachers were former students of the YEP, have been trained by Reality Gives, and live in Dharavi. The other teachers lived elsewhere in Mumbai, and are more experienced in teaching English and 'soft skills' to young people. All teachers were formal employees of the NGO. However, over the course of the study there was a degree of fluctuation in the relative involvement of these teachers, and some involvement of additional, voluntary teachers. The details of this, and implications for the action research study, are addressed in Chapter 4.

3.1.3 The students

At any one time, there are approximately 30 young people, aged 18-30 years, enrolled on the Youth Empowerment Program. They are recruited by the NGO from within Dharavi's community. A different group of students participated in each of the action research cycles, and their individual backgrounds, skills and motivations are central to the emerging findings of this study.

[6] Reality Gives use the American spelling 'program' to denote their educational programme, and so this will be kept consistent in this document. It should not be confused with a computer program.

[7] Weinart (2001) defines the concept of employability as someone's capability of gaining initial employment, maintaining employment and moving to new employment by choice. It depends on the knowledge, skills and attitudes possessed by the individual, and also the labour market information (ibid).

3.1.4 *The curriculum provider*

Teach India is an initiative launched by the Times of India group to teach spoken English to underprivileged young people across India's urban areas. The British Council designed a curriculum to support spoken English language learning, titled 'English for Employability' which is now used by Teach India in educational projects with more than 60 NGOs based in slum areas across Mumbai and Delhi. The principal aim of the initiative is to support young people's movement into employment, and Teach India have partner employers across Mumbai who offer a series of jobs and training programmes to course graduates. There has been a loose agreement between the researcher and Teach India that the learning objectives and curriculum materials can be shared for the purposes of this project, although the strength of this relationship waned over the course of the study.

3.1.5 The technical partner

The technical system used to create mobile learning resources in this study belongs to a small UK-based organisation with a history in providing mobile language learning resources to immigrant families. The system has flexibility to develop language learning resources using audio files, images, text and a selection of interactive features (see Appendix VIII), for a range of mobile platforms, and there was some limited capacity for technical development where this project demands it. There were inevitably technical restrictions that the system presented, and these will be made explicit throughout the course of this thesis.

Within each partner organisation, a number of individuals have participated in each study. The relative participation of each individual fluctuated over time, but an overview is presented in Figure 1.

The involvement of a considerable number of different participants in this study arguably represents a strength of this research, because it has the potential to bring together multiple perspectives in order to improve practice. However, this also represents a significant risk. A great deal of effort was invested in building appropriate partnerships with each organisation, and clarifying their relative involvement at different stages of the study. Examples of the agreements setting out the nature of their respective involvement have been included in Appendix I. A breakdown in any of these relationships inevitably had serious consequences for the collaborative intent of the study. I experienced a number of significant changes in the principal participants over the course of the study, which will be set out in Chapter 4.

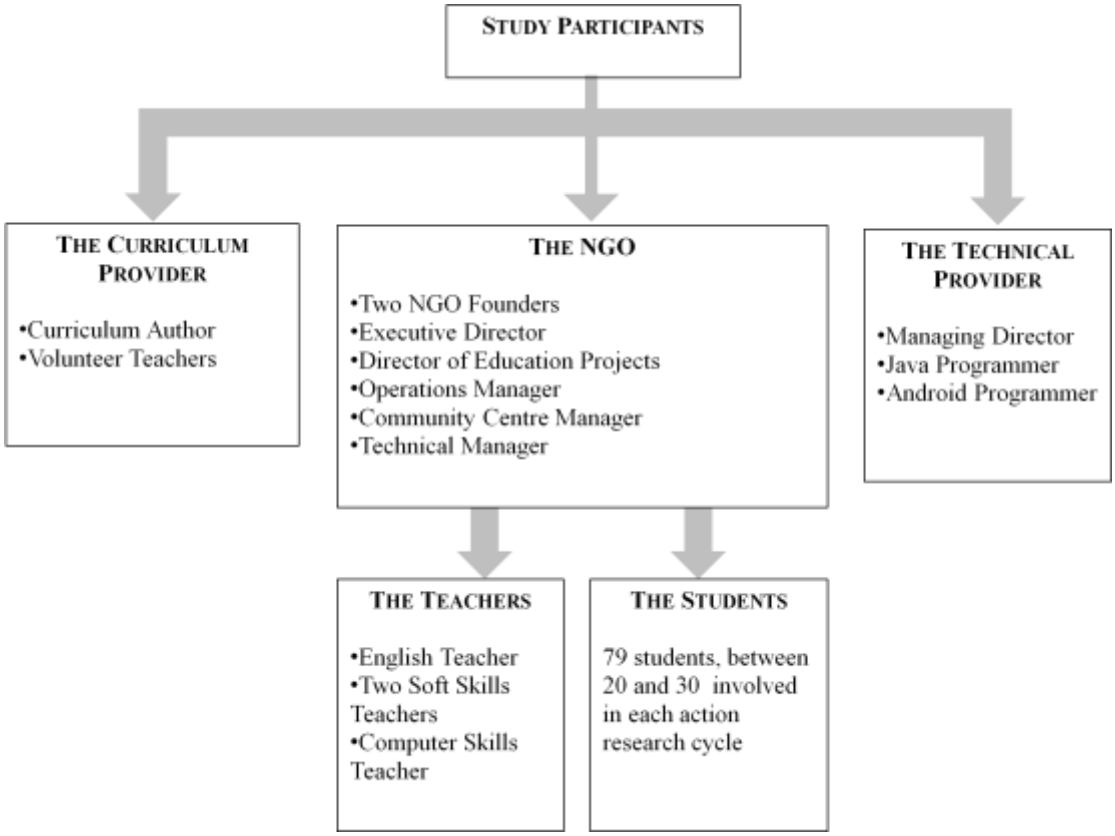
The large number of participants also presented a challenge in balancing differing views and goals. For example, whilst a researcher would consider a technological failure as something to learn from, an educational provider or a student would consider this a major disruption. In

such a case, the interest of the researcher would conflict severely with the problem-solving interest of the educational provider. Indeed, as McIntyre (1992) argues:

> "when one investigates the constraints imposed by institutional contexts on one's practices and their effectiveness, one enters a public arena where one is setting the merits of one's individual, probably innovative, practices against the established practices and institutions of people much more powerful than oneself" (1992:7).

I had an additional challenge, therefore, in carefully managing expectations and balancing views in a way that remains acceptable to all actors.

Figure 1. Study participants: An overview



The action research cycles

Action research often is depicted as a dynamic, cyclical process that recognises the explicit possibility of acting differently as a result of progressively learning from experience (Kemmis and McTaggart 1981; 1994). In this way, Avison *et al.* (1999) suggest that an action researcher can address complex real-life problems, and the resulting contributions are of immediate concern to practitioners. This is particularly appropriate for the field of education technology in developing contexts.

As Hollow *et al.* (2014) point out:

> "there are many unintended consequences that occur within the field of ICT for development – it is important to recognise this and accept that this will remain the case" (2014:15).

Most representations of action research cycles are based on the models illustrated by Kemmis and McTaggart (1981), Elliott (1991) or Carr and Kemmis (1986), all of which indicate that one cycle informs the next. McNiff (2013:8-9) suggests a notional action plan is:

- Take stock of what is going on;
- Identify a concern;
- Think of a possible way forward;
- Try it out;
- Monitor action by gathering data to show what is happening;
- Evaluate progress by establishing procedures for making judgments about what is happening;
- Test the validity of claims to knowledge;
- Modify practice in light of the evaluation.[8]

This plan is set out as a visual model in Figure 2.

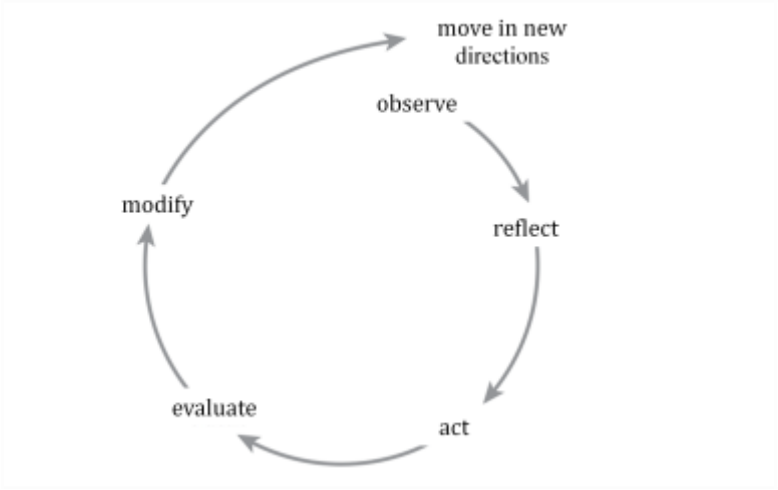


Figure 2. The cyclical nature of action research (in McNiff 2013:9)

In this study, I carried out three action research cycles, which built progressively on the findings from the preceding cycle but with slightly different areas of focus. The first cycle, *Reconnaissance*, was primarily concerned with gaining understanding of the research context and the concern or problem that the action research study was to address, and developing a prototype resource. The second cycle, *Implementation*, was concerned with a longer trial of a

[8] This is a modified version of the plan in McNiff and Whitehead, 2010.

mobile learning resource and gathering of data to monitor its use. The third cycle, *Detachment,* also entailed the trial of a modified mobile learning resource. This time, however, I left the set-up and running of the project to the NGO representatives. These cycles and their broad objectives are set out in Table 2. It should be noted that I am now in the process of working with the NGO to sustain and build on the practice established during the action research process, and I will explain this further in Chapter 8.

Table 2. The action research cycles and their broad objectives

Cycle	Objectives
1 **Reconnaissance** Jun - Dec 2012	1. To gain familiarity with the Youth Empowerment Program and its English language course; 2. To understand the students' existing practices using mobile phones and motivation to learn English; 3. To demonstrate the opportunities and constraints presented by the technical system; 4. To collaboratively establish the purpose of the mobile learning resource, and the way it should support Youth Empowerment Program students; 5. To define content features for the mobile learning resource proper; 6. To develop the mobile learning resource to be used by students in Cycle Two;
2 **Implementation** Jan – May 2013	1. To reestablish aims of mobile learning resource and terms of its implementation; 2. To better understand the students' existing practices using mobile phones and motivation to learn English; 3. To distribute the mobile learning resource (informed by Cycle One) to a group of Youth Empowerment Program students; 4. To collect data on student use of the resource, and student teacher and NGO feedback. 5. To define revisions to design and implementation of mobile learning software to be used by students in Cycle Three;
3 **Detachment** May – Oct 2013	1. To better understand the students' existing practices using mobile phones and motivation to learn English; 2. To train staff and NGO representatives to implement and manage the intervention, so that it can run in the absence of the researcher; 3. To deliver the revised mobile learning resource to approximately thirty students; 4. To collect data on student learning experiences; teacher experiences of implementation; and NGO perspectives on the intervention; 5. To review the criteria for the design and implementation of the mobile learning software according to student and teacher experiences and NGO perspectives.

Methods for data collection

According to Cohen and Manion (1989), an action research cycle should be constantly monitored over varying periods of time and by a variety of mechanisms (questionnaires,

diaries, interviews and case studies, for example) so that "the ensuing feedback may be translated into modifications, adjustments, directional changes or redefinitions as necessary" (1999:223). They argue here that the purpose is to bring lasting benefit to the ongoing process itself rather than to some future occasion, as is the purpose of more traditionally orientated research (*ibid.*).

While a detailed account of the process of data collection and the reflection on and analysis of this data is reserved for Chapter 4, Table 3 and the remaining discussion in this chapter will briefly justify the methods used for data collection according to each subsidiary research question. As McNiff (2013) is keen to emphasise, the data collection, reflection and analysis of data in action research is by no means a linear set of processes, rather they are complex and iterative. The full timetable of research activities that took place over the course of the three action research cycles are set out in Appendix II. However, at this stage, when the priority is to identify, justify and problematise the study design, it seems clearer to present the data collection methods in a relatively linear fashion.

Table 3. Principal methods for data collection for subsidiary research questions

Research question	Data collection method
a. What are young people's existing practices using mobile technology, and what are the resulting implications for the design and implementation of a mobile learning resource in this setting?	1. Semi-structured interviews with each student, teacher and NGO representative 2. Semi-structured interviews with five mobile phone salesmen/stallholders 3. Observation of students using mobiles and other technology
b. What are the motivations for and challenges presented by learning English for the young people, and what are the resulting implications for the design and implementation of a mobile learning resource in this setting?	1. Semi-structured interviews with each student, teacher and NGO representative 2. Semi-structured interviews with curriculum author 3. Observation of students participating in English classes
c. In what ways do students of the Youth Empowerment Program use mobile learning resource provided to them to support their learning of English language?	1. Regular collection of software logging data 2. Observation of students using the mobile learning resource 3. Interviews with students about their use of mobile learning resource and any problems they have faced

3.6.1 Young people's mobile use and English language learning

Semi-structured interviews with all research participants (students, teachers and NGO representatives) were conducted at the beginning of each action research cycle. As set out in Chapter 4, these served as useful opportunities to build rapport with participants, to explain the purpose of the project, to gain consent and to explore important issues that related to the first two research questions. The semi-structured nature of the interviews aimed to allow both the researcher and the participant the freedom through which to explore an honest and authentic account, whilst maintaining a degree of consistency across participant interviews. Outline interview schedules are presented in Appendix III.

3.6.2 Students' use of the mobile learning resource

Inherent to the use of technological tools, such as mobile phones, is the ability to record and store data generated through the use of such tools, for example usage data (Trinder *et al.* 2009 in Vavoula *et al.* 2009). This has been used in a number of mobile learning projects to record cumulative application usage time or combined with a number of other techniques (Wali *et al.* 2009; Trinder *et al.* 2009; Pearson 2011). In this study, logging software was embedded in the mobile learning activities, serving to record when the learners used the phones, for how long, what they attempted, and how successful they were at answering the questions. This technique arguably provides a means of identifying which elements of the resource were useful to the learner, when, and how this pattern changed over time.

However, the collection and analysis of such data can be problematic. It can be seen as an intrusion of privacy, and without full explanation, can lead to a significant distortion of user behaviour (Pachler 2009). For some, the knowledge that "something" is being recorded can be a barrier. This reluctance to be observed has been observed by Trinder *et al.* (2009) and Wali *et al.* (2009) in pilot studies. Hooft (2009) notes that data collection should go unnoticed by the learner so as not to interfere with the learning experience, but that learners should be made aware of their role in the research process, so that they are able to provide insight and commentary on their own engagement with the mobile resources. Learners were informed clearly about this logging function, and the way in which it would be used.

Log data is not able to provide contextual information about where and by whom the resources are being used. For example, the sharing of the resources between friends and family members, which was observed in the first cycle, could distort the patterns of use of individuals. Trinder *et al.* (2009) argue that, while logs can provide useful insight into device usage, detailed analysis often requires additional sources of information, such as participant interviews and observation. In this study, log data has thus been used alongside data from

observations and interviews with participants to gain a greater understanding of how learners used the mobile phone resources.

Where possible, I observed the students as they engaged with the mobile learning resources within and around the community centre in Dharavi. Students were able to use the resources before and after classes. There were also limited opportunities to observe learners in their own homes. Particular items to observe included:

- Instances of individual or collaborative use
- Levels of motivation to use the resources, and how these changed over time
- Technical or pedagogical difficulties

However, there were a number of potential challenges with the observation approach. Hooft (2009) suggests that learners are becoming increasingly independent, active and unpredictable and it becomes much more difficult to collect data via such observations. There is also a tension in this sort of observation between the distance the researcher needs to acquire, and the familiarity and intimate knowledge of the culture she must acquire (Roberts *et al.* 2001). As a cultural outsider, and somewhat conspicuous within the Dharavi community, it was not always easy to acquire the familiarity and access that Roberts *et al.* (2001) suggest is necessary in participant observation. Such concerns will be discussed in more detail in Chapter 4.

Semi-structured interviews were also conducted with students at regular intervals throughout the cycle, when I was there, to gather the following:

- Self reports on the use of the mobile learning resource at the time of log-collection
- Views on the nature of the learning resources and how they could be improved
- Explanations about particular patterns of use, prompted by information in the log analysis

Using interview methods to collect data has the advantage of enabling respondents to reflect on their experience, revealing issues that may not be visible during observations or in log data (Wali *et al.* 2009). However, Trinder *et al.* (2009) note that interviews rely on memory after the event. For this study, patterns from the log files have been used to prompt students' recollection of particular learning experiences.

Where possible, teachers were interviewed about the progress of individual students during each action research cycle. This discussion included access to the regular student assessments of student progress that take place over the course of the Youth Empowerment Program. Outline interview schedules are included in Appendix III.

Reflection and data analysis

> "Reflection [on data] seeks to make sense of processes, problems, issues and constraints made manifest in strategic action. It takes account of the variety of perspectives possible in the social situation and comprehends the issues and circumstances in which they arise." (McTaggart 1987:9)

In an action research cycle, it should be noted that reflection and analysis is not the last phase in the action research process; rather it is concurrent with data collection or cyclic. As Glaser and Strauss (1967) argue, it begins as soon as the first set of data is gathered and does not only run parallel to the data collection, but the two become "integrated" (1967:109). Similarly, Miles and Huberman (1984) strongly recommend early analysis in any qualitative research. It helps the researcher "phase back and forth between thinking about the existing data and generating strategies for collecting new, often better data. Furthermore, early analysis permits the production of the interim reports that are required in most evaluation and policy studies, and for discussion with project partners" (1984:50).

Such early attempts to analyse data were crucial in this study, particularly because decisions based on this analysis had to be made in the field, in collaboration with participants. It was a great challenge in this study to analyse "on the go", in the midst of fieldwork.

3.1.6 Familiarisation with data

The first stage was to become closely conversant with, or immersed in, the interview transcripts, field notes and reflective diary and on the basis of this, to start a coding process through which key points from the data could be identified and, where appropriate, their strength. Sometimes, I was interviewing a large number of students and teachers over the course of a few days, and so there was not time to transcribe every interview in its entirety. Rather, I listened to recordings and take shorthand notes. In particular, I sought to identify points of agreement between the various sources or perspectives. Similarly, I searched the data sets for points of disagreement. These points were perhaps even more important that points of agreement, as they highlighted areas of possible incomplete understanding or tension between participants. Often, these became triggers for exploration or data collection, and in being disconfirmational, allowed me to test our collective understanding.

It was also important to identify any data that was surprising, either to myself or to other participants. As McAteer (2013:11) points out, while many action researchers try to take a grounded theory, or theory-building approach, which should be theory-neutral at the outset, it is unlikely that some underlying explanatory theory is not present. Even if not articulated, the element of surprise at some findings suggests that it is present at a subliminal level. As such, then, it is not unusual to find some data which challenge this subliminal theory. This step was

therefore very important in challenging my own preexisting assumptions. I found a number analytical aids particularly helpful in the subsequent stages of analysis for each cycle:

3.1.7 The reflective diary

McNiff (2013) suggests that a successful reflective diary should simultaneously provide a history of a project, the initial and later analyses, and the questions that arise for the researcher along the way. I tended to write field notes on a daily basis, then revisit them periodically, adding questions and new perspectives. The reflective diary in this study served not only as 'a space in which to become initially analytic, spot emergent themes and theoretical insights' (McAteer, 2013:191), but as a space in which to draw together multiple perspectives and to deal with some of the personal and emotional challenges associated with conducting research in this setting. Extracts from this diary inform much of the discussion in Chapter 4, and also play an important role in the discussion of the findings chapters.

3.1.8 Vignettes

Miles and Huberman (1994) define a vignette as "a focused description of a series of events taken to be representative, typical or emblematic in the case" (1994:81). A vignette has a narrative, story-like structure that preserves chronological flow and that normally is limited to a brief time, to one or a few key actors, to a bounded space or to all three. As Erickson (1986) suggests, a vignette is a:

> "vivid portrayal of the conduct of an event of everyday life, in which the sights and sounds of what was being said and done are described in the natural sequence of their occurrence in real time." (1986:149-150).

During early data collection, there were a number of events, scenarios and descriptions noted down in observations and field notes that seemed especially representative, meaningful data. Pulled together in a vignette, and delivered either in written form or orally, it provided a focused tool to discuss important issues and gain interim understanding. Examples included the way a student solved a particular technical problem; an incident involving a mobile scam communicated by SMS; and incidences sharing of the Android program via Bluetooth. In this study, vignettes offered an opportunity to engage participants actively in producing, reflecting on and learning from the data as the cycles progressed.

However, the use of such vignettes was potentially controversial. As Erickson's (1986) discussion points out, "even the most richly detailed vignette is a reduced account, clearer than life…it does not represent the original event itself, for this is impossible… [It] is an abstraction: an analytic caricature (of a friendly sort)…that highlights the author's interpretive perspective" (1986:150). Thus, he notes, the vignette is a "potentially dangerous tool that can

be used to mislead as well as to inform," whose interpretive validity "cannot be demonstrated within the vignette itself" (*ibid.*). In order to respond to such criticism, I tried to use multiple vignettes and accompanying commentary where needed. Research participants and critical friends often asked probing questions once I had presented a vignette, which helped to clarify my narrative. Such amended vignettes are also presented throughout the findings chapters and accompanied by analytical commentary.

3.1.9 Cross-checking meaning with participants

Cross-checking emerging meanings with other participants was very helpful. With students, this was often in the form of focus groups (explored in more detail in Chapter 4). With teachers, I would run through early findings in weekly staff meetings. With NGO representatives, I tried arranged regular meetings to update and discuss emerging themes and to discuss next steps. McAteer (2013) argues that these approaches can aid both the reliability of emerging meanings and the validity of the interpretation.

3.1.10 Critical friends

I had two 'critical friends' (one of whom had worked as a consultant for the NGO in the past, and one who had worked as an author for the curriculum provider) who I consulted on emerging findings at various stages during the process. I found their input particularly helpful to aid clarity of thought, providing a useful cross-check on possible interpretations of the data.

The process of analysis was, of course, iterative in nature, linked to individual research questions where possible. Codes were assigned to each research question over the course of each cycle, and evolved considerably with my increasing understanding. McAteer (2013) suggests that this process forms of a thematic 'picture of practice,' which can be refined and interrogated. At the end of each phase of data collection and analysis, a series of tentative changes to practice were proposed and discussed with participants and the next steps for action were agreed. These changes, and the processes by which they were discussed and agreed, are set out as part of the relevant findings chapters.

Making claims to knowledge

> "The research part of action research involves data-gathering, reflection on the action shown through the data, generating evidence from the data, and making claims to knowledge based on conclusions drawn from authenticated evidence…. (McAteer 2013:25).

The reflective and analytical processes in action research should lead not only to changes in practice, but also to the generation of explanations or knowledge claims. Elliott (1991) emphasises this point: "Theories are not validated independently and then applied to practice. They are validated through practice" (1991:1), proposing an almost conversational relationship between the two. In becoming a means through which practitioners can theorise their practice in collaboration with peers, students and others, it is argued that action research can become both a democratic and democratising process (McAteer 2013). It makes explicit links between the micro-level of local practice and the macro-level of society at large, where a range of discourses are at work, variously positioned to empower some groups and disempower others (ibid). In the present study, a number of discourses relating to young people, technology, English language and empowerment in India require closer examination. In acknowledging and challenging such discourses, action research is thus often presented as emancipatory in nature (see for example Carr and Kemmis 1986).

This view aligns closely with that of scholars who call for a critical approach to technology (see Selwyn 2009; Selwyn and Facer 2014):

> "…the use of digital technology in educational settings is often not a wholly inclusive, dialogical or equitable process in which all actors have equal power in participating, and where all actors can determine what educational technology is or how it is used. The critical take on educational technology is therefore often driven by a desire to redress the imbalances of power…" (2009: 71)

I therefore argue that the emancipatory aspirations of action research mean it is an approach well suited to exploring and challenging the power imbalances and dominant discourses in this study.

Ethical considerations

All research must be set within an ethical framework, which Gilbert (2008) argues is a matter of principled sensitivity to the rights of others. Action research, however, arguably presents particular challenges for the development of ethics that are both sound and sensitive to the research context. In particular, Locke *et al.* (2013) note that collaborative action research blurs the distinction between participant and researcher, particularly when an element of self-study is included. Moreover, the collaborative nature of action research problematises the

question of who is researcher and who is researched, raising issues around anonymity, the 'ownership' of findings and dissemination (Locke *et al.* 2013).

In the context of obtaining informed consent, Grover (2004) asserts that agreements are too often written in ways that make them hard to understand by many participants and fail to recognise people's difficulties with language. She suggests that, while framing research as 'collaborative' may help reduce the power imbalance, it does not hide the fact that, "... one party is investigating the other. One party (the academic), for instance, normally has the power to disseminate information broadly about the other, which information may be beneficial or damaging to the welfare of the individual(s) and/or community studied" (2004: 256).

In this study, introductory information about the study was provided in written form, as set out in Appendix IV. For students, this was translated into Hindi and presented orally in Hindi and/or Tamil by their teachers. It was hoped that this ensured the implications for the study were fully understood by all participants. Participation was renegotiated orally prior to each interview, and is detailed on interview recordings, as the study progressed. In addition, any changes to the study were reported to participants as necessary and when a new stage or form of data collection began. Participants could be promised confidentiality outside of the research context, and where they have been referenced in this thesis I have used pseudonyms for students and indicated their approximate role for teachers and NGO representatives, but the collaborative nature of the research meant that views and experiences were generally shared openly amongst participants.

However, Heath *et al.* (2007) note that "informed consent is a largely unworkable process in action research, given that researchers can rarely – if ever – know the full extent of what participation may entail, or predict in advance all the possible outcomes of participation" (2007:404). A possible solution to this issue, they argue, is *process consent* (consent as 'negotiated on an ongoing basis'), which "provides a useful mechanism for updating participants involved in studies with emergent research designs, and allows existing participants to decide whether or not to remain involved'" (2007:409). As Chapter 4 will set out, this concept is particularly appropriate for this study, where participant involvement changed from cycle to cycle, and I needed to continually (and often orally) renegotiate consent with each participant.

In development research, where we have seen that there is an increasing focus on participatory research, there has been a need for a new framing of research ethics. Traxler (2013) argues that the obvious corollary to participative methods or user-centred research methods must be participative and user-centred research ethics, or perhaps *user-generated*

ethics, which are markedly different from research ethics originating within distant academic institutions. The challenge, Traxler argues, is now to turn this principle into practicality (Traxler 2013). Such considerations will be a point of reflection as part of this study.

Conclusion

Action research is concerned to improve practice, challenge and reorient thinking about practice and transform – through dialogue and collaboration – contexts for learning (Locke *et al.* 2013). It offers a highly contextualised exploration of the collective attempts to improve practice, and the recursive, cyclical approach recognises the possibility of acting differently as a result of learning from practical experience. Given action research is inherently collaborative, it thus offers the opportunity to involve the NGO, teachers and students in the way the mobile learning resource is delivered. The explicit focus on emancipation and empowerment means action research looks to expose and address the underlying (and unequal) social, political and institutional structures in an educational system (see Carr and Kemmis 1986), with a view to deriving new claims to knowledge. Thus, action research aligns to the call for a critical approach to studies of education technology for development.

Yet McAteer (2013) notes it is often challenging to translate such worthy commitments into a rigorous and academically defensible research study. There are a number of ethical complexities to conducting action research in an unfamiliar developing country context and to doing research using personal mobile devices. Indeed, action research offers particular methodological challenges in balancing perspectives and expectations of multiple parties. And, there is a particular challenge in maintaining the dual role between actor and researcher, whilst maintaining a consistently critical and reflective stance. Chapter 4 will seek to present and explore my experiences of conducting the action research in context, and the ways in which I negotiated these difficulties.

4 NEGOTIATING THE FIELD: THE ACTION RESEARCH 'STORY'

Introduction

Chapter 3 has presented a justification for the employment of an action research methodology and an overview of the study design. It also set out the particular challenges associated with the 'telling' of the action research story. The aim should be for the study to be replicable and accountable, but it is also important to reflect on the highly personal and contextual nature of this study. This chapter will therefore present both the experiences of data collection undertaken during each cycle and the methodological challenges that I faced.

Each action research cycle will be addressed in turn, setting out key objectives. For each objective, details of the associated methods or action taken will be provided, as well as important methodological reflections during each stage of the process. The iterative nature of action research means that findings have emerged and evolved within and throughout the research cycles. I will indicate the position of the relevant discussion in the subsequent findings chapters, where the research findings will be set out in detail.

Cycle One: Reconnaissance (June - December 2012)

> "The action researcher is trying to delve into what is happening or what has happened and, as such, needs to ensure that this initial reconnaissance phase frames the rest of the project effectively and accurately, and is informed by as complete a range of perspectives as possible." (McAteer 2013: 66)

The first action research cycle, which I initially termed the research 'pilot', had the following key objectives:

1. To gain familiarity with the Youth Empowerment Program and its English language course;
2. To understand the students' existing practices using mobile phones and motivation to learn English;
3. To demonstrate the opportunities and constraints presented by the technical system;
4. To collaboratively establish the purpose of a mobile learning resource, and the way it should support Youth Empowerment Students in their learning of English;
5. To define and prioritise content features for the mobile learning resource proper;
6. To develop an extensive mobile learning resource to be used by students in Cycle Two.

4.1.1 Familiarisation with the Youth Empowerment Program

My first encounter with the Youth Empowerment Program was as part of a tour of Dharavi with Reality Tours and Travel, as recommended by the NGO's Executive Director. There is a very close coupling of the tour group and the work of the NGO, and understandably so: the latter is funded by the former and the two groups share a number of key staff members.

Teachers and operational staff were, in general, of Indian nationality, while strategic NGO workers were exclusively international. The division in working arrangements was stark. While Indian workers worked from Dharavi, the majority of the international workers operated on a flexible basis – from home, in cafés, with stints on a laptop in the community centre. The hotter the weather or the heavier the monsoon rain, the less likely it seemed that they would be in Dharavi. Many of my first meetings with the NGO to discuss the project took place in neighbouring and more affluent Bandra, where the majority of the international NGO workers lived.

This organisational divide was both striking and influential in the course of the study. I immediately felt that I needed to be more involved 'on the ground' in the work of the Youth Empowerment Program. As McIntyre (1992) argues:

> "Action research is not itself empowering, without the power to take the necessary actions in the first place… *One has to be knowledgeable about the situation, and be known to know it.* One has to be credible in one's role. One has to negotiate one's way into a position to credibly act in a hypothetically effective way." (1992:1; emphasis added)

McAteer (2013:35) is clear to emphasise that any changes in practice fall within the practitioner researcher's 'locus of control'. In other words, I needed to be in a position in which I was enabled or empowered to take action. This required building familiarity with Reality Gives, the Youth Empowerment Program, and the research participants.

I therefore requested an initial period of observation of the operation of the Youth Empowerment Program, including the process by which students were recruited and selected, the initial 'orientation' activities led by teachers for the new students, and some English language learning, computer and soft skills lessons. I use 'observation' in a loosely participative sense. Given the majority of the recruitment, selection and orientation took place in Mumbai's particular form of Hindi, and I did not know any Hindi at this stage, I was largely lost. However, I did my best to join in, grateful for the opportunity to acclimatise and build early relationships with students and teachers. When games were played, I did not benefit from an explanation of the rules and so guessed what to do. My frequent errors were the source of amusement, as was my embarrassment. However, I think showing some vulnerability at this stage was important. With the exception of some of the more confident (and exclusively male) members of the group, most students and some of the teachers were initially reluctant to interact with me. Although I never felt unwelcome as such, a number of students later admitted their intimidation and, in some cases, fear at their first close encounter with a 'foreigner'.

During this time, I learned a great deal about the operation of the Youth Empowerment Program. Observing English language, computer and soft skill classes, I learned of the particular challenges associated with the recruitment and retention of students over the three and a half month long programme; access to and maintenance of adequate computer facilities; and the design of a fit-for-purpose English language curriculum for the classroom lessons, which took place in the mornings and the afternoons, each with batches of up to fifteen students. I was embarking on the study against a backdrop of changing curriculum priorities – a turning point in the organisation's strategic direction (examined in detail in Chapter 6). It was the first of many significant changes in strategy and personnel that would occur during our partnership. I was therefore challenged to make the study flexible in the face of this organisational change.

4.1.2 Understanding students' use of mobile phones and motivations to learn English

I interviewed students and teachers individually in order to understand a) how students were already using mobile technology and b) the motivations for learning English and the challenges they faced in doing so. NGO representatives were also interviewed about the views and hopes for the project. Finally, local mobile phone suppliers were interviewed to get a broader view of the local mobile economy (see Appendix III). These interviews, amounting to approximately 40 in total, took place in just a few days, and I spent the evenings listening to interview recordings, taking notes, and beginning the initial coding process that would inform the next steps in the study.

There were a number of important methodological reflections that emerged from this first batch of interviews. Space limitations in the crowded community centre made it difficult to conduct one-to-one interviews without interjections and interruptions from other students. There was no real facility for private interviews in the community centre, and reluctance from students to move away from their friends. Indeed, many of the interviews turned into focus groups. The English teacher remarked that the set up could be made less intimidating for the students to help them relax:

> "They see you with the silver laptop, the mobile for recording, and they see a foreigner sitting behind a desk. They are thinking it is a test. They are getting a little worried." [English teacher, interview: June 2012]

He made some obvious points and I felt guilty that I had not considered how I was coming across to the students. I was encouraged, though, that already there was evidence that community centre staff were engaged in the research process. I therefore changed the interviewing strategy, making the technology I needed less prominent and adopting a more relaxed seating arrangement.

The requirement for the use of a translator to conduct interviews presented important methodological challenges in this research. Scholars have noted that the experience and expertise of the translator is likely to affect the quality of translations and become especially important during the qualitative coding and data analysis processes (Edwards 1998; Squires 2009). Poorly translated concepts or phrases will change what themes emerge from the analysis and may not reflect what the participant actually said. This threatens, for example, the credibility and dependability of a cross-language study (Temple and Young 2004) and will necessarily form part of the study's limitations.

At this stage, I did investigate the use of an external translator. However, by involving the teachers as translators, I could call for spontaneous support when an incidental conversation with a student proved important. I also believed it helped to support the collaborative nature of the project: by hearing what the students were saying, the teachers were able to reflect themselves on the nature of the project and could provide their own insights, both in the interviews and in subsequent conversations. However, this may have affected the willingness of students to speak openly, and at times the teachers began to answer questions posed to the students directly before the students had been given an opportunity to speak. Indeed, the teachers' grasp of English may have lacked the level of fluency to articulate more complex ideas. My own attempts to converse in Hindi with the students – however poor – were well-received. I decided that actively and visibly trying to learn Hindi could address some of the inherent power imbalances between researcher and subject. Achieving the level of proficiency required to conduct interviews in Hindi was unlikely in the fifteen-month fieldwork period, and so an interpreter would still be required. Nevertheless, there was a strong imperative for me to invest in an intensive Hindi course before the next action research cycle.

Finally, as the interviews progressed, teachers and NGO representatives expressed growing interest in the nuanced and detailed information about the students that was emerging from our conversations. The variety of student motivations to learn English, the linguistic and cultural diversity of the student body, and their particular difficulties in accessing English language learning in the past, was not information the NGO had attempted to collect before. They requested that I provide them with as much of this as possible. However, I was concerned at this stage that the students had not consented to have the information shared in this manner. Indeed, some of the interview data was quite personal. I decided, therefore, that I would construct a short 'profile' of each student, based on the information they had given me. I then requested to meet each student, to go through the content of their profile, asking them to remove, correct or add information that they felt was important. They were offered the opportunity to have their photo taken, and to have their portrait available to view on the wall of the community centre. Not all students wanted this to happen, and I respected their wishes.

However, there was a sense that most students were enjoying the opportunity to tell their story and to be listened to, and to have a presence on the community centre's wall. I hoped that, through the process of co-construction, students would feel that the process of data gathering was less extractive and more collaborative. The student profiles also served as an important subject reflection with NGO representatives and teachers. Emerging findings for each of the first two subsidiary research questions are presented in Table 4. These findings will be examined in detail in Chapters 5 and 6 respectively.

Table 4: Emerging findings from Cycle One

Research Question	Emerging findings
What are young people's existing practices using mobile technology, and what are the resulting implications for the design and implementation of a mobile learning resource in this setting?	1. There is a wide range of mobile handsets and platforms in use, with J2ME and Android the most common; 2. There is significant variability in access to and familiarity with mobile phones, with boys apparently more likely to have a personal mobile than girls; 3. Economically constrained learners use innovative strategies (eg. dual SIM) to minimise costs; 4. Teachers show lack of trust/disapproval towards mobile use within the community centre.
What are the motivations for and challenges presented by learning English for the young people, and what are the resulting implications for the design and implementation of a mobile learning resource?	1. English language skills are strongly linked to employment opportunities and social status in Mumbai; 2. There is a particular lack of confidence in speaking skills, not addressed by current YEP curriculum; 3. Students have variable levels of English learned from various sources (school; college; TV); 4. Students have very few opportunities to practise any English outside of the classroom; 5. The teachers' standard of English is variable; 6. There is a lack of consensus over effectiveness of existing English language curriculum.

4.1.1 What sort of mobile learning?

The early interviews served to help to collectively address two questions: a) in what way should the mobile learning resource support the English language learning of Youth Empowerment Program students and b) what should be the particular characteristics of the mobile learning resource? These two questions needed to be considered within context of the opportunities and constraints presented by the existing technical system.

I drew together the range of suggestions about the purpose of the mobile learning resource that had been put forward in the interviews and focus groups and presented these to the teachers and NGO representatives in a weekly staff meeting. Each suggestion was briefly discussed and clarified, and some members of the group put further suggestions forward. I felt

immediately that some of these suggestions would be extremely challenging and, in some cases, unfeasible. Managing expectations would inevitably be a challenge throughout the project, requiring careful communication about technical and pedagogical limitations.

In consultation with the technical partner, I sought advice on the feasibility of each of suggestions, and the list was then prioritised at the group next meeting. The prioritised list of features (which are not necessarily mutually exclusive) are presented in Table 5 and explored further in Chapter 6.

Table 5. The purpose of the mobile resource

1. The resource should allow students to build review and consolidate what they learn in the classroom
2. The resource should be for students' independent use, outside of lessons
3. The resource should provide support for weaker students
4. The resource should provide extension material for more advanced students
5. The resource should be a diagnostic tool that provides teachers with data on how students are progressing
6. The resource should be a way of bringing students who have very low levels of English up to the required entry level for the course
7. The resource should be something to share with other similar NGO projects.

A particular point of discussion was the issue of how to capture students' learning practices, and whether to attempt to 'measure' student language skills in the manner of an experimental study. Although funding bodies often look for 'hard' quantitative outcomes from experimental study designs to demonstrate the impact of mobile technologies on student learning (Traxler 2013c), we agreed that an experimental design for this study was inappropriate for a number of reasons. First, the sample size available was a maximum of 30 students for each action research cycle, which is likely to be too small a group to reliably detect any statistical effect of the mobile learning resource on students' English language skills.

Second, where students were using the mobile learning resource in an informal manner, as a complementary tool to a taught language class and in a society where students are likely to have high levels of exposure to English in a range of other contexts (street signs, media etc), it would be very difficult to attribute any statistical effect solely to the use of the mobile language resource. As Schenker *et al.* (2007) argue, even in relatively controlled environments such as classrooms or research labs, it is difficult to isolate individual variables and establish causal or correlational relationships between interventions such as digital technologies and learning.

Finally, the NGO expressed an ethical reservation about providing a potentially beneficial resource to one group of students whilst simultaneously depriving another because of the need for a control group. In an interview in the first cycle, an NGO representative suggested that this approach would also be problematic because the students have tight-knit friendship groups, and it would be difficult to prevent sharing of the resources between an experimental and control group.

Instead, it was agreed that a qualitative approach should be taken to understand the ways in which the mobile resources have served to support the students' English language skills, and the strategies or practices they used to engage with the mobile resource.

4.1.3 Opportunities and constraints of the existing technical system

In order to establish the particular characteristics of the mobile learning resource, I felt it was necessary to demonstrate the existing technical system and the sorts of learning activities it might create. I developed a prototype resource, which employed the full variety of features and language activities made possible by the system, and which was pitched at a language level equivalent to the students' current classroom curriculum. I also incorporated some of the emerging requests for features of the mobile learning resource that had been suggested as part of the interviews earlier in the cycle, including locally sourced images.

Prototyping's strength is argued to lie in the construction and iterative development of applications of technology in cooperation with end-users (Ramachandran *et al.* 2007; Rogers 2011). However, Sugar (2001) notes that:

> "users are not expert designers, and designers should not expect users always to know exactly what they want to use… They may not be right all the time, either, and that even though users' opinions must be respected, designers need to present the possibilities and limitations of proposed solutions properly" (Sugar 2001:8).

Details of this prototype design, and its underlying rationale, can be found in Appendix IV.

At the time, although it was becoming clear that the mobile learning resource would need to made available on multiple mobile platforms to accommodate the diversity of mobile handsets in use by the students and their families, there was not time for the required technical development to make this possible during Cycle One. Instead, five trial Android phones, bought in Dharavi specifically for the project, were made available to the students in order for them to trial the prototype resource.

The prototype was only a short set of resources, comprising approximately 20 minutes worth of activities. Each student in the group was given the opportunity to take the phone away for one night to use the resources, on a rotating basis. Teachers were concerned about trusting the

students to return the phones on time and in good condition. Students therefore were asked to sign a form to confirm they would comply with the project requirements (see Appendix VI). I made the students aware that a) they would be asked for their feedback on usability and content of the resource and b) the software would log their activities and this data would be collected. At this stage, the log data was only to be used as an indication that the logging feature was operating correctly and that students had indeed engaged with the resources.

At the end of the trial period, students were gathered in groups of seven or eight for focus groups to gather feedback on the resources. The focus group employed questions relating to the mobile learning resource, set out in the interview schedules in Appendix III. The facilitation of groups was challenging, especially because I needed to allow time for translation. I made sure that each student was given a chance to respond, but more confident students often dominated the groups. One of the concerns of NGO representatives was the eagerness of students to please, and the resulting difficulty in gathering honest feedback on interventions. I made clear that it was important for them to be as honest, and as negative, as possible, because their feedback would help to improve the intervention for future students. A set of desirable criteria for the mobile learning resource was compiled as a result of these discussions, and is presented in Table 6.

Table 6: Desirable criteria for mobile learning resource

Technical criteria	**Pedagogical criteria**	**Implementation criteria**
1. The resource should be free to use 2. The resource should operate independent of a network connection 3. It should have compatibility across as many of students' personal handsets as possible 4. Where students do not own personal devices, they should be able to use the software on loan devices.	1. It should be aligned to learning objectives of "English for Employability" at CEF A1 Level.[9] 2. It should support correct models of pronunciation in a range of spoken accents (including UK, US, Indian); 3. It should provide material to support vocabulary, listening, reading and writing skills; 4. It should provide Hindi translation for more difficult vocabulary concepts; 5. It should contain locally relevant images and scenarios.	1. There should be a code of practice to encourage respectful use of mobile devices in the community centre 2. There should be support for students who are unfamiliar with mobile devices

9 The Common European Framework of Reference for Languages: Learning, Teaching, Assessment, abbreviated as CEFR, is a guideline used to describe achievements of learners of foreign languages across Europe and, increasingly, in other countries.

4.1.2 Developing the mobile learning resource proper

At this point, I returned to the UK for a period of five months, during which time I worked to develop a set of learning resources according to the agreed criteria. This entailed the drafting of the individual activities that would align with the learning objectives set out in the classroom curriculum, the commissioning of audio recordings, the collection of image files to be incorporated into the resource, the assembly of these assets using the online technical system and the testing of software to check for system bugs and content errors. A more detailed justification for the structure and design of the resources will be presented in Chapter 6.

I also attended intensive Hindi classes and maintained contact with teachers and NGO representatives to share with them the developing learning activities to make arrangements for the next cycle. Whilst I was happy to work on these resources myself, I would have preferred, in line with the collaborative intent of action research, that teachers and NGO representatives were more involved in the actual business of resource development.

> "There is a fine line between offering to do things for others so you don't demand too much of their time or effort; and taking their involvement away from them completely. It doesn't help that I've come back to the UK, either. (Reflective diary; June 2012)

As a researcher and facilitator of the project, I reflect on the extent to which teachers and NGO representatives could have been more engaged in the research and associated action a number of times throughout the process, and I will address this issue again in Chapter 8.

Cycle Two: Implementation (January – May 2013)

The second action research cycle was the cycle for which I spent the longest in the field and collected the largest volume of data. I had the following key objectives, which will be addressed in turn:

1. To reestablish aims of mobile learning resource and terms of its implementation;
2. To better understand the students' existing practices using mobile phones and motivation to learn English;
3. To distribute the mobile learning resource to a group of Youth Empowerment Program students;
4. To collect data on student use of the resource, and student teacher and NGO feedback;
5. To define revisions to design and implementation of mobile learning software.

4.2.3 To reestablish aims of mobile learning resources and terms of its implementation;

After a short delay while waiting for a complete set of thirty students, I once again introduced the purpose of the project and invited students to participate. I was advised by NGO

representatives to wait for at least two weeks before actually distributing the mobile software, because there tended to be fluctuation in student numbers. Indeed, there was considerable movement over these first two weeks, and the final number of student participants reached 27. Two volunteer English Teachers, recruited by Teach India, the curriculum provider, had joined the community centre teaching staff. They taught the morning batch of students on alternate days. I conducted introductory interviews with each of them, explaining the project resources and the rationale behind their development. This explanation included the way in which the mobile resources aligned with the classroom the curriculum and were available for the students to use to support their classroom learning outside of class time. I also offered the opportunity to trial the resources. One of these teachers would only take up this opportunity if it could be used on her iPad (which was not possible at this stage).

As will be discussed in Chapters 6 and 7, these volunteer teachers showed limited interest in the mobile learning resource, largely, I believe, because it was beyond the scope of their voluntary work with Teach India. Given the growing emphasis on the role of teachers in the design and implementation of mobile learning resources (see Chapters 7 and 8), I would have liked, for example, to encourage them to incorporate the mobile learning resources into the exercises set for homework, but this was largely out of my 'locus of control' (McAteer 2013). The teachers would often arrive the moment their class was due to start and leave immediately afterwards, and were not involved in any staff meetings. This meant that I struggled to establish any sort of collaborative relationship with them during this second action research cycle. I nevertheless maintained a strong partnership with Reality Gives' full time English teacher, who taught the afternoon classes.

4.1.3 To better understand the students' use of the mobile phones and motivation to learn English;

I undertook individual interviews with students, learning from my experiences of conducting interviews in Cycle One. With a greater initial understanding of student practices using mobile phones, and motivation to learn English, these interview schedules were revised and improved (see Appendix III). The little Hindi I had learned proved very useful in working with a translator. I could often tell, for example, when a translator was paraphrasing or had missed an important point, and I was able to query the use of particular terms. I also introduced myself to each student in Hindi, and told him or her I could understand just how difficult it was to learn a new language to show a degree of empathy.

This time, the NGO requested that student profiles were constructed as I had done before, and so I was able to negotiate consent for this process from the outset. The interviews, and

subsequent reflection on the data, provided a more detailed picture of both the students' use of mobile devices and the challenges they have faced in learning English. These additional findings are presented in Table 7.

Table 7: Emerging findings from Cycle Two

Research question	Emerging findings
How are the young people already engaging with mobile technology, and what are the resulting implications for the design and implementation of a mobile learning resource?	1. The mobile economy in Dharavi is shifting with the decline of Nokia and the rise of cheaper Android devices. 2. Mobiles are imbued with a range of meanings for young people – for some they are integral to their livelihoods; for others they are 'risky' devices banned or controlled by parents; this appears to be affected by gender and life stage. 3. Mobiles are lost, replaced or exchanged with great frequency, presenting major problems to continuity of use and log collection. 4. Students unfamiliar with mobile phones were exposed to potential risks (eg. harassment via SMS, mobile scams). 5. Technical problems, mainly relating to compatibility and installation, were relatively frequent, although quick to resolve.
What are the motivations for and challenges presented by learning English for the young people, and what are the resulting implications for the design and implementation of a mobile learning resource?	1. Large number of requests for Hindi translation from students to support vocabulary learning. This sits at odds with the immersive approach to English language learning espoused by the Teach India curriculum. 2. 4 of the 27 students are not able to read Hindi script, so accompanying written materials were not useful. Much of the NGO's recruitment advertising will also be ineffective for this group. 3. Students call for more resources within the mobile resource that support 'conversation' and spoken English.

4.1.4 To distribute the mobile learning resource to a group of Youth Empowerment Program students;

As will be set out in Chapter 5, it was decided that those students with compatible personal mobile phones should receive the software on their own phones. Where students had incompatible phones, or did not own personal mobile devices, they would be provided with access to the software via loan devices that needed to be purchased specifically for the project. Due to the difficulties of sourcing large numbers of the same model of handset in the community, eight of these phones were Nokia 6303i and ten were MicroMax Smarty

(Android smartphones). As the students were attending in morning and afternoon batches, the students requiring a mobile in the morning batch received Nokia 6303is and the students in the afternoon batch received MicroMax Smarty devices. This was not an ideal scenario, given the differences in usability of feature phones and smartphones. However, it did allow the software to be tested on a range of devices, and observations on student reactions and negotiations of the different platforms. I preinstalled the software on each of the loan handsets. They were distributed amongst students, without SIM cards. Student agreements had to be signed before students could take the phones away with them. For the remaining students, I asked them to bring in their phones and installed the software on individual devices while they were in classes.

Students were provided with a user guide linked to the mobile platform they were using (see Appendix VII), which was translated in Hindi orally (and later in writing). I led an introductory session which explained the operation, structure and terms of use of the mobile learning resource and the Reality Gives English teacher acted as translator. This session revealed some interesting insights and raised questions about the most appropriate way to introduce the resource:

> When I handed out the student phones, in their boxes, with instructions, some students did not touch them, waiting patiently. Others (mainly boys) had the phones out and were using the software almost immediately, before I had even begun to explain how the training would work. It seemed entirely intuitive for them so I wonder if training is even necessary. They were also quick to show others how it worked – maybe there is potential here for peer learning next time? Within ten minutes the room was full of the beeps and buzzers incorporated into the software…rather less controlled than I had intended. [Reflective diary; January 2013]

Students were also encouraged to take the phone home with them for one night, use the software, and return to explain any problems they had encountered. Over that first month, I recorded all student technical problems in an 'issue log', which set out the nature of the problem and they way it was resolved. This proved important to understand the sorts of technical problems that were likely to occur. If this project was to be sustained in the longer term, these problems would either need to be addressed by a changed technical specification or by training a member of staff to deal with them effectively.

4.1.5 To collect data on student use of the resource, and student teacher and NGO feedback;

I remained in Dharavi for a period of six weeks after the mobile resource was introduced. During this time, I observed the ways in which students were using the mobile learning resource in the community, keeping detailed field notes and logging and addressing any technical problems they encountered.

As set out in Chapter 3, the learning resources had a logging function, which recorded when, with which parts and how successfully each learner engaged with the software. These logs were collected manually by copying a file from the memory card of each device.[10] By downloading and examining the logs regularly, it was possible to identify patterns of use, and the logs represented a way to cross check the learners' own accounts of the ways in which they had used the mobile resource. Boase and Ling (2013) note the difficulties in asking research participants to remember or to characterise their own use of technology. Perhaps most crucially, the logs provided a basis for discussion with each learner, and at times with teachers, to understand and challenge apparent patterns of engagement.

Although a number of studies have employed logging as a means of data collection (e.g. Kam 2013; Kumar *et al.* 2010), the use of log data as a basis for interviews is a relatively underused methodology. Wali *et al.* (2012) recommend that log data should be used in conjunction with other qualitative methodologies. For this reason, I include three practical examples below, with a view to emphasising the advantages of this approach.

Sunita

Sunita's logs suggested that her software was used extensively during the early mornings, afternoons and evenings. However, from initial interviews, I knew that Sunita was attending a local college each morning to study for her Bachelor Degree in Commerce. I brought up the pattern of use from the logs during an interview, and Sunita explained that she left the mobile phone at home with her three brothers and sister while she was at college, so that they were able to use the resource. In fact, she tended to use it early in the mornings, after she had finished her household chores and before she attended English classes at the community centre. In this example, the logs were misleading, but discussion of them lead to an understanding of regular patterns of sharing within a family.

Anil

Anil displayed enormous enthusiasm for the mobile learning resource, expressing thanks for the opportunity to participate in such a project. He explained during initial interviews that he found the resource extremely helpful and used it extensively. However, his logs suggested that the extent to which he had engaged with the mobile learning resource over the first two months of the study was extremely limited. One of the teachers explained that young people would be eager to please a foreigner, and understand that this was an exciting opportunity. In

[10] The particular limitations of this approach will be addressed in Chapter 7.

this example, cross-checking participant accounts with logs helped to dig beneath the misleading accounts of participants.

Amreen

Amreen was unfamiliar with mobile technology and, although enthusiastic about the concept, struggled to understand how to use the software. During the first two weeks, she explained that she did not understand the mobile resource. She claimed to have completed the activities and couldn't understand why it was just "words and pictures". However, on examination of the log files, it was clear that she had only accessed the dictionary and settings icons within the software and had not found the body of learning materials. It was subsequently possible to arrange another student to support Amreen in making more extensive use of the software.

Using software logs in this study provided both important methodological opportunities and represented a limitation in the study design. The above examples illustrate the value of using software logging alongside other qualitative research methods in this action research study. During student interviews, they provided a means to prompt students' own reflection on their use of the resources. However, the process by which logs were collected was a manual one, both time consuming and intrusive, especially when the software was being used on students' own mobile phones. Indeed, the logging function took place within the software itself, which meant that where software was deleted, or a phone was stolen, there was no way of retrieving logs remotely and the data was lost. This risk was managed by collecting logs on a forntightly basis where possible. As will be set out in Chapter 5, the frequency with which handsets were lost, stolen, exchanged and sold was great, and despite explaining to students that it was very important to preserve the software, nearly half of student logs were lost or incomplete.

During this time I also wanted to offer some form of reciprocation for the support provided to me by the NGO. I therefore worked on the teaching and development of a conversation curriculum for former students of the Youth Empowerment Program, and designed some assessment tools for the NGO to assess the overall impact of their projects in Dharavi. Hammersley and Atkinson (2007) are suspicious of this kind of additional activity. Whilst they recognise a spectrum going from complete participation (which they define as covert research) to complete observation, their sentiment is clear: the 'researcher' role must come first. They feel that participation takes up too much sheer time and energy (2007: 84). There were times when I felt that I was under pressure to meet other deadlines, and that the activities I was involved in were distracting from the core business of the research. However, I gained many valuable insights from working with other students, particularly in conversation classes with former YEP students (many of whom had been involved in Cycle

One). These insights meant I could explore and expand upon in other research activities. Indeed, Mills and Morton (2013) are in favour of this approach:

> "..our own feeling is that some form of active participation is the best way to observe and record the issues you seek to comprehend. It is not easy, but can be very rewarding. Being honest about the way we become 'entangled' with our research and our participants is key" (2013:44).

With the students having been using the phones for six weeks, I left the field. The decision to do so was partly practical – I had other commitments in the UK – but also offered strategic advantages. What would happen in my absence? To what extent would the lack of my own presence influence the use of the mobile resources? How would staff deal with technical problems? If such a project was to be sustainable, these are all important questions.

> When I left, I addressed the students in broken Hindi. The gist of my speech was simple. "Thank you for helping with this project, your feedback is very important to me, please tell [X] if you experience any problems, I will return on [X] date and look forward to speaking to you about how you have been using the software." I had, of course, sought some help in correcting my errors and had written out what I was going to say in transliterated form on a scrap of paper. Cheating, you might say. It was quite a daunting task nevertheless, and the students immediately commented on my nervous and flushed demeanor. As I spoke, an intimidating number of mobile phones were thrust towards me in the manner of news reporters, the students eager to capture such a rare occurrence - a foreigner speaking Hindi. (Reflective diary; March 2013)

This incident illustrates the way in which mobile phones were used to capture the unusual and the significant. And they offered a means to share glimpses into the lives of the young people beyond the community centre. I was privileged to pictures and stories of younger siblings, children, engagements and weddings through photos and videos captured on their mobile phones. One of the students became one of the principal photographers at her sister's wedding because she possessed the Android phone from the project. And I shared some of my own: pictures of my fair skinned-family and the unfathomably green England that appeared to intrigue students. They even requested that I collect more pictures while I was back in the UK to show them on my return. This kind of reciprocity was important in fostering a collaborative relationship with the students, and helped to compensate, I felt, for the rather extractive nature of the more formal forms of data collection.

On my return, a month later, the Youth Empowerment Program was coming to a close. I sought to gather a range of data on the ways in which the students had engaged with the learning resources. I interviewed each of the 27 students individually (using the schedule set out in Appendix III), and collected in loan handsets. I made a number of observations whilst undertaking this process:

> "It was the end of the Youth Empowerment Program and, after the interviews, those students who had borrowed devices had handed them in. It had not been an easy to prise them away, and some students were several days late. There was a lengthy process as they removed their personal photos, music, ringtones etc from the memory card and transferred them on to their own storage devices. Sometimes I needed to do this for them because they didn't have a computer to manage the process, or didn't know how. Ethically, of course, it was not right that I had access to this content unless they chose to show me. Eventually I collected a full set of phones, with only a few broken accessories as collateral damage, and took them back to my temporary residence in Bandra. I would extract software logs the next morning.
>
> At 4.25 am, I was woken by an irritating beep. It was coming from the box of phones. A student had clearly forgotten to stop their daily alarm. I found the culprit, turned off the alarm and tried to sleep. But a whole series of alarms followed: 4.35; 4.40; 4.50: 5:15… These students woke up early. The final alarm was coming from the phone at the very bottom of the box. The screen flashed with a disturbing image: it was a photo of me, from eight or nine years ago, at a university dinner. A former Facebook profile picture, this student must have gone to the trouble of finding my profile (we were not friends) downloading the photo and using at the homescreen picture. I checked the list of phone IDs – the phone had belonged to Sulekha, an eighteen - year - old girl from a strict Muslim family. I was embarrassed that a photo illustrative of my life as an undergraduate in the UK (holding a glass of wine, wearing clothes I wouldn't dream of wearing in India) had been so prominent in her experience of the project, and in her home. Whether we like it or not, our lives are increasingly traceable through digital media and bound up in our own research, and we, as researchers, have unavoidable influence on our research participants. My fascination with the participants in the project was, in some way, by some students, reciprocated. It was an uncomfortable but important lesson to learn. [Reflective diary; April 2013]

This is a description that, to me, represents a 'critical incident' – an event that Tripp (1993) argues to be a "significant turning point or change in practice" (1993:8). It was a reminder of the intensely personal nature of a mobile phone, and how this sits uncomfortably with the provision of a loan device for a time-limited project. Dearnley and Walker (2009) and Pachler (2009) note there are particular challenges associated with gaining informed consent when conducting mobile learning research. The practices that are being investigated are on personal devices, and intimately bound up with the lives and relationships of the students, and take place in a private sphere (Pachler 2009). In particular, gathering log data from personal devices can be seen as an invasive research method (ibid). While, from an ethical perspective, I did tell the students what was going to happen, but I fear that neither the students, nor myself or the other research participants, had thought through the implications of the ways in which young people were going to make personal and appropriate loan devices during their period of use.

This description also highlights the fact that, at times, I have found my own centrality in the research process unsettling, accompanied by a perception that it will produce subjective, and therefore invalid, research. However, McAteer (2013:33) argues that a particular strength in

action research is the acknowledged location of the practitioner right at the heart of the process. By having 'I' at the core of the action research question, it is "deeply personal and contextualised, drawing on the values and beliefs of the researcher, and challenging him/her to reconcile those values and beliefs with practice" (2013:33).

McIntyre (1992) emphasises that action research automatically gives a clear formulation of the researcher's position in relationship to the research and the situation. All false assumptions of a positivist position, and all of the difficult and ambiguous aspects of research such as participant observation, are removed by saying "I'm an actor for real in this situation – and I'm making it that clear and open" (1992:1). This, he argues, avoids problems of claiming to be disinterested, but rather states the researcher's own interest as an engaged actor (ibid.).

4.1.6 To define revisions to design and implementation of mobile learning software;

Through early coding of interview data, phone log data, observation data and fieldnotes, I began to formulate emerging findings. I had one week to do this, and it should be noted that the volume of data was large and, at times, overwhelming. However, I worked through this list in an NGO staff meeting, and in focus groups with students (of a smaller size – 4 or 5 – than in cycle one) to prompt reflection on the emerging findings and the implications for the design and delivery of the mobile learning resource. Selected findings and implications, and whether they were taken forward, are set out in Table 8 but will be discussed in detail in Chapter 7.

Table 8: Suggested modifications to mobile learning resource

Suggested system modifications		**Suggested additions to learning activities**		**Suggested changes to software implementation and support**	
Install app via Bluetooth where possible	✓	Student vocabulary suggestions	✓	Teachers to make greater reference to mobile activities that supplement classroom curriculum	×
Multi-user function (to track different family users at home)	×				
Develop a means to track app sharing	×	More difficult extension material for advanced learners	✓	Involvement of parents at early stages in cycle	✓
Means to collect software logs remotely so that they can be monitored by teachers	×	Activities to support "conversation"	✓	Appointing peer mentors	✓
		Hindi translation	✓	More consistent and readily available technical support	✓

I then returned to the UK for a period of one month during which time I worked to refine learning resources accordingly and to put together training materials that covered issues of risk and responsibility when using a mobile phone. The heat of Mumbai in May meant that

the Youth Empowerment Program was suspended for one month, and was due to begin again in June. It was my intention to return for the beginning of this next cycle.

Cycle Three: Detachment (May– October 2013)

The original objectives for the third action research cycle were as follows:

1. To deliver the mobile learning resource to approximately thirty students;
2. To train staff and NGO representatives to implement and manage the intervention, so that it could run in the absence of the researcher;
3. To collect data on student learning experiences; teacher experiences of implementation; and NGO perspectives on the intervention;
4. To review the criteria for the design and implementation of the mobile learning software according to student and teacher experiences and NGO perspectives.

However, there was a turbulent period in the lead up to the beginning of the third cycle. A senior member of the NGO had resigned unexpectedly for health reasons and with almost immediate effect. I did not have time to fly out for a debriefing before the position became vacant. As a result, the Youth Empowerment Program start date had been significantly delayed. There was a high level of uncertainty hanging over the initiative as a whole, particularly in terms of English teachers and availability of Teach India resources. I had already booked my flights, and so, with little information and with the loss of a key participant in the project, I decided to return to Dharavi, unsure whether the cycle would be able to take place as planned:

> I approached the Ashayen Community Centre with some trepidation. I knew things would not be quite as I had hoped. A sudden change in management would almost certainly hinder business as usual, and a hindrance to business as usual meant that my study had an uncertain future. There were piles of rubbish at the top of the cast iron steps. The bins clearly had not been emptied for some time. Mice and cockroaches were feasting on the overflowing debris. Inside the community centre, the floor was strewn with waste paper and chocolate wrappers and the once vibrant green desks and benches lie in disarray. In the middle of the room, swinging on an office chair, was the English teacher, engrossed in a YouTube video that he was watching on one of the student smartphones. "We have no students," he said. "There is nothing for me to do." I suggested we might begin by cleaning up. [Adapted from fieldnotes: June 2013]

I sensed general feeling of apathy amongst the teachers in the absence of leadership and the intense summer heat. While recruitment for a new leader for the organisation took place, I worked to encourage the recruitment of students as we had done in the previous cycle, so we might have students ready to begin. Delays continued for a full month and, unable to change my flights due to family commitments in the UK, my time to establish a third action research cycle was increasingly limited. However, the following activities were undertaken:

4.1.7 Training of staff to install software and train students

I worked with teachers and a dedicated member of the NGO team to ensure that they could manage a) the installation of software onto student handsets (see Appendix IX) and b) they had the resources to train students in their use, and associated risks (see Appendix X).

4.1.8 Initial interviews with students

Although student batches had not yet been confirmed, I obtained consent from 24 students to undertake initial interviews (using the outline schedules in Appendix III) and to establish the number of personal mobile phones and compatible handsets.

4.1.9 Preparation of phones for distribution

Working with NGO staff, I made sure the loan devices were loaded with software and headphones and chargers were working and that they were ready to distribute to students as required.

It was not possible to distribute the phones to students before I left Mumbai because the batches of students were not complete or confirmed. I was therefore forced to leave the initiation of the project and distribution of phones and software to community centre staff. At the time this felt like a serious failure in the study design. It was not what I had intended, and I would lose the opportunity to gain insight from the initial stages of the cycle, but at least it would allow the NGO to deliver the intervention on their own, and we could collectively learn from this process. This experience emphasises the importance of being able to maintain flexibility to deal with unexpected circumstances beyond the control of the researcher.

During the two months I spent away from the field (July and August 2013), I kept in contact via email and Skype, and was encouraged by reports of progress. However, the main English teacher left the NGO in August. For the study, this meant a major loss of another key participant and further continuity for the action research study.

I returned to Mumbai in September 2013, having maintained contact with other NGO representatives. I discovered that loan devices phones had been distributed to sixteen students and the software had also been installed on four students' personal handsets. However, no training had been delivered, and few technical issues resolved. Students had received very little support or encouragement on the use of the mobile learning software. I felt that this cycle had failed to build successfully on many of the lessons learned in Cycle Two.

Nevertheless, I conducted interviews (using the schedules outlined in Appendix II) and collected log data where possible to understand the ways in which students had been engaging

with the resources. While some had abandoned the intervention due to lack of clarity or technical problems, fifteen students had engaged in different ways with the mobile software and were able to articulate their experiences in interviews. These findings were surprising to me – I had perhaps wrongly made an assumption that the absence of a comprehensive introduction to the project and close monitoring would make it difficult for students to engage with the mobile learning resource. For many students, this appeared not to be the case. These findings are incorporated into Chapter 7.

At the end of this third cycle, there was an important opportunity to debrief with NGO representatives and teachers. This was to be my last extended period of fieldwork, and the last action research cycle. I conducted a series of lengthy and reflective interviews in which we discussed the future of the project and the lessons we had learned from the process. An analysis of these discussions is included in Chapter 8.

Beyond the action research cycles (October 2013 – present)

There was consensus from the NGO that they wanted to continue using the mobile learning software with Youth Empowerment Program students, using the software and training resources I had developed. We agreed that I would help to facilitate this remotely and this remains the focus of our continuing partnership.

Key objectives for this ongoing work are as follows:

1. To allow the NGO to run the intervention independently;
2. To facilitate wider distribution channels for the mobile learning resource eg. via app stores;
3. To periodically monitor, student, teacher and NGO perspectives from a distance.

To date, the mobile software has been made available for distribution on the Android platform via the Google Play Store and the NGO has been employing the software with students of the Youth Empowerment Program (see Appendix XI). They have arranged local distribution of the app (via Bluetooth) for four other NGOs in Mumbai, distributing the application to more than 100 students (see Appendix XI). However, I understand that, due to the more technically demanding nature of the installation process on Nokia phones, and the increasingly common ownership of Android devices, this distribution has been solely via the Android platform. The implications of these activities will be addressed in Chapter 8.

Conclusion

In this chapter I have offered an account of the process of conducting action research, the challenges I faced and some of my reflections on this process. I have alluded to emerging findings, and their implications for changes to practice as the action research cycles progressed. The iterative and reflective nature of action research means this is necessarily an incomplete account, but it serves as an important framework onto which the next four chapters can build in order to provide depth, understanding and theoretical propositions.

This chapter has also illustrated the way in which an action researcher needs to be able to balance heavy involvement in the implementation of the project with a consistently critical analysis of the situation for research purposes. The researcher is coupled so closely to the situation that they may lose the critical stance (Checkland and Holwell 1998). Monitoring closely this practice as well as acting within it demands space and time, which, almost by definition, the practice does not give easily. I therefore found the intense periods of data gathering and critique quite challenging.

Action research tends to be carried out by individuals who are interested parties in the research. While this is arguably a strength (as has been set out previously in this chapter), it has led to criticisms of the validity of the research process, with accusations of inevitable researcher bias in data gathering and analysis (see for example Gibson 1985). Action researchers draw attention to the notion of commitment. An action researcher must be committed to rigorous examination and critique of his or her practice. Carr and Kemmis (1986) liken this conceptualisation of commitment to the Aristotelian notion of *phronesis* – "the disposition to act truly and rightly" (1986:32). It is the degree to which action researchers are committed to this critical analysis of their practice that provides the true measure of reliability in data gathering.

Many authors acknowledge the 'messiness' of action research, and the importance of articulating this mess. From Schön (1983) talking about the 'swampy lowlands' through to the work of Mellor (2001) and Cook (2009), the importance of this 'mess' as a place where thinking changes, interpretations are challenge and meaning is made, is stressed. These authors would argue that this mess brings value and rigour. Indeed, Cook suggests that it is 'vital to research that it seeks to engage in contesting knowledge leading to changes in practice' (Cook 2009:285). This chapter has, I hope, gone some way to articulate this 'mess', and in describing it is hoped that the study also maintains a methodological rigour and transparency.

Finally, McAteer (2013) suggests that action research can also present a surprising emotional challenge. The role of emotions in research often discussed in action research texts, exposing researchers' feelings of vulnerability, confusion, insecurity and so forth, and I have tried to weave in indicators of this throughout this chapter.

The next section of this thesis will now present the study findings. In each findings chapter, a particular analytical device, akin to the vignette, will be used to illuminate the importance and variety of the individual experiences of students: the ethnographic portrait. According to Mills and Morton (2013), "the strength of ethnographic portraits lies in the way they communicate the complexity of theoretical ideas through imaginative writing and individual stories. The very term 'portrait' is a helpful one, for it emphasises the deliberately crafted nature of the accounts. Portraits are not aspiring to be 'true' representations, holistic representations or complete 'life histories', but rather are deliberately partial accounts and encounters" (ibid. 2013:88). These portraits have been carefully constructed from between two and four interviews with each student, periods of observation in the community centre and, sometimes, time spent in student homes. Teacher reflections, either from interviews or incidentally, that relate individual students, are also incorporated, as are notes from my reflective diary to add to the narrative. The portraits also include my own interpretations of events, attitudes and emotions.

Whilst I believe these portraits are a powerful means of portraying the variety of student experience, a number of criticisms might be leveled at their use. How, for example, have I ensured that these accounts do not demonstrate a misuse of what Adams (2008) calls 'narrative privilege'? How have I ensured that a portrait full of complex and changing relationships and events is not simply my own version? Boyd (2012) talks of 'layered stories' in which narratives from different perspectives on the same person or event are used to construct a final narrative that is more representative of the 'reality of the situation, thus suggesting that the content is more reliable and trustworthy' (2012, in McAteer 2013). Indeed, McAteer (2013) suggests that the construction of a non-judgmental narrative around the portrait, and the clear demonstration of alternative perspectives, can be skillfully done so that the finished product maintains analytical integrity (2013:128).

STUDY FINDINGS

5 THE PLACE OF MOBILE TECHNOLOGY

Introduction

> "Young people's experiences [of technology] do not operate in a vacuum. They take place in a social context, one which is *supported and constrained by social laws and practices, norms, stereotypes and expectations* of the family and [the young people] themselves" (Davies and Eynon 2013:5; emphasis added).

There is a growing recognition that the study of technology should not be understood "simply in terms of its functions, but has to be reconceived in relation to people, practices and purposes" (Oliver 2012:442). Indeed, as Chapter 1 has shown, there is an imperative to position mobile learning interventions in a manner that is both informed by and sensitive to the local contexts in which they are situated (see, for example, Selwyn 2013; Pegrum 2014; Unwin 2009). It follows, therefore, that a sensible starting point for the design and implementation of this study's mobile learning resource should be a detailed understanding of the ways in which the learners are already employing mobile technology in their lives. To this end, the first findings chapter of this thesis will address the following subsidiary research question:

> What are young people's existing practices using mobile technology, and what are the resulting implications for the design and implementation of a mobile learning resource in this setting?

Chapter 4 has already provided an indication of the findings that emerged during successive action research cycles. The purpose of this chapter, therefore, is to explore these findings and to formulate understandings about the place of mobile phones in the lives of the young people in Dharavi. It should be emphasised that the discussion in this chapter relates to young people's access to and engagement with mobile phones before they use any the mobile learning software that is developed as part of the action research. This means the supporting data has largely (but not exclusively) been collected at the beginning of each action research cycle.

The discussion will first draw attention to the presence of a dominant discourse emerging from participant responses: excitement about the potential of ubiquitous mobile technology to empower and to provide opportunity to a marginalised community. However, beneath this discourse, there is a complex picture of access, ownership and engagement with mobile technology for the young people enrolled on the Youth Empowerment Program. While there is a growing recognition of the divisions in access to mobile devices according to gender (see Chapter 2), the discussion in this chapter seeks to provide a more nuanced picture of digital inequality. I will argue that such a picture is indeed closely related gender, but also to the life stage and socio-economic circumstance of the young people, and influenced by a rapidly

shifting local mobile economy. The mobile phone, therefore, is far from a neutral device that simply *delivers* educational content. Rather, as a piece of technology, it serves to both reinforce and challenge social norms and expectations in this community.

This chapter will then turn to the implications of these understandings for the development and delivery of the mobile learning resource for Youth Empowerment Program students. Through a presentation of the 'multi-directional conversations' (McAteer 2013) that took place between action research participants, the discussion will address key decisions that were made during the course of the study, including the choice of mobile platform, the methods for installation, the provision of technical support and the encouragement of the safe and responsible use of mobile devices.

Technology, opportunity and empowerment: A dominant discourse

During interviews and incidental conversations that took place over the course of the action research study, mobile phones were often described as a near-ubiquitous, essential utility amongst the Dharavi community. "Mobile phones for young people are a basic need. They are everywhere," says Reality Gives Guide who acted as a translator for some of my earlier interviews. And, as the interviews progressed, I gathered statement after statement about the value of mobile phones as integral for conducting business, for communication with distant family members in *ganv*, "native places", outside of Mumbai, as means to access the Internet, a link to social media, and even a link to "modern" Western culture, predominantly via YouTube.

Sometimes these statements were highly personal, relating to the ways in which mobile phones act as enablers in their own (or their families') lives. However, almost as often, these statements were less specific to students' own circumstances, and rather served as commentary about the wider community and society as a whole. Examples of these contrasting statements are illustrated below, with a) representing the former and b) (a statement made by a student with no access to a mobile phone or computer), the latter:

a) "I need my mobile for everything, my business [a belt making company]. We take orders everyday, make calls, order stock. You see everything depends on the mobile." (Cycle Three; Mahaj)

b) "Nowadays these mobiles are everywhere. They are really very important for people. They are like a link to friends, to every part of life. People are always on these mobiles…chatting, FB [Facebook]." (Cycle Two; Sarita)

Davies and Eynon (2013) note that "in many countries, the dominant discourse about technology tends to be relatively upbeat, with many seeing new technologies as offering a

great number of opportunities for the individual and for society as a whole" (2013:6). This discourse is certainly discernible amongst the responses of participants in this study, but it is interesting that some of the young people express awareness of such opportunities without positioning themselves as beneficiaries. In other words, they show awareness of a digital mainstream to which they do not necessarily belong.

For many families in Dharavi, the possession of technology, be it a mobile phone, a computer, or a television, is a source of excitement; something to be proud of. I noticed the prominence of technology during some visits to student houses:

> Sunita's compact first-floor family dwelling is accessible via a precarious iron ladder above Kumbharwada, the potters colony in Dharavi. It is a single room, dimly lit and containing a single bed for a family of five. A few crumpled pieces of material lie on the uneven floor. "This is where we are sleeping," she tells me. One end of the room has a small stove, a water bottle and a collection of pots and pans. The other end of the room is entirely taken up by a desk, surrounded by family photos and a small Hindu shrine. "And here is our computer," Sunita announced proudly. She explains that it was new purchase, for which the family have been waiting a long time. It is mainly for the use of her older brother, who is trying to start a business, but she enjoys sitting behind him and watching him use it (Adapted from reflective diary: Cycle Two).

> Falak lives in one of the concrete tower blocks on the outskirts of Dharavi, close to Mahim station, the product of one of the many redevelopment attempts of the slum area. The main room has just enough space for a double bed, with the majority of the nine family members' belongings stored in the cupboard-like room next door. A small alcove is home to the kitchen stove, where Falak's mother is busily making biryani. When I arrive, Falak's four younger siblings are lined up on the bed, transfixed by a flat screen television that dwarfs the room. Gangnam Style is blaring, and the children imitate the globally familiar dance moves. "We love TV," Falak explains (Adapted from reflective diary; Cycle Two).

Indeed, when young people do have an opportunity to own or carry a mobile phone, many of the study participants observed that the devices served as a means to indicate individual success and social status:

> "I've noticed since I came to India in 2002 that the phone has become something that gives people independence, like an important statement about who they are. It's like, in the West, you'll buy a car, you'll buy a house. Here, people don't have the same financial capability, let's say, so having a phone…it's like "Hey, look at my new phone." They laugh at me and my crappy Nokia, because for them a phone is a status symbol. It's what they can afford" (Senior NGO representative; September 2013).

I also observed this tendency on many occasions in the community centre. A new purchase, often a smartphone, would be on display, new features discussed, comparisons made about size, speed and cost, with devices of their peers. It should be noted that this pattern of behaviour was almost exclusively limited to young men enrolled on the Youth Empowerment

Program. With this in mind, the important influence of gender will be discussed later in this chapter.

There was also a strong and recurring observation by teachers and NGO representatives that using technology is itself an empowering process for the young people. The project I was proposing to them therefore had a strong institutional "fit", which was emphasised on numerous occasions during interviews:

> "It makes perfect sense to use mobiles. They are already here, familiar to everyone. And we want them to learn to use technology more productively to give young people ways to grow, to be empowered" (Senior NGO representative; March 2013).
>
> "Also as an organisation it is important to us to use technology in different ways. We are constantly looking for ways to progress, expand, make better use of the resources available to us. And this kind of project definitely fits the bill." (Senior NGO representative; October 2013).

I was often introduced to groups of tourists who had chosen to undertake a tour with the NGO's sister tour company. In these instances, the tour guides presented the mobile learning initiative as a sort of 'showcase' project:

> "Another group of tourists came to the community centre today, and because I was working there in my usual corner, the tour guide introduced me to the group and gave a quick summary of the mobile learning project. I think they've been briefed to do this by [NGO's operational manager] and I am thankful for the recognition. The thing that always makes me uncomfortable about these encounters, though, is that, to them, it is a development project rather than research. So they, very kindly, present it as an inherently beneficial initiative. And my immediate emotional response is always, "well…we don't know if it is yet" (Reflective diary; March 2013).

Selwyn (2013) observes that while limitations and shortcomings of projects in developed regions are made quite explicit, the projects employing educational technology used in developing contexts are less likely to be the subject of such rigorous critique. Instead, Selwyn argues that:

> "educational efforts in the field of ICT4D are often welcomed broadly and uncritically as an inherently 'good thing' regardless of their outcome… It could be argued that the 'good intentions' that underly such initiatives leave such forms of educational technology almost beyond reproach in the minds of many commentators" (Selwyn 2013:118).

There is nothing new about an enthusiasm for exploiting the affordances of a new and popular technology for social good. Indeed, without some institutional buy-in to the promise of mobile technology for empowerment at a conceptual level, it seems unlikely that I would have even been given permission to undertake the study in Dharavi. However, the purpose of drawing out this theme at the outset is to illustrate the evidence of a strong, internationally recognised discourse at the local level (and, crucially, at the institutional level). Davies and

Eynon (2013:7) note that the key problem with this position is the relatively deterministic assumptions that are made about information and communication technologies.

> "Instead of thinking about the complexity of the interactions between the person, other people, technology and the context, the focus is all on the technology and what it can do 'to us – a highly instrumental focus that is apparent in numerous policy areas" (Friesen 2009; in Davies and Eynon 2013:7).

In this way, there is a risk that enthusiasm for the use technology may obscure a more complex and nuanced picture of young people's engagement with technology, and the implications of such a picture for the use of mobile phones to support learning. The remainder of this findings chapter will attempt to expose these nuances - and some of the voices of caution - that emerged during this study.

Beneath the discourse: The complexities of access and engagement

> "The cheap mobile phone…has a unique potency: it puts an immensely disruptive device within reach of the poor. It is small and discrete and can be hidden if necessary. And it enables connections and encounters that would previously have been impossible. The effects of its arrival among poorer people in India have been to shake and challenge institutions of authority and both to reinforce and undermine gender roles." (Jeffrey and Doron 2013:165)

While the overwhelming majority of the 79 young people I spoke to initially said they had access to a mobile phone, on further exploration it became clear that there were important social restrictions and socio-economic practices that governed such access. Table 9 shows young people's reported ownership of personal mobile phones, defined through discussion as those they considered to belong solely to them, and for which they were the dominant user.

Table 9: Personal mobile phone ownership amongst student participants

	Students with a personal mobile phone		**Students without a personal mobile phone**		**Total**
	Male	Female	Male	Female	
Cycle One	8	3	0	17	28
Cycle Two	9	7	2	9	27
Cycle Three	9	5	1	9	24
Total	26	15	3	35	79

*At cycle outset

This is a crude representation of the data, and does not account for changes in circumstance over the course of an action research cycle, but it is important to illustrate that it was more common for young men to own a personal mobile than young women. For those students

who did not have access, there was commonly (but not always) a mobile phone belonging to parent or sibling, with which they considered themselves familiar. This shared family ownership is consistent with the reporting of Castells *et al.* (2007), who note that high levels of mobile phone sharing in India mean greater access levels than teledensity figures suggest. However, what Castells *et al.* (2007) make less clear is what this shared ownership means to people in real terms, and the power relations implied in such relationships. The discussion that follows will use short extracts from student portraits to argue that this picture is closely intertwined with gender, life stage and socio-economic circumstance. For this reason, the student portraits are presented in the following order: For young men, for unmarried girls, and for married women.

1.1.1 Enterprise and identity

> Aniq is twenty years old. His family is from Uttar Pradesh and moved to Dharavi in 1990 to start a business that manufactures belt buckles. From the age of fourteen, Aniq has been involved in the family business, which has been growing rapidly in the last few years, trading not only in Mumbai but on a more international basis. Aniq had a terrible accident eighteen months ago, in which he fell from one of Mumbai's overcrowded trains and broke both his legs on the platform edge. For a year, he wasn't able to work in the workshop, where he would be crafting belt buckles from molten metal. "It is a skilled job," he explained, "and the business has suffered." Expressing guilt and a sense of injustice for his misfortune, Aniq explains that he has found a new role for himself. Aniq's father, who has received little education himself, is increasingly reliant on Aniq to converse in English and use electronic systems to facilitate international trade. He explained that this was why he had a "very nice mobile" - a shiny, white Nokia E5. "It is absolutely necessary for the business". He manages calls, orders and stock from his phone, and shows great proficiency as he demonstrates the systems he has in place. A highly personalised device, he also takes me through his music, photos, ringtones assigned to different contacts and clients, and strategies for managing the limited capacity of his memory card. He is clear to emphasise that the "kind of technology we have also is a sign of success". He chose this phone because it looked good. He has been happy with the model but explains it's time to upgrade. "I want a BlackBerry so I can be a businessman." The brand association is an important one. "Businessmen have BlackBerries," he clarifies. And he will, he is certain, be a businessman in the future. As the oldest of three brothers, it will be his responsibility to take on his father's role. (Aniq; Cycle Three)

The extract from Aniq's portrait illustrates two important themes that emerged from interviews and observations with the students. First, the mobile phone plays a pivotal role in a number of local family businesses, which are increasingly nationally and internationally facing. While reviews of the evidence that mobile use has improved the economic fortunes of small enterprise in developing countries is inconclusive (see, for example, Donner and Escobari 2010), the benefits conferred to local businesses, both actual and potential, were described enthusiastically by young people in Dharavi. A number of young men showed sophisticated use of mobile devices and had highly complex, often web-based, systems for managing stock, orders and client contacts on their phones. Frequently, they did not have

access to a computer at all, and so were entirely dependent on the mobile device to perform these tasks.

Secondly, Aniq's portrait suggests a strong sense of brand awareness amongst some young participants. A number of young men associated the BlackBerry brand in particular with business and entrepreneurship. Such an association remained strong at the time of fieldwork, despite BlackBerry's global decline and a recognition that the devices were becoming harder to find in local stores (see, for example, Times of India 2013).

1.1.2 The primacy of technical skills

> Hussein, twenty years old, was born in Bihar but moved to Dharavi with his older brother. They run a wallet making business, and send money back to their extended family in Bihar every month. Hussein learned leatherworking skills from his father, and is primarily in charge of the manufacturing side of the business. His brother, now thirty years old, is in charge of marketing. He explains that mobile phones are their sole means to connect with the market, and Hussein describes a host of social media tools used to promote the business, including Facebook and WhatsApp. Hussein owns a Samsung smartphone, which he bought for a sum of 8800 rupees. It is top of the range, so he believes it is worth the money. Hussein is a very confident user of mobile technology. Another of his brothers used to work for Nokia and "knows how to fix broken phones," now operating one of the many mobile repair outlets in Dharavi. Hussein is interested in the mechanics of mobile phones and has learned a great deal from his brother. He even volunteered his technical skills to support the mobile learning project, although sadly his skills were never put to use. Hussein is very confused about his future. While he has loyalties to the family business, he believes he will be more successful if he improves his computer skills and becomes a computer software engineer. He already has an aptitude for computer programming, and uses profits from the business to invest in his future through attending the many computer skills courses around Mumbai. (Hussein; Cycle Three)

Hussein provides another example of the integral role of mobile phones in family business, but this time he employs mainstream social media to support his marketing strategy. He favours the Android platform, because of the ease of access to these tools, and has invested a significant sum of money in buying one of the most expensive handsets I saw available in Dharavi. Hussein, like Aniq, possesses a high level of "skills access" (Van Dijk 2006), not only as the skill to operate mobile phones, but also as the skill to search, select, process and apply information from a range of sources. This way, Van Dijk would argue that he, along with Aniq, have the ability to strategically use this information to improve their position in society (ibid).

Hussein's portrait also gives insight into the many workers involved in the mobile phone repair industry – what Jeffrey and Doron (2013) refer to as the "mechanics of the mobile" (2013:89). In 2007, 2.5 million people were estimated to be employed in the 'telecom service

sector', and this figure did not include the most innovative mobile mechanics of all – those doing repairs and second-hand sales in small shops in every town in the country (Mani 2012). Finally, Hussein's portrait indicates a link that many of the young people, both male and female, made between computer skills, employment opportunities and life chances. In Hussein's case, he has invested business profits in the development of his own computer skills.

1.1.3 Windows to the wayward West

> Anil, nineteen, is a young man who has been frequently described by his teachers as "not very serious" about his studies. Repeatedly disrupting classes by chattering or playing music on his Nokia C1 dual SIM mobile phone, Anil seems from my observations to be an endearing but infinitely distractable student. His mobile phone, a device he complains about for being "old and ugly", is the cause of the majority of these distractions. Bollywood music videos, amusing images, and a lot of pretty girls: he forages from the Internet whenever possible to entertain and to shock his classroom companions - the "naughty boys" on the back row. His teachers are apparently not the only ones who are irritated by Anil's mobile use. His parents and sisters are equally frustrated by the constant beeping and sniggering. "My parents say I should concentrate on my college studies," says Anil, who is undertaking a Bachelors in Commerce. "They don't understand why my head is always in the mobile." Anil is well-informed and canny about data tariffs, taking advantage of the dual SIM feature to switch between prepay Reliance and prepay Tata Docomo networks depending on what he wants to do and the time of day. Most of his family and friends have Reliance contracts, so calls were cheaper to them, but TataDocomo has the best 3G plan – Rs 5 for 50MB per day. One day, Anil looks forlorn. His parents have confiscated his mobile because he was caught looking at something inappropriate. He would not tell me what it was. (Anil; Cycle Two)

I have included Anil's portrait extract to emphasise two issues of apparent importance in the current study. First, he illustrates the adept manner in which young people negotiate the competitive network tariffs in order to minimise expenditure. The dual SIM feature of mobile phones is commonly employed by students and their families to allow switching between tariffs according to time of day or type of activity and, in some cases, to allow two members of a family to use the same device. The students, without exception, used Prepay (or Pay-As-You-Go) SIM cards so that they would not have the financial burden of a monthly contract and could maintain flexibility between networks. These observations are consistent with those of Rangaswamy and Cuttrell (2013), who used ethnographic methods to study young people's mobile Internet use in another of Mumbai's slums and noted the cost-awareness of their participants. And, interviews with mobile retailers suggested that clients almost exclusively had prepay SIM cards, and often had multiple SIM cards to take advantage of the best tariffs. Many of their clients, they note, are migrant workers who come to Dharavi and purchase cheap phones and top-up cards to keep in touch with family in different parts of India. Indeed, Sarin and Jain (2008) and Zainudeen *et al.* (2006) point to the large majority of financially

constrained mobile phone users in India, Sri Lanka, and Bangladesh, who use of low-end mobile phones and prepay arrangements in order to maintain their important kinship ties.

Anil also provides us with an illustration of one of the more subversive aspects of mobile use by young people in India: the means to access inappropriate content on the Internet. In their ethnographic studies across India, Jeffrey and Doron (2013:187) observe the increasing access to risqué entertainment using mobile internet. As Anil's portrait shows, such practices were often deemed inappropriate and the subject of disapproval, both by teachers and community centre staff, and by his parents. Jeffrey and Doron (2013) note that, amongst more conservative communities, the mobile phone has become "a metaphor for changing values and practices related to domesticity, sexuality and morality," and represents shift towards a distinctly "Western" view of the world (Jeffrey and Doron 2013:187).

1.1.4 A new privacy for romance

> Rafiq, twenty-six, revealed soon after we met that he was under pressure from his family to get married. Initially shy about his situation, he discloses as we become better acquainted that a match has been made for him. His wife-to-be lives in rural Maharashtra, in his *ganv* or "native place". Following established practice, the couple have been allowed to meet face-to-face only twice (and in the presence of family) while the marriage arrangements are proceeding. However, he has nightly conversations with her on his Nokia feature phone. He explains that his prospective wife's brother lends her his own mobile phone after 10pm (when calls are cheaper) and ventures a safe distance down the narrow alleys behind his house to make sure his conversations cannot be overheard. Rafiq and his wife-to-be have been getting to know each other over the course of a few months, unbeknown to either set of parents. The only member of the family who is aware of, and even facilitates, the nightly conversations is her brother. Rafiq's mobile phone is password-protected, a feature which affords him a degree of privacy in his crowded family home. Throughout our conversations, he explains that he feels happier about the marriage now that he knows his wife-to-be better, and she knows and accepts him. Friends around him speak of their determination for a love marriage, while Rafiq seems fearful of the love and intimacy that must be forged through his marriage of arrangement. He is not brimming with self-confidence, always a shy member of the Youth Empowerment group and even more so around girls, and seems to see such illicit conversations, via a mobile phone, as a form of reassurance. (Rafiq; Cycle One; regular attendee at the community centre throughout fieldwork)

Arranged marriage, which must be sanctioned by both sets of parents, has remained a deep-seated institution in India into twenty-first century, despite predictions that it would begin to fade away as India 'modernised' (Uberoi 2006:31). Using a remarkably similar example of premarital communication on mobile phones, Doron and Jeffrey (2013) argue that the exercise of agency in the courtship –"the boy and girl were no longer simply pieces moved by the parents on a marriage chessboard" – introduced a new dimension into the institution of arranged marriage, with possible implications for the way a couple would conduct themselves within the wider family (2013:179). Indeed, Boo wrote about comparable telephone

exchanges in Behind the Beautiful Forevers (2012:182). There is also an indication that, like the letter-writing practices discussed by Foucault (1997) and Ahearn (2001), such mobile phone exchanges, illustrated by Rafiq's story, operated as a 'technology of the self', facilitating the development of 'self' in powerful ways (Doron 2012). Rafiq's case provides an illustration of the way in which phone conversations can forge knowledge and understanding of one's self and others, while representing 'subversive mobile practice' that is beginning to disrupt the course of a longstanding social institution.

1.1.5 Beyond reach

> Kamil, 18, does not have his own phone and, with none of his family members in current employment, he explained that although there was a mobile phone at home, the family did not currently buy "mobile top-up" (or credit) because it wasn't a financial priority. While he initially says he felt comfortable using a mobile device, it becomes clear that he is very unfamiliar and, as a result, rather nervous about participating in the project. [Kamil; Cycle Two]

> Farid, 19, in a similarly financially constrained position, occasionally snatches some time on his father's old Nokia mobile. There are no other devices at home, but he uses the devices of his neighbours, former school friends and, as I witnessed, takes every opportunity to borrow the phones of other students on the Youth Empowerment Program. He displays brand awareness and technical proficiency, encouraging students to download the latest app or video craze. [Farid; Cycle Two]

While the majority of young men enrolled on the Youth Empowerment Program did have access to a mobile phone, including a whole range of older feature and smart phones, devices were not affordable to all of them. Kamil and Farid provide examples of this minority, but they display differing levels of interest in and familiarity with mobile phones. Van Dijk's (2006) framework for digital inequality is helpful in understanding these findings: In the absence of *material* access to technology, students display differing levels of *mental* access, defined by van Dijk (2006) as a relating to the extent to which a person has digital experience. A lack of digital experience, he argues, might be caused by lack of interest, computer anxiety or unattractiveness of new technology (ibid.). Kamil's portrait indicates a degree of computer anxiety. Indeed, I encountered several cases of students who showed fear and anxiety towards technology in general. In Farid's case, however, a lack of material access has not deterred him from exploring and experimenting with technology.

The portraits included in the discussion so far illustrate the diversity of access to and engagement with mobile phones amongst male Youth Empowerment Program students. For some, mobile phones are essential tools for business (Aniq and Hussein), for others they have proved to be subversive devices that challenge social norms and expectations (Anil and Rafiq), and for others still they remain an exciting (Farid) or intimidating (Kamil) technology

that is beyond economic reach. The discussion will now address the circumstances of unmarried girls.

1.1.6 Opportunity and empowerment

> Krishna is a conscientious twenty-three year-old from a Hindu family. An only child, whose progress has been carefully nurtured by her parents, she hopes to become a lawyer. Krishna explains that, just as many of her college friends had a higher level of English than her, they generally had their own mobile phone. She persuaded her parents that she should have one too, and now has her own Nokia C3. "Nowadays," she explains, "the mobile is very important to be connected to your friends, and connected to the modern world." She refers to her idea of the modern world frequently, discussing the role of women, and the greater access to opportunities they have in comparison to older generations. Her particular interest lies with the idea of the generation gap, a topic that formed the basis for her final presentation for the Youth Empowerment Program. Making frequent comparisons to her parents' generation, she explains the value she now ascribes to technical knowledge. "Because technology is what we have today. To the older generation it's not important, but to us, when we are getting jobs, we need to know these computers that are everywhere. In the offices, you know. And we need this very important knowledge. So you need to have the skills within you." (Krishna; Cycle Two)

The extract from Krishna's portrait provided an example of a family who has privileged the potential social and economic opportunities offered by owning a mobile phone and have taken the decision to provide their daughter with a device. For Krishna, her line of persuasion was two-fold: it will position her equal to her college peers; and it will support the acquisition of important technical skills that will improve her prospects. There were several girls enrolled on the Youth Empowerment Program who were also in this position, and for the most part, their families followed the Hindu religion. However, as the next few portrait extracts will illustrate, many families were more reluctant to allow their unmarried daughters to explore the affordances of a mobile phone.

1.1.7 A threat to morality

> Rukhsana, aged nineteen and born into a traditional Muslim family of tailors, does not have access to a mobile. "My parents have a house phone, my mummy, my daddy, but they don't allow their daughters to use the phone. They think that if we are using the cellphone we will have access to bad things, I mean, the Internet and all. It can be very dangerous sometimes." When asked how she felt about this, she responds: "I don't want to upset my parents, and we don't need a mobile phone in my life anyway. I don't have any reason to use. When I am at home I am working, I have no time for these things." [Rukhsana; Cycles 1 and 2]

Rukhsana provides an example of an alternative view of a mobile phone: as a threat to morality. For many fathers, the mobile phone was an 'object of distrust' that could generate trials and transgressions for vulnerable and naïve young girls (Jeffrey and Doron 2013). Such a view remains a political point of debate across India: In June 2013, a BJP MP announced

his wish for a policy of "no cellphones for unmarried girls, no jeans for women" (Singh 2013). Although considered a very conservative viewpoint, it is clear the issue of unmarried girls using mobile phones remains an issue of socio-political controversy.

I was called to assist with two particular situations that helped me to understand the source of such apprehensions. The first involved a Muslim girl called Sana:

> Sana had been given a hand-me-down phone by her neighbour and, after a few days, had been receiving explicit and inappropriate text messages from an unknown boy. She and her family were distressed by the messages, particularly when Sana suspected they came from one of the boys who had been eve-teasing[11] on the street. The family sought help at the community centre. I felt ill-placed to be of any assistance: I did not understand the Hindi in the messages, and I didn't have sufficient knowledge of the legalities of the case. My suggestion to involve the police was laughable – "They will not do anything without money". It was not the last time I would hear of the frailties and corruption of the local police service. After several evenings of conversations with the parents, it was agreed that the best way to resolve the situation was to remove the phone from Sana and to restrict her movement in the nearby alleys to reduce her vulnerability. It was clearly an unsatisfactory solution for Sana – her face said it all - but this was an apparently typical reaction to a case of mobile harassment. (Adapted from reflective diary; March 2013)

The role of mobile phones in 'eve-teasing' of young girls in urban areas has been recognised elsewhere (see, for example, Islam 2012 for an example in the Bangladeshi context). And, this incident shows the way in which, in response to the perceived threat of mobile devices, the societal response was to increase the restrictions on Sana's freedom to move around her neighbourhood. From her experiences in Pakistan, Tyers (2012) notes that mobile phones, and their use to support education, might in fact be serving to reinforce gender inequalities in society, by, for example, reducing the need for women to leave the domestic sphere. In Sana's case, the risks of mobile phone use have served as the impetus for reducing her personal freedom.

The second incident arose when a prospective student of the Youth Empowerment Program, Vanita, an unmarried woman in her early twenties, came noisily up the stairs to the community centre:

> Vanita explained that she was the lucky winner of Rs. 200,000. She had been informed by SMS of the news, and needed to pay Rs. 18,700 to ensure the release of her winnings to a "diplomat", Mr Hanks Anderson of Chevrolet (Ford General Motors). She explained to my Hindi-speaking companion a feeling of excitement and relief: this could be the end of her family's financial problems. All she needed was for someone to converse with the company in English to arrange the transfer of funds. She had heard there was a foreigner in residence who could help, and that was where I came in. It was painfully obvious to me that this was a scam, but Vanita was quite determined to claim her fortune. A number of times, her phone was thrust to my ear

[11] A euphemism adopted in India and Pakistan for the sexual harassment and molestation of girls.

> to "speak English" to the decidedly fraudulent person at the other end. It took a great deal of persuasion that Vanita should not hand over any money, and that the competition was not genuine. In the end, I requested to be emailed a copy of Hanks Anderson's passport, a fantastically poor forgery, and it took a lengthy comparison between Hanks' counterfeit and my own genuine passport to convince Vanita of the hoax. "So I will not get the money?" I felt her disappointment most acutely. (Adapted from fieldnotes; February 2013)

Pandey (2014) highlights the frequency with which Indian mobile subscribers are subject to phishing SMS messages and the need to provide greater guidance about the associated risks. Such guidance might be positioned as improvement of *information literacy*, the set of skills and knowledge through which we find, evaluate, and use the required information, as well as to filter out information that is unnecessary or inaccurate (see, for example, Eisenberg *et al.* 2004).

Sana's and Vanita's stories illustrate the potential vulnerability of naïve young girls who are ill-accustomed to using mobile phones. When I raised these incidents with community centre staff, they recounted a number of similar eve-teasing incidents and mobile phishing scams. The soft skills teacher tried to help me to understand this:

> "You see, the problem we have in India is the mobiles are coming very quickly. In just a few years. In other places, in your country, you have time to learn to use the mobiles properly…safely. Here, we have the technology, but we do have the time to learn…about the things that could happen, the risks. There is a lot of excitement, these people are not thinking. The girls are very…exposed to this kind of risk." (Teacher interview; April 2013)

There is thus an important issue surrounding the provision of appropriate support for students who are unfamiliar to mobile devices, and vulnerable to such scenarios.

1.1.8 Sibling dynamics

> Soraya and Zahra are sisters, aged twenty-two and twenty respectively. They are among those students I get to know best during my time in Dharavi. Soraya, an articulate yet anxious college graduate, is so determined to improve her English that she spends every spare moment in the community centre, engaging me or other foreigners in conversation, bringing in English newspaper articles with highlighted passages to query a grammar point or use of vocabulary. Zahra, by contrast, is a more laid back character, who has decided not to go to college and has a far lower level of English. Soraya once provides me with her explanation for the differences in their characters: "Zahra is more beautiful, so she is also more lazy."
>
> Soraya, as the eldest daughter, has a great deal of responsibility in the household - cleaning, cooking and caring for her disabled mother. She has also taken on some financial responsibility, working as a tutor for younger children and teaching basic computer skills for another NGO in Dharavi several times a week. She has a basic Nokia mobile, which, although in a terrible state of repair, rings frequently with requests for provisions from home or instructions for her next tuition session. "It is important for my parents to contact me," she explained.

> Zahra, who attended the Youth Empowerment twice during the months I spent in Dharavi for "timepass", is in the midst of marriage preparations with a young man in Uttar Pradesh. She sounds indifferent about the prospect of marriage. She explains that, while she has been thinking about getting a mobile, her parents are not keen on the idea. It would give the wrong impression to her future parents in law, who are "very traditional," and would need to be left behind when she marries and moves to UP in a few months time. Zahra concedes, however, that sometimes she plays games on Soraya's phone, often when Soraya is not looking." (Soraya; Cycle Two; Zahra; Cycles 1 and 2).

Soraya, as the elder sibling, and with growing familial responsibilities, provides an example of an unmarried Muslim girl granted the possession of a mobile phone to support the fulfillment of her household duties, and, as she describes, to be easily contacted by other family members. In their study of gender and mobile phone use in Banaras, Jeffery and Doron (2013) observe:

> "where a young girl does have a mobile, there is a sense that she can be contacted at any time. Thus the inside/outside distinctions are maintained, and the mobile phone is perceived as a tool to *manage risk*: the risk of a woman venturing into the dangerous and disordered outside world" (2013:174; emphasis added).

Zahra, with fewer household responsibilities, seems to be more restricted in her access to a mobile phone, and intimates that her future husband's family, with traditional views about a young women's use of the technology, would not approve. The norms and expectations surrounding mobile phone access for newly married women hold particular currency for a number of the students of the Youth Empowerment Program, and will be addressed in the following discussion.

1.1.9 Restriction and defiance

> Palaka, aged twenty, moved to Dharavi from Karnataka after marriage, and now lives with her new husband and parents-in-law. Incredibly shy at first, her reluctance to speak is not helped by her faltering grasp of Hindi. Her mother tongue is Telugu, and she explains that she is trying to learn both Hindi and English at the same time. It is also the very first time she has ever engaged with a foreigner, and she is clearly ill at ease during out first few conversations. As her comfort within the group (and with me) grows, she opens up a great deal. She explains her parents-in-law are very traditional. They are not aware of her enrolment on the Youth Empowerment Program and would not approve. While she spends her afternoons in the community centre, they think she is out looking for manual work, such as shrimp peeling - an occupation that would be suited to her self-reported "low-caste" status. Already the mother of two children, she displays determination to better herself and overcome her lack of education. Although both her husband and father-in-law have a mobile phone, she does not have access to a personal device. Defiant, she feels like she could benefit greatly from such access and knows exactly how she would put one to use. She would talk to her mother and sisters in Karnataka more often, close relationships she evidently misses, now that she has left her natal home. (Palaka; Cycle Two)

Palaka's case illustrates the importance of a woman's natal home for a newly married woman living as a junior member of her husband's household. Jeffrey and Doron (2013) note that by facilitating natal ties, a mobile phone became a valued possession for newly married women trying become accustomed to life in the new conjugal setting. Yet to some, the phone was potentially threatening and disruptive, as this passage from Jeffrey and Doron (2013) illustrates:

> "My sister-in-law who got married a year back. Her husband does not appreciate that she speaks a lot with her sisters, he thinks that whatever problems are created in his family are due to the cell phone – because his wife can speak with her sisters a lot and they are giving her tips and tricks how to handle the mother in law. So he banned her from using the cell phone." (2013:171)

From her increasingly articulate accounts of her own situation, it seems that Palaka has experienced similar constraints imposed on her natal family ties, causing a certain amount of resentment and defiance towards the restrictions of her new family.

1.1.10 The household mobile

> Nazma is a student, who, although initially brimming with enthusiasm for the Youth Empowerment Program, was unable to complete the course because she was struggling to manage the time commitments of the 3 hour-long daily lessons, running a household and looking after her two small children. We kept in touch, nevertheless, and she invited me to her house, which she shared with her children and elderly mother-in-law. Her husband worked in the fabric trade in Oman and was therefore away for long periods of time, but he would buy mobile top-up when he was back in Mumbai. Nazma and her mother-in-law had access to a household mobile, which they used to receive calls from him three of four times a week. "It is not a good one"…she explains to me. "It is the old one of my husband." She would much prefer a "smartphone touchscreen" that she has seen some of her extended family using. The household mobile does have a camera, though, and she explains that she sends pictures to her husband of her children if they do new things, or if there is a special family occasion that he cannot attend. (Nazma; Cycle Two)

For Nazma, the household mobile was not considered a private possession of any of the female members. This shared family ownership is consistent with the reporting of Castells *et al.* (2007), Konnka (2003) and Kam *et al.* 2012. A phone call is commonly shared among friends and colleagues to the extent that it is "considered unfriendly to omit someone among friends or colleagues from the distribution" (Konnka 2003:104-105). The public nature of mobile phone calls has been observed in a number of mobile learning studies, most recently Kam *et al.* (2012). Yet these studies do not indicate the underlying power and control exerted over a household mobile that we might discern from Nazma's portrait. For Nazma, mobile conversations were conducted in the open, in ear-shot and under the authority of her mother-in-law, and dictated by her husband's schedule. Her husband even purchased the top-up cards, thus maintaining a degree of control over the use of the mobile phone within his household in

his absence. Jeffrey and Doron (2013) note that household mobiles among the community were often older, basic devices passed on by the men of the house who had purchased new multimedia phones for themselves. They argue that, just as Nazma's circumstances suggest, "a woman's phone should be used only to communicate with her husband and extended family" (*ibid.*:172).

5.1.1 Controlled independence

> Sulbha is educated to degree level. Like Palaka, she has recently been married, and she speaks of her struggles to adjust to her new life in Dharavi. The pace and the crowds of Mumbai are a stark contrast to her quieter rural existence in Maharashtra. When she was living at home, she had an old mobile phone that she used to communicate with family and college friends. She had to leave that behind when she came to Dharavi. Her husband told her it would be better if he gave her a mobile phone when she arrived. While she is happy with the model he gave her, a Nokia C1, she explained that she had not been able to transfer all her contacts across, and so has lost touch with some of her friends. "After marriage each and everything is exposed to your husband, and if you have a cell phone your husband will definitely go through it…" (Sulbha; Cycle Two).

While expectations clearly vary from place to place and community to community, Sulbha's story is reflective of some of Jeffrey and Doron's (2013) research. A woman was expected to cut her ties to her previous networks (symbolised and/or represented by her mobile phone), where she may have had more independence, mobility and freedom, and to re-attach herself to a new kin network and become absorbed into her husband's family. Jeffrey and Doron (2013) argue that the mobile phone can be viewed as an object of distrust, unless it is monitored by the husband and family. They draw on Dickey (2004), who suggests that such distrust arises because of the possible flow of 'inside' information to the outside world (such as gossip) – the leaking of family news may threaten the reputation and honour of the household. Lamb (1997) called the cutting of former communication links after marriage the "making and unmaking of persons".

> "Women's personhood is unique…in that their ties are disjoined and remade, while men's ties are extended and enduring" (ibid 289-90).

Lamb (1997) exposes an expectation that a woman should discontinue most of the connections with her previous household when she marries and moves to live with her husband's family. Sulbha's portrait illustrates the way in which this practice can be continued and renegotiated by restricted use of a mobile phone.

These short portrait extracts have served to illustrate the complex picture of access, ownership and engagement with mobile technology for the young people enrolled on the Youth Empowerment Program. Closely intertwined with gender, life stage and socio-economic circumstance, the mobile phone cannot be conceived as neutral device, nor the universally

positive and empowering technology that might be understood from the dominant discourse that was initially identified.

Such portrait extracts are necessarily partial and situated, and draw on the experiences of a limited number of individuals. However, the experiences that they illustrate, particularly concerning gender, have striking similarity with some of the observations drawn in Doron (2012) and Jeffrey and Doron (2013) in studies in Banaras and in other parts of India. It is for this reason that I have drawn extensively on this work throughout this chapter, and believe that the parallels drawn suggest a degree of external validity to the findings here presented.

It should be noted that the role of marriage in the lives of the students, either recent or imminent, was particularly prominent in the data. This is arguably because it is a common preoccupation for young people aged 18-25 (the age range for participation in the Youth Empowerment Program). It may also have been made more prominent by the fact that I myself got married in between two of my periods of fieldwork in Dharavi, and adopted a surname that many students recognised as Muslim. The students were aware of this, and asked many questions about the way in which weddings took place, the role of religion, and so on. Through these discussions we were able to draw a number of cross-cultural comparisons, and these contributed to the final student portraits.

A shifting mobile economy

Where the student participants in this study did own personal mobile phones, the make and models in use by young people were influenced by a rapidly changing landscape in terms of the technology that was available, affordable, and desirable within the community. Interviews with mobile phone retailers in the streets surrounding the community centre during Cycle 1 and Cycle 2 served to provide some explanations for such diversity. Along Dharavi's main thoroughfares, glass cabinets proudly displayed the latest Samsung and Nokia models, but they come at a hefty price. In response, one mobile retailer notes the preference for refurbished handsets.

> "People are buying these new smart phones more and more, but we have a lot of customers for the repaired phones...they are cheaper and they work well" (Interview; June 2012).

Another salesman confirmed that, at that time, Nokia Java phones were still dominant with price-conscious families and particularly amongst the migrant worker client base that frequented their stores. Yet, six months later, when I repeated similar interviews, mobile stallholders were adapting to the changing global mobile phone market:

> "The Nokia company is going very badly. We don't buy these Nokias because the price goes up and down. We don't get the margins. We now have these MicroMax, Lava. They are Indian brands…very cheap. Rs.2500 for Android smartphone." (Mobile stallholder; January 2013)

The availability of mobile devices in Dharavi is thus linked closely to changes in the global marketplace, and the increasing prominence of Indian Android handsets becomes especially important in this project. However, mobile retailers emphasised that there remains a strong local economy that facilitates the recirculation and recycling of devices to support more financially constrained members of the community.

Such a picture of device use was also complicated by "China phones"– smartphone copies occupying the lower end of the marketplace. Such devices are noted for their unreliability (Jeffrey and Doron 2013) but appeal to those who would like to look like they own a more expensive device. Unaware of this during Cycle 1, I was fooled by such salesmanship myself in the initial search for locally-sourced devices for the project:

> "I was very excited today to find what I thought was a very cheap Android phone to use for the trial of the prototype resource. The box and the handset itself looked exactly as I expected them to look and I did ask repeatedly at the kiosk to check it was Android, always with a positive response. But I was foolish not to read the smallprint because when I arrived back at the community centre and tried to load up the prototype software to test it, I got repeated errors from an unrecognised operating system. My frustration was noticed as the students were leaving their English lessons and [X], one of the more technically savvy students, looked over my shoulder and said "China phone, mam." (Adapted from reflective diary; Cycle 1)

This discussion illustrates that, where students did have a personal mobile phone, they owned a range of different models and handsets, including Nokia feature phones, Android smartphones, "China" copies, and a variety of other feature phone models, each with different screen sizes and software specifications. This diversity is presented in Table 10.

Table 10: Student personal mobile phones by device type

	Type of mobile phone			
	Android smartphone	Nokia feature phone	"China" copy	Other
Cycle One	3	5	2	1
Cycle Two	4	6	3	3
Cycle Three	6	5	1	1
Total	13	16	6	5

Such a heterogeneous mobile economy presented important challenges for the development of software in this study, which will be addressed later in this chapter. The heterogeneity is compounded by the rate at which students lose, borrow, exchange or damage their devices over the course of the study. I kept a record of some of their explanations that emerged during student interviews:

> "Mam, I was sleeping in the street and someone stole my mobile."
>
> "We had a burglary. All cellphones gone."
>
> "I like my brother's mobile more so I exchanged."
>
> "My father needed my phone so he took it."
>
> "[During monsoon] I forgot my plastic case in the rain. Now the phone is not working."

This rapidly changing picture presents further complexity when considering the use of a mobile phone as a learning device, and students' capacity to take responsibility for their own technology. Indeed, specifically the computer skills teacher articulates this particular concern:

> "The problem with these students is they don't have the respect for the property. Here in the community centre, we have big problems…they don't keep the computers clean. The mouse is on the floor…the students are eating snacks by the keyboards… The technology is really in a terrible state. I don't think you can really trust these students with the mobile" (Teacher interview; June 2012).

The discussion in this section implies a rapidly shifting picture of the availability, affordability and functionality of mobile devices and a lack of trust surrounding the way in which young people treat technology.

Implications for the mobile learning intervention

The findings thus far point to a number of important considerations for the development and delivery of an appropriate mobile learning resource to be used by the Youth Empowerment Student. Through a presentation of the 'multi-directional conversations' (McAteer 2013) that took place between action research participants, the remaining parts of this chapter will address these considerations in turn, highlighting key decisions that were made during the course of the study. Such decisions including the way in which the piece of software should be delivered to the students; the choice of mobile platform; the way in which students should be supported in using the software; and the encouragement of responsible use of mobile devices.

1.1.11 How to deliver the software to the students?

The first consideration related to the means by which a piece of learning software, developed by a preexisting technical system (see Chapter 6), should be provided to the students. In fact, such a decision was largely dictated by the constraints of the existing technical system. Mobile devices offer connectivity, either via a mobile network or data connection, using a mobile SIM card, and many mobile learning applications are web-based and are therefore dependent on such connectivity in order to retrieve the necessary data. However, the technical system employed in this study did not require such connectivity, but rather packaged mobile software as a native app stored on the internal or external memory (a microSD card) of the phone. This approach presented a number of important limitations, including the difficulties of updating content, and these will be specifically addressed in Chapter 8. Yet, given the findings presented earlier in this chapter, the local storage of the software offered two important advantages for the Youth Empowerment Program students.

Student portraits have suggested that financial constraints prevented some students from using a mobile device or, through tariff negotiations or intermittent access to "top-up", dictated the manner in which they could them. It was therefore important to the NGO that the mobile learning project would not have any cost implications for the students. Because the software was installed locally, students would be able to use the software on their mobile phone in the absence of a data connection, and thus there were no associated network costs to participate in the project.

Student portraits have also highlighted the concerns of some families surrounding students' use of mobile phones, which could be viewed as risky or subversive devices. Such concerns principally relate to the connectivity of devices, including access to the Internet and making phone calls. It would be, however, possible for students to use the software without a SIM card inserted into the mobile phone, thus, in theory, removing such associated risks. This way, we agreed it would be possible to provide equality of learning opportunities to students, irrespective of whether they used a phone for other networked purposes. Such a view will be examined and challenged in Chapters 7 and 8.

Nevertheless, by employing the approach of local storage it would of course be possible for young people to use their own SIM cards, thus providing the connectivity that some families might fear. Any tensions created by the introduction of a mobile phone for this project into family homes were only made explicit by the students on a few occasions, but some explanations for limited use of the mobile resources (explored in Chapters 7 and 8), as well as reports from community centre staff, implied that the tensions associated with the use of mobile devices remained.

1.1.12 Which devices? BYOD versus One-to-One

In Cycle One, it was necessary to make decisions about a) the nature of the devices on which the mobile learning resource would operate; and b) whether the software should be provided on loan devices (a One-to-One model) or on students' own handsets (a BYOD model).

As Chapter 2 has set out, many mobile learning projects have provided learners with specially acquired technology, so that developers do not have to consider compatibility with the multitude of mobile platforms and screen sizes which learners are already using (Traxler and Wishart 2011). This means that the devices are reclaimed at the end of the projects by researchers. Such practices are argued to limit the sustainability of an intervention, because the devices are removed from the learning community at the end of the project (ibid.). As a response, there has been a shift towards a 'Bring Your Own Device' approach, whereby learners employ their own mobile phones in educational projects (see, for example UNESCO 2013b).

However, as the earlier discussion in this chapter has shown, not all students had access to a mobile phone; and if they did it might not be a device they could use independently (because it was shared and/or controlled by others). Yet, in this study, a priority identified early by all NGO representatives and teachers was equity of access to mobile learning opportunities for students:

> "I do think it's very important that this project is accessible to *all* our students, whatever their background or whether they use a mobile phone." (Senior NGO representative; July 2012; emphasis added)

The students echoed this sentiment by expressing their interest in participating in the project, irrespective of their current access to using a mobile phone. It followed, therefore, that those students without personal access to a mobile phone would receive a loan device in order to ensure their participation in the project.

Yet those students who did have a personal mobile, and made extensive use of it, expressed a preference for a piece of software that could be used on their existing device, rather than a loan handset.

> "I think it is better to use a software in my own mobile, as already I have everything I need here. My photos and all. I don't need another mobile." (Yogeshwar: Cycle One)

There were also financial advantages to using students' own handsets where possible. I expressed my concern about the cost of purchasing loan devices, particularly as the initial money would be coming out of my own study grant. The NGO representatives agreed that they needed to minimise associated costs of the project going forward. We therefore proposed

that, where possible, students' personal mobile phones should be used, and loan devices would be provided if this was not possible.

1.1.13 Ensuring compatibility

There was thus a requirement to make sure the mobile software could operate not only on devices purchased specially for the project, but also, as far as possible, on students' personal devices. However, as this chapter has set out, where students did have a personal mobile phone, they owned a range of different models and handsets, including Nokia feature phones, Android smartphones, "China" copies, and a variety of other models, each with different software specifications.

There have been a number of critics of projects which allow pedagogy to be dictated by the technological capabilities of a device (see, for example, Ting 2005), yet there is no escaping the very real constraints imposed by the diverse functionalities of the mobile phones that exist amongst a group of learners such as the one participating in this study. The pedagogical complexity of what can be developed for an Android smartphone, for example, is far greater than that on a basic feature phone. As UNESCO (2011) points out, it becomes very challenging for developers to leverage such a dynamic field for educational purposes.

The existing technical system for this study could already generate learning resources that worked on Android smartphones. With some additional development support, these resources could be made to work on a proportion of Java-based (e.g. Nokia) devices. The NGO representatives and teachers agreed this development was important, as they did not want it to be a requirement of the project that students should have to use a smartphone:

> "The key is to be affordable for the young people. Smartphones are desirable, but the budget has to be 3000 rupees, no more…The salary for a private sector job is 5000-6000 rupees per month, but a government worker would receive 12,000-15,000. A smartphone costing 6000-10000 rupees per month represents too much of a family's income." (NGO Representative Interview; June 2012)

The dominance of the Nokia brand during Cycle One, as highlighted by mobile vendors and reflected in the handsets owned by students, added further weight to the argument for lower-end mobile devices. The technical partner expressed some reluctance, however, given the increasing dominance of Android smartphones, both in the UK and in developing countries:

> "I think it would be hard to justify developing for a Java platform [e.g. Nokia] given the way things are going with Android." (Technical partner, July 2013)

Nevertheless, we agreed that we would prioritise equity of access for students, we would develop for the existing mobile economy, and would try to align as closely as possibly with students current engagement with mobile phones by the students. After sourcing additional

funding, the development work for Java phones was thus undertaken in preparation for Cycle Two.

However, it was not possible to guarantee compatibility of the Java software to encompass the full variety of student handsets. Therefore, there remained a small proportion of students for both Cycles Two and Three who owned their own mobile phone, but who could not have the software installed on their own handset due to issues of incompatibility. This meant that they also required loan handsets. The development challenges were highlighted in a consultation with the technical partner:

> "Without being there to physically test each different model, with its different screensize, memory capacity, and all the other things that can vary, it's very hard to say in advance which devices will work and which ones won't. All I can give you is a rough specification." (Technical partner; January 2013)

At the beginning of Cycle Two, the process by which I established compatibility of mobile handsets was laborious, time consuming, and often disappointing for the students, who had queued up for some time to find that their device did not work. Such emotional considerations are examined in greater depth in Chapter 7. One of the particular problems I faced is highlighted in this extract from the reflective diary:

> "In initial interviews, and from what the students had shown me, it appeared that there were many more Android devices than was actually the case. In fact, some of these devices were convincing "China phone" copies that looked very much like Android smartphones but with unfamiliar and incompatible operating systems. At this late stage, it's not feasible to attempt to develop software that would work on such devices. We don't have the time or the money." (Reflective diary; January 2013)

As a result of incompatible handsets, the number of loan devices that would be required for the project was greater than anticipated, and I learned to factor in additional time for the laborious installation process. I had to develop detailed installation instructions to leave for NGO staff who planned to manage the technical process in my absence, with a list of devices that I knew would support the software and those that would not. The practical implications for the NGO representatives responsible for the software installation going forward are considered in Chapter 8.

1.1.14 Sourcing loan devices

It was necessary to purchase loan devices that could be provided to those students who did not have personal mobile phones, or owned handsets that were incompatible with the software. It proved challenging to source large numbers of the same device from local mobile retailers, and I was required to wait for several days while additional stock was ordered from elsewhere in Mumbai. I found it especially difficult to source the all required devices of the

same type and in the early stages of Cycle Two. I therefore sourced a combination of budget Android smartphones (at Rs. 2800 per device) and Nokia 6303is (Rs. 2000 per device). Our next decision was how these devices should be distributed to the students. Although the software was designed to provide as similar as possible an interface, irrespective of the mobile platform, there were clear differences in aesthetic and functional properties of the two types of device (see Chapter 6). We predicted the touchscreen smartphones were likely to be more desirable than the more old-fashioned feature phones (an assumption that will be explored in Chapter 7) and so felt that it would be less likely to cause tensions betweens students if all those students in the same class (either morning or afternoon) received the same type of loan device (see Chapter 7). The teachers suggested providing one type of loan device to students attending classes in the morning, and another type to students attending classes in the afternoon.

However, once students who owned personal mobile phones, compatible with the software, saw that other students were being given loan devices – and devices that were deemed "better" than their own phones – there were some complaints and requests to switch to a loan device. In response to this, the NGO suggested that, as an incentive for keeping the software on their own phones, these students should be allowed to keep the software beyond the Youth Empowerment Programme. By contrast, students using loan devices were required to bring them back at the end of the three and a half month period.

This discussion illustrates the way in which, through collective attempts to provide equity of access to a mobile learning opportunity across a group of students, while accounting for existing disparity in access to mobile device and constrained by technical limitations, a complex set of new inequities were created instead: Those students who had mobile phones that were compatible with the software and maintained access to it beyond their involvement in the action research study, those students who had mobile phones that were not compatible and so, for the duration of the YEP, had access to a loan device as well as their personal mobile; those students who had no personal mobile phone and thus received an Android smartphone loan device; and those that received a Nokia. In addition, students were provided with a choice as to whether a SIM card was inserted into the mobile phone, thus creating inequity in terms of connectivity and use of the broader functions of a mobile phone.

The devices through which students ultimately accessed the mobile software during each action research cycle are presented in Table 11.

Table 11: Devices through which students used the mobile software in Cycles Two and Three

	Students accessing software via personal mobile			**Students accessing software via a loan device**	
	Android	Nokia	Incompatible handsets	Android	Nokia
Cycle Two	4	6	6	10	7
Cycle Three	6	7	2	7	4

The inequity in the way in which the software was accessed has implications for a) the nature of student learning experiences and b) the sustainability of the mobile learning intervention, and will be addressed in both Chapters 7 and 8.

1.1.15 Responsible use of mobile devices: Training in safer mobile practice

As illustrated by student portrait extracts in the chapter, by the end of Cycle Two, I had gathered examples of the way in which mobile phones could be considered subversive devices which could be viewed to challenge traditional notions of propriety and social norms. Indeed, there was evidence of certain risks surrounding naïve use of mobile devices. Yet the NGO representatives, the teachers or the students did not raise concerns about the provision of a mobile phone to some young people in the early stages of the study. Nor did I consider such risks. Given the existence of a literature which indicates the potential issues surrounding the use of mobiles, I reflect on this as a major oversight on my part. For example, Beger and Sinha (2012) highlight the way in which South African youth are enthusiastic users of Mxit and Twitter via their phones, but face cyberbullying, sexting, privacy violations and exposure to sexually explicit images. It was only through student interviews and incidental conversations during Cycles Two and Three that such concerns were raised, and collectively we could consider implications for the mobile learning resource.

Firstly, the existence of such risks were not considered a reason to stop young people from using mobile phones, and, through them, the Internet:

> "Those risks are the same for everybody in the world, so the risks of using the internet are a by-product of teaching any child to use the internet. That's one of the reasons that our computer program exists. We run a computer program for housewives. And somebody asked me "Why would you do that?" "When are those

> mothers ever going to need to use the internet?" So for me it's about the fact that they've conquered that alien. I've seen children using a mouse for the very first time. Again, using a mobile phone, they are doing something that is totally common for other people in this world for the first time, and so in a way it's about equality of opportunity. And about educating them about how to do it safely." (Senior NGO representative)

By the end of Cycle Two, we agreed that there was a need to make students aware of the risks of eve-teasing and mobile scams, and what to do to keep themselves safe when using a mobile phone. As a result, the initial training in the use of mobile devices was expanded after Cycle Two to include tips on "Safe Surfing" from the Internet and Mobile Association of India (see Appendix X for an outline). The extent to which this was successful, however, will be explored in Chapter 8.

Yet it is clear that there is an important tension between the NGO's belief in the potential of mobile phones to offer opportunities to empower young people (set out earlier in this chapter) and the need to be sensitive towards strict family controls and expectations relating to the use of this technology. This tension will be considered further in Chapter 8.

Conclusion

Davies and Eynon (2013) note that young people's use of technology is often discussed:

> "in terms of unexamined generalities…that ignore the complexity and gradually changing nature of their participation in a shared digital culture" (2013:1).

This chapter has used portraits of young people, and the perspectives of teachers, NGO representatives and local mobile suppliers to illuminate some of this complexity. Despite the apparent excitement about the potential of technology to empower and to provide opportunities to marginalised young people, I have argued that young people's existing practices using mobile phones are closely intertwined with gender, life stage and socio-economic circumstance, and influenced by a rapidly shifting local mobile economy. The mobile phone, therefore, is far from a neutral device that simply delivers educational content to learners. Rather, as a piece of technology, it can serve as a means to advance the economic position of family business or to promote the acquisition of digital skills. It is also positioned as an exciting or intimidating device that is beyond economic reach. It can serve to both reinforce and challenge social norms and expectations surrounding the position of young women and the institution of marriage in this community. And, shifting local economic factors and institutional constraints influences the students' use of the mobile phone. Selwyn and Facer (2013) suggest there is a need for accounts that concentrate on developing such "thick" descriptions of the present uses of technologies in situ rather than speculative predictions and forecasts of the near future. The three action research cycles, which have

successively informed and built upon each other, have facilitated the collection of data that provides this "thick description" of the variety of students' existing practices with mobile phones. This depth of understanding provides an appropriate point of departure for the development of a mobile learning intervention.

First, the technical system used in this study dictated the need to provide local access to the mobile learning software on a microSD card. This presented two perceived advantages for the intervention: Learners would not be dependent on a network connection and therefore would not have to pay network charges; thus accounting for the financially constrained circumstances of some students. And, students could avoid any social concerns about the risks or threats to morality associated with mobile connectivity by using the software on a mobile phone without a SIM card. This would, in theory, provide learners with equality of access to learning opportunities without inciting social tension surrounding networked devices.

Second, the study would employ a hybrid model of BYOD and One-to-One devices, so that students with personal mobile phones could use their own phones, but those without meaningful access to a mobile phone could use a loan device for the duration of the project. This approach, however, meant that the software needed to work on the two dominant mobile platforms (Android and Nokia feature phones), and development challenges meant that compatibility with the wide range of devices in use by students could not be guaranteed. The result was a complex set of new inequities in access depending on student circumstances.

This chapter has limited the discussion to the socio-technical considerations relating to the mobile learning intervention that is the subject of this study. Building on these findings, the next chapter will focus on pedagogical priorities for mobile English language learning.

6 PEDAGOGICAL PRIORITIES FOR MOBILE LANGUAGE LEARNING

Introduction

> "Throughout India, there is an extraordinary belief, amongst almost all castes and classes, in both rural and urban areas, in the transformative power of English. English is not seen just as a useful skill, but as a symbol of a better life, a pathway out of poverty and oppression. Aspiration of such magnitude is a heavy burden for any language, and for those who have responsibility for teaching, to bear. The challenges of providing universal access to English are significant and many are bound to feel frustrated at the speed of progress. But we cannot ignore the way that the English language has emerged as a powerful agent for change in India." (Graddol 2010:124)

For a significant minority of Indian families, English is a language that is spoken at home. However, for those who are not born into an English speaking family, access to English language learning opportunities might be as a distinct part of a vernacular-medium school curriculum. It might, indeed, be through an English medium school, which is fast becoming the most desirable (and most expensive) form of education across India. It might be through any number of privately run language courses that have sprung up across the country and come at a hefty price. It might be through a combination of these scenarios and, of course, will likely be supplemented by the wealth of TV, film, print media and government services that are all delivered in English across India. However, for those marginalised groups who cannot afford, or cannot access such opportunities, or feel that they have not achieved the level of English they need or desire by other means, there is a role for the burgeoning Non-Governmental Organisation (NGO) sector, which serves to provide more affordable (or free) English language lessons to the communities in which they operate (Graddol 2010; Kilby 2011). Reality Gives, the partner NGO in this study, is one of a number of NGOs doing just this for disadvantaged areas of Mumbai, through its Youth Empowerment Program.

Yet, as this chapter will make clear, providing English language learning opportunities that are both appropriate and effective for the Youth Empowerment Program's students is far from straightforward. If a mobile learning resource is to supplement this programme in some way, as is the intention of this study, it is first necessary to better understand the circumstances that bring students to access the initiative and the challenges that have been faced by the NGO and its teachers in sourcing and delivering a classroom curriculum. This chapter therefore addresses the following question:

> What are the motivations for and challenges with learning English for the young people enrolled on the Youth Empowerment Program and what are the associated implications for the design and implementation of the mobile learning resource?

The discussion draws attention to the variability in the students' experiences of learning English at school and in college (or, in some cases, by other means), and their reflections on the importance of English language skills for their futures, particularly for employment and continuing education. There is an examination of the particular challenges faced by young people seeking to improve their English skills, especially given the multi-lingual nature of Dharavi's community, and the debates surrounding nature of an appropriate English language curriculum for the Youth Empowerment Program. Finally, this chapter sets out the collaborative efforts to identify both the purpose and characteristics of a mobile learning resource within the constraints of an existing technical system.

Learning English: Students' motivations and challenges

The students of the Youth Empowerment Program expressed three broad motivations to improve their English language skills: to access better employment opportunities; to support and expand family businesses; and to negotiate the different stages of the education system. These broad motivations will be explored in turn using student portrait extracts. The extracts will also be used to draw out the particular challenges the students have faced in learning English. As a final point of discussion, this chapter will address the discourses linking English, empowerment and inclusion, which permeate the accounts of students, teachers and NGO representatives alike.

6.1.1 English for more secure employment

> Gowardhan, twenty-five, is a father of two young boys and moved to Dharavi with his wife from Gujarat five years ago. He was educated to the age of fourteen and did not learn any English at school, and although he has picked up words and phrases from living in Mumbai, and from films, he has very little confidence in his ability to speak in English. He is a carpenter, and comes from a family of carpenters. He was drawn to Dharavi because of the plentiful work opportunities, and now lives in a camp of migrant workers from all over India. As his family grows, he explains that his wages are no longer sufficient to support them all, and so he must get a better job. He has his eye on some jobs in the shipping industry. Several of his colleagues have moved into this sector and he has heard reports of the more secure working conditions and better salaries. However, he explains that his friends had much higher levels of English that he does. He thinks this is why they have managed to move 'up', and he remains 'trapped' in low-wage, less prestigious work. It is for this reason that he has come to the Youth Empowerment Program. (Gowardhan; Cycle Two)

Like Gowardhan, the majority of students who were working and, indeed, many of their family members, worked in what Graddol (2010) terms the 'unorganised sector'. This might be street vendors, *dhobi wallahs*[12], rickshaw drivers, migrant labourers or low-wage workers

[12]Someone with an occupation related to washing clothes, often member of the Dhobi caste.

in family-run enterprises. Graddol (2010) points out that few of these workers enjoy job security or any sort of workers' rights. There is also a high level of male unemployment in Dharavi (see, for example, Campana 2013) and a number of students explain that their fathers, older brothers (or, sometimes, themselves) have struggled to find sustained work.

Against a background of insecure employment status, students expressed an undisputed view that English will lead to 'better jobs' and employment prospects and in our discussions it becomes clear that 'better' was understood as both better paid and more secure. Indeed, when asked why students attend the Youth Empowerment Program, one of the volunteer teachers notes:

> "I think they do realise that, wherever we go, at least in Bombay, we need to have English. Bombay is not a very Hindi-friendly city. Marathi maybe. But most of the courses, most of the jobs, require you to speak English. So they want to become part of the English-speaking bandwagon." (Volunteer English teacher; interview)

Gowardhan, however, is a student who has had very little access to English language learning opportunities, either at school or elsewhere during his upbringing in Gujarat. He has, nevertheless, picked up some language from general cultural exposure in Mumbai since he arrived. A critical friend, who had significant experience teaching English in Mumbai and elsewhere in India, noted:

> "In 21st century urban India, there is a lot of English in society, on radio, TV, advertisements, signboards etc. There is English everywhere. And this has an affect definitely on their English. And also in Hindi or in whatever languages they speak there are an increasing number of English words used - what are termed "lexical borrowings"…This means that they do tend to have – I'm generalising – stronger vocabularies…they are stronger in their understanding and vocabulary but weaker in areas of language production." (Critical friend; interview)

Graddol (2010:66) also highlights asymmetry across four language skills. Such asymmetric proficiency levels may reflect the way English is used in a multi-lingual society, but it makes it difficult, he argues, to estimate overall proficiency levels in the population. He asks, "what counts as an English speaker, when most Indians know a few words, but only a few have a high level of competence in both local and more standard varieties?" (ibid. 2010:66). In our interviews, Gowardhan expresses his frustration at what he believes are insufficient language skills to secure him a better job.

6.1.2 English for better career prospects

> Reshma is a 21-year-old graduate from a local college. She comes from a Muslim family, and she identifies her mother tongue as Urdu.[13] Her level of English exceeds

[13] It should be noted that colloquial spoken Hindi and Urdu are very similar. However, while Hindi is written using the Devenagari script, Urdu is written using the Arabic script.

> almost all the other students I meet in Dharavi, illustrated by the fact that she is able to conduct her interviews articulately and without hesitation in the absence of a translator. She has a Bachelors Degree in Commerce, and attended an English-medium convent school in Bandra (a neighbouring, more affluent, district in Mumbai). Despite her apparent success, she describes a number of occasions when she has felt inadequate or embarrassed at her errors or inability to articulate herself in English, either with peers, university staff or in job interviews. "I just want to get fluency in the language, you know, for better jobs, good posts. Without English, you get a low qualified job like call centre, shopping malls. I need a better job, in office or bank, so I need fluency in the proper type of English with a good accent, and that's why I came here." She is a determined student, and articulately expresses her ambitions: "I want to manage both things in house and in job. Actually at my age my family advise me to marry. In our religion, by the time we get 18, 20, we have a pressure. You must marry. You must not work – it's not your work, it's boys' work. So I want to show that I can do both things properly." On a number of occasions, she expresses just how crucial she believes English will be in achieving these goals. [Reshma; Cycle Two]

Reshma clearly articulates her belief in the essential nature of English to employment prospects in a whole range of professions. Despite attending a private, English medium school with a good reputation (a form of schooling that will be examined in more detail later in this chapter), she stills lacks confidence in her own ability to speak English. This, Graddol (2010) argues, reflects the fact that English has for a long time been treated as a library language in India, used for reading textbooks and writing exam papers, but not for conversation. Reshma's profile suggests an asymmetry across the four language skills that is characteristic of most school leavers (*ibid.*), and student reports lend credence to this claim. Every single student I spoke to in each of the three action research cycles felt that spoken English was their weakest language skill, yet they felt it was the most important for their future prospects.

Despite reporting the same sense of aspiration, and linking English with employment prospects and upward social mobility, Reshma and Gowardhan's portraits illustrate the range in levels of education in general, and in English language ability in particular, between the students enrolled on the Youth Empowerment Program. While Reshma has achieved a BA in Commerce at a local college, Gowardhan left school at the age of 14. While Reshma is able to converse relatively happily in English, and laments her lack of fluency and inauthentic accent, Gowardhan has very little understanding or ability to communicate in English at all, and all our exchanges needed to be translated in their entirety. I have chosen to report these to portraits because they represent two ends of the spectrum of circumstances of the Youth Empowerment Students who participated in the study. In turn, they present the challenge of developing an English language curriculum that can support and engage a group with considerably diverse ability and levels of former education.

6.1.3 English to support family businesses

> Kamil, who is eighteen, comes from a Gujarati family and has had a Gujarati medium education. He is reluctant to speak at all in English and, indeed, Hindi, which he understands to a degree but cannot speak fluently. In order to conduct our interviews, we require the support not only of a teacher-translator from Hindi to English, but from Jagadish, who is able to translate from Gujarati to Hindi: our exchanges are therefore long-winded but good-natured nevertheless. Kamil's father has his own business selling saris and his mother often accompanies him. She is one of the few students' mothers who are working rather than being solely responsible for household duties. Neither Kamil's parents have any knowledge of English. His father, Kamil explains, believes that the struggling sari business will be bolstered if a member of the family can converse in English and deal with a broader customer base across Mumbai. Kamil also describes his father's wish to make his business more "modern" and more technical, using electronic ordering systems. For this, he will require the language and the technical skills that you need to navigate a computer interface. He doesn't think that he will be ready after the course. He is already struggling to keep up with the material in the classroom curriculum. Kamil thinks he might find another course after the Youth Empowerment Program has finished. [Kamil; Cycle Two]

Like Kamil, a number of Youth Empowerment Program students were encouraged by their families to improve their English so that they might employ their language skills (and, as was often mentioned in student interviews, computer skills) in the growth and reorientation of small family businesses. Without any other English speakers in the family, Kamil's family were dependent upon him to learn a highly valued skill, and I sensed from Kamil that he was under some family pressure to progress quickly. However, as for many of the students, Kamil felt that he was disadvantaged because of the lack of correct models of English available to him at home.

Like Gowardhan, Kamil's family is originally from Gujarat and speaks Gujarati at home. Kamil also lacks confidence in Hindi, the language with which the NGO assumed students were comfortable. For a small minority of students, both the language of instruction (Hindi) and target language (English) were relatively unfamiliar. Table 12 sets out the range of mother tongues (or first languages spoken with their families) as reported by the students across the three action research cycles.

Table 12: Students' reported mother tongues

	Hindi	**Urdu**	**Tamil**	**Marathi**	**Telegu**	**Gujarati**
Cycle One	16	7	2	0	1	2
Cycle Two	11	7	3	1	1	3
Cycle Three	10	9	4	0	0	1

This is once again a crude representation of the data, which does not account for the fact that many of the students had the ability to speak several languages, and employed a complex process of 'code-switching' between these languages according to the context. However, it remains that there is significant diversity in mother tongue, and associated levels of literacy, across the Youth Empowerment Student body, which becomes particularly prominent in the design and delivery of the mobile learning resource as the study progresses.

6.1.4 English for the school system

> Laxmi, aged 38, addressed by her peers with a courteous 'ji' because of her years and experience, is the oldest student to enrol on the Youth Empowerment Program, and allowed to attend by teachers who relaxed the admissions criteria. She has four children, the eldest three of whom have attended vernacular medium school for the entirety of their schooling. Her mother tongue is Hindi, and so her children have, where possible, received their schooling predominantly in Hindi. However, she explains that she has found the quality of schooling in Dharavi variable. In the case of her second son, the quality of teaching in Hindi-medium was particularly bad. She made a decision to move him to the Tamil section of the primary school. He didn't speak Tamil at the time, but the teaching, Laxmi understood, was of a better standard.
>
> Now, her youngest, aged fourteen, is about to make the transition to an English medium school. Although this is a bigger financial commitment for her family, as the school requires a large 'donation' on enrolment, she believes firmly that English-medium education will offer better chances for her son. But to secure enrolment, she herself feels she will need to better English skills. There is an expectation, she explains, for parents to talk to the teachers in English, and she would like to be able to support her children with their schoolwork. She has another motivation to learn. Her husband has passed away, and she makes a living by offering tuition to twenty odd children who live in neighbouring alleys in Dharavi. Increasingly, she says, parents are demanding more and more English language tuition as well as the traditional Hindi and mathematics she is used to, and she feels her own skills need to improve before she can offer this service. (Laxmi; Cycle One)

First, Laxmi's portrait sheds light on the complex relationship between schooling and language across India and in Dharavi in particular. Just as Laxmi's oldest three children have done, the majority of the Youth Empowerment Program students have attended municipal, vernacular medium schools, at least to seventh standard (age 14). Khan (2013) notes that this is the most common option for children in Dharavi.

Indeed, because of the linguistic diversity within Dharavi's population, these schools must offer different vernacular mediums in different 'shifts'. According to Khan (2013) the Brihanmumbai Municipal Corporation (BMC) runs more than forty tuition-free schools in seven different language media (ibid.). A Reality Gives English teacher explains to me:

> "We don't have a lot of space, so different vernacular mediums take place on different floors, you might have Tamil, Hindi, Marathi, Gujarati, Telugu…all in one building. As a foreigner you should not try to understand this." (Teacher interview; June 2012)

Laxmi's portrait suggests the way in which, depending on the reputed quality of the teaching, some parents made decisions to move their children between vernacular mediums to seek the best education for their children. Several students gave accounts of this negotiation, which suggested that they did not speak the same language as the medium of instruction for at least part of their schooling.

Second, Laxmi's portrait raises the issue of the English language learning within vernacular schools. Students often described their English tuition as of poor or unreliable quality. At his Hindi-medium government school, Moiz explains that although English lessons were supposed to feature in his curriculum, his English teacher rarely came to work. The English classes in the YEP were therefore his first opportunity to learn. Indeed, Graddol (2010) notes that there is a huge shortage of teachers who can implement the English programmes now being started or envisaged in primary schools, secondary schools and vocational education (2010:14).

Third, Laxmi's portrait highlights a decision to move her youngest child to a private, English-medium school, for which she believes she requires a higher level of English proficiency. Indeed, the apparent benefits of private, English-medium education, are articulated very clearly by the students:

> "If we talk about the municipality school, the teaching is okay but the thing is the…the teachers don't take much time, they don't focus on each and every one…. for them it's not important how much that person has improved, or how can we help that student, how can they learn English better, you know? The people who go to private schools, you know, at least they spend money but still they can get good education…and they can speak English very well. I have seen many people who don't do very well at municipality school but they move to a private place, they have really improved in their English. So it all depends on the system we have." (Sarita; Cycle Two).

A small number of students on the Youth Empowerment Student have benefited from a largely private, English-medium school education. Falak, Pankaj and Reshma have attended such schools outside of Dharavi and at considerable expense to their parents. Others, such as Krishna and Kamil, have been moved after seventh standard to benefit from three years of

private English-medium education in the lead up to the Secondary School Certificate (the equivalent set of exams to UK GCSE). Yet an English-medium education does not necessarily lead to proficiency in the language. In her English-medium school, Falak describes a scenario in which the majority of the 65 students in her class are uncomfortable with English. Whilst the classroom materials are in English, teachers tend to provide all explanation in Hindi, so she does not have to engage with English language and is not therefore developing any skills of language production. As Taylor and Bain (2005) point it, it therefore cannot be assumed that English medium education equips young people with the ability to communicate in English in the workplace to standards deemed acceptable to employers.

A volunteer teacher in the Reality Gives community centre argues that there is a more fundamental reason for difficulty in acquiring language proficiency:

> "I went to English-medium school. But it's not just what you do in school. It's part of your entire upbringing. Here it is very complicated. You can speak in three languages at the same time. I grew up with four languages spoken around me. You see if you want to really be good at those languages you have to have the discipline at home to really practise. Just doing at school is not enough. You see a lot of people who come out at the end of English-medium school and they are not capable of speaking English at all." (Volunteer teacher; interview)

Finally Laxmi's portrait highlights the demand for tuition outside of the formal education system. She is one of a number of female students, who ultimately express a desire to become teachers, who are offering this sort of supplementary educational support for local school children. In her study of the educational opportunities in Dharavi, Khan (2013) also observes the rise in numbers of students accessing additional tuition. One father, interviewed as part of her study, has enrolled them both in what he calls 'double tuition' – which is morning and evening supplementary classes in English language skills.

> "The English taught in government schools is not of the same level as in private schools, so I have to ensure that my children are not left behind and acquire more than adequate proficiency in the language,' says the thirty-two year old father, who feels the additional expense of a few hundred rupees every month is worth it" (Khan 2013:188).

6.1.5 The transition to college

> Sunita, eighteen, attended a Marathi medium school until 10th standard, when she was seventeen and had managed to "clear" all her subjects at SSC level. At this point, she moved to attend a college at King's Circle, on the other side of Dharavi, where she is studying *Commerce*. She explains to me that there are three streams of college course: *Science*, considered to be the most prestigious and the most expensive; *Arts*, considered to be the least academic, and *Commerce*, the most popular option amongst those Youth Empowerment Students who also attended college. She explains that the move to college had been very difficult. "…because in college, for six months, they are translating in Hindi or Marathi so we can understand, but after that they are stopping this and we don't

> know what they are saying. Even some students, they have good marks in English before, but they too are finding it too difficult. So then they are only using English, and I not even understand one paragraph. So whatever notes and whatever syllabus we get we have to sit and translate what it says in Marathi, we had to be clear. And then we have to make copies of this and give to all the students. Most problem is when we are learning things for exams, we learn everything by heart, and if we forget one thing, we forget everything." Sunita admitted that she did not intend to continue into the next year of her college studies, because she was tired of sitting in lectures that she didn't understand. (Sunita; Cycle Two)

After the Secondary School Certificate (the national exams that are the equivalent of the UK's GCSE), practically all college provision in Mumbai is English-medium. For those who want to continue their education but have been, until this point, enrolled in vernacular medium schools, it is a particularly difficult transition to manage. Sunita's portrait illustrates the challenges that such students face in keeping up in the new language medium. The Operations Manager for Reality Gives describes how, for a long time, the students in Dharavi from vernacular medium schools have struggled:

> "In Dharavi, lot of people are from vernacular medium. Hindi-medium, Urdu medium. Soraya, Amreen, they are highly qualified girls, but mostly if you are from an Urdu medium school or Hindi, Marathi, you don't have good access to English. Then they get 80%, 90% marks in the 10th grade, when they have the education in Urdu. After that, everything is in English, so their marks very quickly drops. I've seen thousand of cases you will not believe this. Very good students, they suddenly just failed the exams." (NGO operations manager; Interview)

And even those who manage to complete their college studies and have benefited from a great deal of English-medium education, like Reshma, note their frustration at a lack of confidence in spoken English:

> "Even after graduation, I feel a very shyness. You know when I was at the graduation, I had some problem with the administration and I went to the principal's cabin and was just like…what to talk, what to say…and I am just speaking in Hindi. And I can't believe this, I am completing the graduation and still I don't know what to say in English." (Reshma; interview)

Graddol (2010) argues that English-medium education represents a major problem in the Indian schooling system, rather than a solution:

> "Children do not learn English simply by being taught through English. A hasty shift to English medium without appropriate teaching of the language causes educational failure. Sustained education in, and development of, the mother tongue remains important" (Graddol 2010: 15).

Yet, as we have seen, in a multi-lingual community such as Dharavi, where quality of vernacular medium education is considered highly variable, some students have experienced a proportion of their schooling in a language that is neither a local language they speak at home, nor English.

6.1.6 English for (dis)empowerment

The discussion thus far has linked English language, employment security and prospects, and has explained the complex relationship between English and schooling for young people in Dharavi. Throughout student, teacher and NGO representative accounts, there is a strong assertion that English is an empowering language, a language that promises new opportunities, but also language that creates division and marginalisation in society. As one of my critical friends notes:

> **"**I would say rightly or wrongly, that English is associated with progress, it's associated with prestige, it's associated with a higher class. And there is a certain correlation (not a causation – it's more complex than that) between people who speak English and wealth. People who speak English are those who go to get good jobs. People who speak English are those who go on to higher levels of education. So therefore English has become a kind of barrier. And if you can cross that barrier, if you can get over that hurdle, you're then able to enter a different area of society… a more privileged area of society. Whether it should be like that is another issue. It enables people at the bottom end of society to boost their lives, and enter higher end jobs, through learning English. And in that sense it's certainly a tool for empowerment. Although as it's empowering those people, I think you could argue that it's further disempowering those who don't speak English. Which is a bit unfair..it's not their language. Maybe English is an Indian language but it's certainly not their language" (Critical friend, September 2013)

Sunita expresses this sentiment very clearly as she worries about her future:

> "The whole world speaks English, and I can't. If you go for any job, English is the first language, so for me English is the priority. I need it to pass any interview. I need it to use computers because everybody works in English on computers and if I don't have computers then I can't get a good job. And also if I get married in the future I will need English to help my children to get a good start in life. And I can have a better job and help to support my family. But I need to have English, proper English, with a good accent." (Sunita; interview)

Indeed, I reflect in field notes on a number of occasions when students, who speak three or four different Indian languages and had mastered two or three writing systems, did not consider themselves educated because they did not have English language skills. Instead, they described the envy they felt towards me because of my level of English. The fact that English is my mother tongue, and that I am not really conversant in any other language, did not seem to help them value their own skills any higher. Furthermore, as Sunita emphasises, students are conscious of the *type* of English they would like to speak, emphasising that the accent with which one speaks English is also perceived to be divisive in society. A critical friend supports this suggestion:

> "When you look at the upper classes, they are still snooty towards the middle classes who speak to my mind good English, but they don't have the right accent, which is a different Indian accent – like a South Bombay accent rather than a British or American accent." (Critical friend; interview)

In India, British English is popularly perceived as 'correct', a colonial legacy. Indeed, Wren and Martin's High School English Grammar and Composition (1935) is still widely considered the authority on English (Critical friend; interview April 2013). Yet Indian English lexis such as "prepone" (to bring forward to an earlier time) is increasingly recognised worldwide, though "no comprehensive description of this so-called Indian English has ever been made" (Nihalani *et al.* 2005). Indeed, it may comprise many varieties; 'Englishes' of Mumbai, Chennai and Kolkata differ considerably (Sedlatschek 2009).

Without a 'standard' Indian English, how should we consider utterances that differ from British English? For example, take the English phrase "we're like this only". In final position, "only" emphasises "like this" (influenced by Hindi: 'hum aisahi hain') and is commonly used across India. Where is the boundary between outright errors, and Indian English variants?

For a long time critical theorists and socio-cultural theorists have criticised the role of English language, a colonial legacy in India, as part of a globalisation process which they see as promoting western, capitalist, materialistic values (see for example Tomlinson 2012) and the expense of local linguistic and cultural capital. While Ferguson (2003) uses the term 'Anglobalization' describe a positive connection between the British Empire, English and globalisation, Pennycook (1994) and Gray (2010) have highly critical of these links. Indeed, Gray (2010) suggests that English has become "a form of linguistic capital, capable of bringing a profit of distinction to those speakers with the ability to access it (or more accurately, its socially legitimated varieties), and as an increasingly commodified dimension of labour-power" (2010: 16–17). Indeed, Graddol (2010) suggests that "we are fast moving to a world in which *not* to have English is to be marginalised and excluded" (2010:10). Such a sense of marginalisation and exclusion, as a result of a lack of English language skills, is articulated very strongly by the students.

The purpose of this discussion so far is not to provide a systematic assessment of students' English language skills. Rather, it serves to illustrate the variety of relationships the Youth Empowerment Students have with the English language. Student portraits have revealed a number motivations to learn English: to access better paid or more secure employment; to bolster family business; to support transitions from one language medium to another within the local school system or to supplement low-quality teaching standards; and to support the community's children, either by providing additional tuition or boosting their prospects to attend a prestigious English medium school. Yet, students have faced a series of challenges: a lack of correct models of English at home; a lack of, or poor quality, teaching in both vernacular and English medium schools, and shifts between languages of instruction that disrupt and discourage students in their progress through the education system. The result, it

seems, is that students who attend the Youth Empowerment Program have a wide range of abilities, and often asymmetric or 'spiky' language skill profiles, and a sense that by not having proficiency in language, they are in some way inferior to those who do. Graddol (2010) provides a succinct analysis of these issues:

> "Depending on which cell in the complex matrix of Indian socio-economic life a person inhabits, their relationship with English is different. Different modes of learning, of use, of empowerment and marginalisation apply" (Graddol 2010:18).

Here, Graddol (2010) makes reference to the imbalances of power that are associated with the use of the English language in India. Such imbalances are the source of discomfort for one Senior NGO representative, who describes the way he has struggled to come to terms with the divisive nature of language across India; and his apparent position of advantage because he was born into an English speaking family. I have also struggled with the idea that, by promoting the learning of English language in this setting, I feel I, we, the NGO, are actively reinforcing the complicated but significant societal divide, rather than challenging it by, for example, celebrating the young peoples' plethora of other skills and forms of communication. However, the NGO representative is clear:

> "Irrelevant of whether it's a good thing, people want English. And if that's what they want, we need to try to deliver it as effectively and efficiently as possible." (Interview; September 2013)

The following section will address the practical and political considerations that confront Reality Gives as an NGO seeking to provide an effective, appropriate and accountable English language programme that seeks, above all, to 'empower' its students.

An English language curriculum for the Youth Empowerment Program

The Youth Empowerment Program is an example of free[14], community-based language learning open to young people in Dharavi. According to Reality Gives' communications, the aims of the programme are:

> "to equip students with valuable language and computer skills, as well as to support their personal development, so they can access better job opportunities, continue their education or better provide for their families" (NGO blog post: 2013).

In our original interviews, I asked NGO representatives and teacher employees to provide their own definition of empowerment in the context of the Youth Empowerment Program:

> "Dharavi people don't have enough opportunities for getting skills they need in today's world. They don't have access to these resources. That is what Reality Gives

[14] The course is essentially free, but students are required to put down a Rs500 deposit that is refunded on completion of the course.

> is trying to do. Build their confidence…to give them the skills and knowledge to access these resources." (Teacher interview; June 2012)

In this sense, empowerment is both about building confidence, and about providing young people with relevant skills. The NGO founder places a particular emphasis on the building of confidence:

> "Yes, we want to improve their English, their computer skills. But it's more the confidence that people get from being able to use a computer, be it a girl or a boy who has never used a computer before and just seeing that amazement on their face and seeing it work. But of course we give them concrete, transferrable skills, but it's the confidence that I think is the most important thing." (NGO Founder; September 2013)

Finally, empowerment is conceived as relating to challenging the societal norms and power relations in society. To a senior NGO representative, empowerment is about:

> "Giving people that confidence to achieve their dreams. There are issues in Dharavi about people being afraid to follow their own aspirations, whether it be for…dare I say it… Muslim women maybe it's trying to give them the confidence to question their family's beliefs, giving people the confidence to be in charge of their own destiny." (Senior NGO representative)

The role of the programme is not, therefore, to bring students up to a particular level of English per se. Rather it perceived to be about providing students with confidence in the use of a language that is associated with new opportunities and upward mobility.

During my observations as part of the first action research cycle, admissions criteria for the Youth Empowerment Program appeared to be quite flexible. While students were supposed to have some basic phrases in English, and be able to complete a simple (and, in my opinion, rather arbitrary) set of fill-in-the-blanks grammar questions, I observed the recruitment process to be conducted on a needs-driven basis. In other words, if students expressed enough commitment to the course, could articulate (in Hindi or another language) why they were committed to completing the course, and could pay the Rs500 deposit, they would be given a place. As a consequence, and as the initial discussion of this chapter has shown, this resulted in groups of students with a wide range of student abilities. Finding an appropriate English language curriculum for such a diverse group has not been an easy task:

> "One of the biggest challenges we've faced is getting access to a high quality English language curriculum… It's hard for an NGO to get hold of really good materials that are suitable for all the students… And then getting good teachers to deliver it." (Senior NGO representative; Jan 2013)

The Youth Empowerment Program had, for more than a year prior to the beginning of this study, been using a curriculum developed by British volunteers with a background in English language teaching. This curriculum followed closely a publication popular in UK language

schools and aimed to balance reading, writing, speaking and listening skills, but scenarios and characters were adapted to make them 'locally relevant' to YEP students.

As noted in Chapter 4, my initial discussions with the NGO were on the basis that the students would use a mobile learning resource alongside this curriculum, although the nature of the relationship between the classroom and mobile resources had yet to be decided. However, during the first action research cycle, NGO representatives and teachers raised the issue that this curriculum has not provided students with sufficient speaking practice.

> "We have found consistently that, at the end of the course, students are not demonstrating enough of an improvement in spoken English skills" (Senior NGO representative; June 2012).

With a sense that their current approach was not fulfilling the students' needs, the NGO made a decision to shift to a curriculum specially focused on the spoken English skills required for employment. Teach India, a corporate social responsibility project founded by the Times of India newspaper group, developed this curriculum with the British Council. *English for Employability* is now delivered in 39 NGO projects across Mumbai slums to "disadvantaged urban youth", and in a similar number of projects in Delhi. The overall aim of the project is actually to improve young people's employability. Indeed, the assessment of the impact of the program is actually measured by the number of young people who go on to find jobs. According to its author, the curriculum has been designed for:

> "…people who do have a low level of English. They should have a basic level of English literacy, reading and writing English words… Most of them have had some sort of schooling. Normally A1 sort of level – produce very basic routine phrases, greetings, introductions…but nothing beyond that. This encompasses the vast majority of learners." (Interview; Curriculum author)

The admissions criteria, however, were stricter than the ones in place for the current Youth Empowerment Program, with standardised testing that was conducted by Teach India representatives and meant that a number of the young people who had previously been allowed to attend the course would not have the requisite base English skills to be admitted. Volunteer teachers, who were recruited by Teach India and completed just seven days training, would also teach the new curriculum. Indeed, the pedagogical approach of the new curriculum was less traditional. While course content was also designed to be 'relevant' to young people living in disadvantaged urban India, there was a greater focus on task-based learning, in which the learners are set tasks with non-linguistic outcomes (e.g. arrangements for a trip, an agenda for a meeting, the solution to a problem).

Such a 'relevant,' task-based approach represents a broader trend to move away from instructional or behaviourist language teaching towards a more communicative approach, as Meskill and Anthony (2010) observe:

> "The historical shifts away from teaching language in the abstract to teaching language *in use* have been significant. Where language was once treated as a subject area, the substance of which was to be *talked about,* contemporary views see the goal of language instruction to be active, productive *use* of the new language" (2010:429).

During Cycle One, it was decided by the NGO that the first group of YEP students would be using this curriculum in September 2012. This represented a major shift in pedagogical approach and new teaching arrangements, which, at the time, I found particularly concerning:

> "I am worried that, having thought I was working with one group of teachers who have a particular curriculum, which I have seen being taught, the NGO is now moving to an entirely different curriculum, created and delivered by an external organisation, with new admissions criteria and different goals. I'm not sure I know where the mobile project fits in anymore and it feels like many of the discussions we've had are irrelevant now." (Reflective diary 2012)

This discussion is important because it highlights the shifting strategic direction of an education project provided by an NGO, a change in teaching arrangements so that they are largely dependent upon volunteer input, and a change in the admissions criteria for students. The action research that positions and delivers a mobile learning resource must necessarily adapt to such changes in circumstances. Indeed, the new curriculum was not used until after the first action research cycle was completed. Therefore, much of the next discussion on the nature of the mobile learning resource and the way in which it might enhance the students' learning was necessarily general and rather speculative, because students in Dharavi had not, at the time, had a chance to learn from the new curriculum.

What sort of mobile learning?

Against a backdrop of shifting curriculum priorities, a central issue to address was the nature of the mobile learning resource that would be the subject of this study, and how it should support the students in their learning of English.

6.1.7 Opportunities and constraints of the technical system

As indicated in previous chapters, the mobile learning resource to be employed for this purpose was necessarily constructed using a pre-existing, web-based content development system. The technical system allowed mobile educational content to be constructed from text, image, audio and video 'assets', which could be uploaded using a web-based interface to construct a range of interactive 'screentypes'. The possible screentypes, their functionality,

and the assets required to construct each screen presented in Table 13. These screentypes could be grouped together to create different language activities. Given there was only a limited amount of development support available, it was necessary to begin by communicating to research participants both the opportunities and constraints presented by this system. As set out in chapter 4, this was done using a prototype resource. The structure and rationale for the prototype resource is set out in Appendix V.

Table 13: Mobile resource screentypes and their functions

Screentype		How it works	Screen assets
	**Vocabulary**	Vocabulary screens present a written word or phrase, an image and audio. Learners can hear how the word or phrase is pronounced, practise saying the word or phrase and record his or her voice. Translations can be added in a range of native languages.	Image; (dual language) text; audio
	**Spelling**	Spelling screens show an incomplete word or phrase, display an image and play audio. Learners select from the characters underneath to complete the word.	Image; text; audio
	**Wordfill**	Word fill screens provide a chance to practise completing sentences with the most appropriate word or phrase. Learners touch the word in the box to view the available options and make your choice.	Image; text with multiple options; audio
	**Wordorder**	Word order screens provide the chance to practise putting words, phrases or parts of a sentence in the right order.	Text (broken down); optional audio
	**Quadrant**	In quadrant screens, four different images are displayed on the screen. Learners touch the most appropriate image to select your answer.	Four images; text question/prompt, optional audio
	**Option**	Option screens present a written question or phrase and accompanying audio and require learners to choose the most appropriate response from the options underneath.	Text question/prompt with optional audio; text answers

Screentype		How it works	Screen assets
	**Listening**	Listening screens play an extended piece of spoken English. Learners listen to the clip, and then answer the questions on the following screens.	Image; text title; extended audio passage or video
	**Reading**	Reading screens present a short piece of text on the screen.	Text image, text title, extended text passage
	**Dictionary**	The dictionary contains the words and phrases from every vocabulary exercise in the course. Learners can select an entry to see a larger image and to hear the pronunciation.	Compiled automatically from all vocabulary screentypes in resource
	**Flashcards**	Flashcards provide a means to reinforce retention of all the vocabulary contained in the mobile learning resource using a carefully calibrated algorithm to help learners to commit vocabulary to memory.	Compiled from all vocabulary screentypes in resource

The types of language activity constructed from the screentypes in Table 13 would be considered to be pedagogically traditional and lacking sophistication by the Mobile Assisted Language Learning (MALL) community (see Chapter 2). According to Tomlinson (2012), language-learning materials:

> "can be informative (informing the learner about the target language), instructional (guiding the learner in practising the language), experiential (providing the learner with experience of the language in use), eliciting (encouraging the learner to use the language) and exploratory (helping the learner to make discoveries about the language)" (Tomlinson 2012:1).

The reality is that most commercially produced materials (either paper or technology-based) focus on informing their users about language features and on guiding them to practise these features. Such instructional or behaviourist drilling and practice approaches, which support repetitive drilling of vocabulary, spelling, grammar and pronunciation, aiming at consolidation of foundational knowledge through flashcard exercises, quizzes or simple games, also underpin the vast majority of educational apps (Pegrum 2014:87). However, these activities are pedagogically limited since they do not typically involve real comprehension or communication, so they cannot be the whole story of language learning (Dudeney *et al.* 2013). Given the more communicative, constructivist and socio-cultural

pedagogical trends set out in Chapter 2, many commentators argue that most apps "are woefully out of sync with modern theories of learning and skills student[s] will need to compete in the 21st century" (Murray and Olcese 2011:48).

However, others agree that such activities have a place in the classroom, especially if they include a focus on meaning, and even more so outside the classroom in a so-called 'flipped classroom' model, where more pedagogically traditional delivery of content or behaviourist drilling activities are completed outside the so that more active, constructivist learning activities can take place during classroom hours (Johnson *et al.* 2012; UNESCO 2013b). Indeed, Pegrum (2014) argues such activities could offer particular advantages for the young people in Dharavi (2014):

> "Though *consumption apps* are somewhat removed from constructivist ambitions of transforming teaching and learning, they may play an ancillary role in contemporary classrooms, and permit the kind of independent learning preferred by many students. Moreover, they may find resonance in varying cultural and educational settings around the world, and can facilitate study in contexts with limited educational resources, thus dovetailing with social justice agendas. When well-designed, even pedagogically traditional apps can reflect current understandings of appropriate content; can bring learning to life through multimodal presentations and interactivity; and, in the case of language learning, can provide authentic verbal and written material accompanied by reliable, system-generated feedback, offering learning opportunities which may be far superior to anything previously available in some settings." (Pegrum 2014:86-87)

Firstly, the apparent simplicity of the software design presents some particular advantages given the debates in Chapter 5: a) software can be produced for both smartphone and feature phone interfaces, providing relative equality of experience irrespective of mobile platform; b) the resources could be locally stored and therefore do not require a network connection, which means there are no cost implications for the learner, nor the necessity to access the internet from the mobile device. The key, therefore, to this project is to find ways in which the existing features of the system can be employed in a way that is of most value to the students' learning of English language. We now turn, therefore, to the decision about how the mobile resource should support the Youth Empowerment Program's students in their learning of English.

6.1.8 How should the mobile device support the students' language learning?

Reflections on the prototype resource, which demonstrated the possible software features, yielded a number of suggestions for the ways in which a mobile learning resource might support the students (and the ways it should not). These suggestions, along with supporting data that illustrates the rationale, are set out in Table 14:

Table 14: Ways to support student language learning

	Suggestion	**Rationale**
1.	The resource should allow students to build review and consolidate what they learn in the classroom	"The course is only three and a half months long. From my experience of English teaching it takes a lot longer for students to grasp the different concepts. In an ideal world you would revisit the material again and again. But there isn't time for that here. So, I know it's a cliché, but anything that consolidates what they are doing is really helpful." (Senior NGO representative; June 2012)
2.	The resource should be for students' independent use, outside of lessons	"I do not want students using these phones at the same time as the lessons. We have in the rules that student must switch off the mobile when they are in the community centre." (Teacher; June 2013)
3.	The resource should provide support for weaker students	"I'm most worried about supporting the weaker students on the course… It moves quickly and it's easy for them to be left behind. So they should have something that helps them go over the lessons, to catch up… Also this would be good for students who miss classes." (NGO operational manager; June 2012)
4.	The resource should provide extension material for more advanced students	"There are some students who are having a very high standard of English already from college... Sometimes they need something that is a little difficult or they are getting bored." (Teacher, June 2012)
5.	The resource should be a diagnostic tool that provides teachers with data on how students are progressing	"I'm really interested in the way the teachers can use the resource as a diagnostic… with the data from the software, to help identify the weaker students and give them more support." [Senior NGO representative; January 2013].
6.	The resource should be a way of bringing students who have very low levels of English up to the required entry level for the course	"I still don't think we're really getting to the students who need it most. The ones who have no English at all, or at least not enough to get on the program." [Senior NGO representative; July 2012] "Maybe the mobile resource should be something we can offer to those people who don't get onto the course. As a way of bringing them up to entry level." [NGO operations manager; April 2013].
7.	The resource should be something to share with other similar NGO projects	"There are lots of NGOs trying to help people in Dharavi with their English. There should be a way we can share our resources with them and increase the scale of the project." [January 2012]

Although these suggestions were not necessarily mutually exclusive, the diversity of opinions on the purpose of a mobile resource was initially unsettling:

> "There is a danger here what we are trying to create is trying to be a catch-all solution to address every problem that we've identified. We need to be clear about what exactly the resource should do, or it will end up trying to do a lot of things badly." (Reflective diary July 2013)

As Selwyn (2013) notes, there is often no one clear 'need' that technology can be used to 'address', or one clear 'enhancement' that technology can 'provide' for all. Indeed, during these initial discussions there was a rather acritical view of the project as a whole. I think this was partially because the concept of mobile learning was unfamiliar, and there was a sense of gratitude for any sort of intervention at all. It might also be attributed to the general need for additional capacity within the Youth Empowerment Program:

> "To be quite honest, anything that gives the students a chance to use English outside of the classroom is valuable. Anything." [Senior NGO representative; October 2013]

This issue is further discussed in Chapter 8. The process by which the suggestions were prioritised was therefore largely based on discussions of practical and technical feasibility.

At the end of Cycle One, we agreed as a group to focus on the first three suggestions in Table 14, with a view to revisiting this list during Cycle Two. First, the mobile resources would follow the structure of the classroom curriculum. It could not, for reasons of copyright, reproduce course content exactly, but it could, for example, use the same vocabulary, drill the same grammar points and provide reading or listening comprehensions based on similar topics, as the ones in the learner course. To this end, it was proposed that the resource would allow students to build review and consolidate what they learn in the classroom. Both examples of the way in which the mobile learning resource was designed to align with the classroom curriculum, and an overview of the entire mobile learning resource are presented in Appendices VI and VII respectively).

Second, the resource should provide independent learning opportunities outside of the classroom. This suggestion arose from two particular concerns: that teachers were uncomfortable with the idea that a mobile learning resource (and therefore mobile phones) should be used in the classroom; and that learners struggle to find ways to practise English when they are at home. Third, in presenting supplementary material to reinforce and review the classroom resources, we argued that this could provide a way for struggling students to keep up with the rest of the group.

The remaining suggestions were either more difficult to implement technically (e.g. suggestions 5 and 7) or required a significant body of further English language content (e.g. suggestions 4 and 6) that would require significant additional time to develop. However, it was agreed we would revisit all of these suggestions after Cycle Two.

6.1.9 Locally relevant, culturally acceptable resources

Although we had agreed the general purpose of the mobile learning resource, the multi-media nature of the resources created by the mobile learning system meant that there were important considerations relating to the use of images, audio and native translation in the mobile learning resource. One of the particular requests that originated from NGO representatives and teachers was that we should strive for:

> "…culturally appropriate materials for students, which don't have the affluence, or the conceptually strange scenarios for the students, that don't waste their energy trying to understand something that isn't relevant to them." (Senior NGO representative; interview June 2012)

Such attempts to make language curricula culturally appropriate have been well discussed in the literature (see, for example, Tomlinson 2012). Indeed, Selinger (2009) emphasises the importance of cultural acceptability in the context of developing electronic resources. Thus, it was agreed that a) scenarios presented in the resources would be as relevant as possible to the lives and circumstances of students, b) images in the resources should be, as far as possible, locally familiar and b) the voices used in audio recordings should be speaking English with an Indian accent, to replicate the English the students are most likely to encounter in Mumbai.

As a final point, the technical system had the capacity to provide native language translation for certain vocabulary and phrases and activity instructions. In the prototype resource presented to students in Cycle One, I incorporated Hindi translations, which were provided by one of the teachers, to demonstrate this capability. The students were largely very positive about the presence of translations, particularly given the majority of them had not access to English language support beyond the community centre. Despite the linguistic diversity of the group, the teachers reassured me that Hindi was the most appropriate language to use, and during Cycle One, I received no indication that any of the students objected to Hindi. However, following the trial of the prototype, the incorporation of translations was discounted for three reasons:

Firstly, the Android platform could not render Hindi's Devenagari script correctly on the old version of Android software. Conjunct characters did not appear properly, and so some words appeared to be misspelt or nonsense. Several of the more conscientious students provided me with a list of these errors following the trial of the prototype. Indeed, the technical partner looked into this issue to see if it could be rectified, and reported that this problem was not only with Hindi, but with Arabic and other languages with conjunct characters . This was a platform specific issue that had been corrected in more recent versions of the Android platform, but was beyond the control of the technical partner. This also suggests the

dominance of roman script in technology interfaces to the exclusion of other major world language systems.

Second, the teachers' guidance for the new Teach India curriculum was very specific about avoiding the use of Hindi within the classroom. Rather, the pedagogical approach was immersive, and students were encouraged to speak only in English. The teachers and NGO representatives therefore felt it would be inappropriate to include Hindi in the mobile learning resource.

Third, as discussed in an earlier part of this chapter, it emerged through incidental conversations with some students that they lacked confidence in using Hindi. Indeed, a minority of students could not actually read the Hindi script at all, usually because they had attended school in another vernacular medium and their literacy in Hindi had not been consolidated as part of their schooling. This was not something the NGO had realised, and illustrates the way in which action research can serve to provide a deeper understanding of the 'problem' it set out to address (see, for example, McNiff 2013). Indeed, the lack of literacy in Hindi has, I believe, caused NGO representatives to reconsider the way in which they communicated in writing with students and their families, which had always been using the Hindi script.

This discussion provides an example of the way in which individual design characteristics were reflected upon and debated by all the research participants as part of the action research process. However, as will be set out in Chapter 7, the decisions made at the end of Cycle One were necessarily revisited in Cycle Two.

Conclusion

Selwyn and Facer (2013) suggest that the "critical study of educational technology necessarily begins with a critical reflection upon the definition of the educational 'problem' at hand" (2013:8). In presenting the variety of different relationships that student participants had with English, and their particular motivations for attending the Youth Empowerment Program, this chapter has exposed a number of dimensions to the educational "problem" at the centre of this study. The Youth Empowerment Program caters for a linguistically diverse body of students with a wide range of English language skills, yet these students share a feeling of disempowerment and marginalisation. A number of shifting political and pedagogical considerations determine the delivery of an English language classroom curriculum for this group, and the study takes place against a backdrop of significant strategic change, incorporating a new partner organisation, new teachers and new admissions criteria.

I have presented the way in which the technical system with which a mobile learning resource could be created may lack pedagogical sophistication, but that it still offered valuable opportunities for language learning if conceived and applied in pedagogically sensitive manner. The pragmatic realities of the project, and the limitations of the software development tool, mean that participants' wide-ranging ideas and demands could not all be immediately accommodated. It was, therefore, important to carefully manage the expectations of the study participants. Indeed, as I have shown with the example of translation support within the mobile learning resource, decisions about action have necessarily needed to balance technological issues related to the restrictions of a mobile platform with pedagogical approach and awareness of socio-linguistic context. Yet such decisions are necessarily subject to reflection and review. As set out in Chapter 3, action research explicitly recognises the possibility of progressively learning from experience. It is to these experiences, and the subsequent reflections on the initial decisions we made, that I now turn.

7 STUDENT LEARNING EXPERIENCES

Introduction

As set out by Levy and Kennedy (2005), "widespread acceptance and use of new communication technologies…does not necessarily point to effectiveness or value in the educational context" (2005:8). In order to be educationally useful they must allow users to interact with information and collaborate in ways that *advance learning* (UNESCO 2011: emphasis added). A logical starting point for the identification for any advances in learning would be to define learning outcomes: what students should be able to achieve after undertaking a particular learning activity. However, mobile learning outcomes are often difficult to define or measure, because learning occurs in any number of settings and often informally (Sharples *et al.* 2010).

Moreover, much mobile learning happens in collaboration with other educational activities. In this study, for example, mobile learning is undertaken in conjunction with a taught classroom curriculum and, for some students, alongside school or college tuition, which may or may not take place in English. While this complexity offers many new opportunities for learning, it also complicates the task of gathering data on the impact of mobile learning projects. Indeed, there is often little attention paid to the variety of learning practices and experiences of the individual learners. This chapter thus seeks to address the following subsidiary research question:

> In what ways do students use the mobile learning resource to support their learning of English?

Combining an analysis of software logging data, interviews and observation, the discussion uses portraits of individual students to illustrate the variety of ways in which the young people have engaged with the mobile learning resource over Cycles Two, the difficulties they have faced, and the extent to which they feel the mobile learning resource has enhanced their learning of English. Chapter 4 has set out the problematic nature of data collected in Cycle Three, but where possible, student learning experiences from this cycle will also be incorporated. This chapter does not focus on what or whether students are learning; rather, it focuses on how they use the mobile learning resource and, indeed, the mobile phone in general, in their learning practices. Where appropriate, reflections on the modifications to the software and the way it was delivered to the students will be set out and justified as the action research study progresses.

Yet this chapter also argues that we must consider learning experiences beyond the mobile software itself, notably the development of students' digital skills, and the learning that is derived from the participatory processes through which this action research study has been conducted.

A typology of learning strategies

The following discussion sets out the ways in which students engaged with the learning resources varied considerably. In order to illustrate this variety, I have proposed a broad typology of learning 'strategies' employed by the students, as set out in Table 15. The typology was developed by first looking at a subset of student practices, and tentatively drawing up series of learning strategies. These strategies were tested and refined using the remaining students' experiences. I do not intend this typology to essentialise student behaviour, and there are students whose practices are not limited to single strategies. Rather, this typology seeks to draw together the multiple data sources (software logs; student interviews; teacher reflections and personal observations) to characterise the spectrum of different student learning practices. Where there are variations on the strategy I describe, (often according to gender or lifestage), these are discussed below.

Table 15: A broad typology of student learning strategies

Nature of engagement	**Strategy**
Directly with mobile learning resource	1. A supplementary resource to classroom learning 2. A systematic, independent approach 3. A collective resource for communal areas 4. An app to compare and share 5. A source of frustration or disillusionment
With the mobile phone as a communicative device	6. A means to improve digital skills 7. A means to create and articulate online identity 8. A springboard to further language learning
With the action research project and the participatory process	9. As a means to engage in a participatory research process

Engagement with the mobile learning resource

Analysis of the data collected in Cycle Two suggested that students engaged with the mobile learning software in a variety of ways, for a range of purposes and, in some cases, not at all.

7.1.1 A supplementary resource to classroom learning

> Ahmed used software that was installed on a loan Nokia 6303i device. He did have his own mobile, but it was a "China" phone[15], which did not support the learning software. He had relatively little former experience of English language learning, and expressed his anxieties about keeping up with the rest of the class. To him, the value of the mobile resource was in the opportunity to review and practise the material covered in the classroom. In line with his own reports, Ahmed's logs revealed that the various activities were completed roughly at the same time as the elements of the curriculum on which the resources were based were taught in English language classes, and he would often attempt these exercises multiple times. He also used the dictionary frequently, and complained in each interview that there was still a need to add Hindi translation of vocabulary. "Sometimes the picture isn't clear enough. I don't know the meaning of these English words." Ahmed had also made a list of vocabulary he had encountered that wasn't covered in the mobile resource. He therefore took his role as a tester of the resources seriously. He suggested that the teachers should be telling them to do exercises on the phone for homework rather than the paper-based exercises they were set after class, as part of the classroom curriculum. He explained that there wasn't much space in his house, and that it was much easier to work on the phone than to deal with pens and paper on the floor. He was a real advocate of the resource, explaining that the project had been an "excellent experience". He preferred the Nokia model to his China phone handset, and requested that he keep the loan device after the end of the Youth Empowerment Program. (Ahmed, Cycle Two)

Ahmed's portrait raises a number of points worthy of further discussion. Firstly, his approach to using the mobile learning resources is arguably the way in which this project was conceived by the NGO. As a learner who, by his own admission, was struggling to keep up with the classroom curriculum, he was using the mobile activities to practise, review, and consolidate the material that was covered in class. However, as the remaining discussion in this chapter will reveal, a very small proportion (four in total) of the students appeared to adopt this learning strategy during both Cycles Two and Three.

Reflection with NGO representatives suggested there were a number of possible explanations for why this was not a common approach. In interviews, Ahmed was calling for the teachers to integrate the resource into the English classes. Yet there were significant challenges in engaging teachers in the project. During Cycle Two, two of the three teachers were working in a voluntary capacity and I found it difficult to meet with them regularly to ask them to remind students of the availability of the resource, and incorporate into their lessons. The English teacher employed by Reality Gives, who was heavily involved in the participatory activities to define the scope and character of the mobile learning resource, was not in practice enthusiastic about integrating the resource into his teaching.

> "You see we have the Teach India teacher's book here, with every detail about how we are supposed to teach the lesson. And the mobile project does not fit easily into

[15] See Chapter 5 for a more detailed discussion of "China" phones in Dharavi's mobile economy.

this plan… really it is for outside of the English class." (English teacher interview; April 2013)

Such engagement of teachers in this project, and the positioning of the mobile resource as external to teaching practice, will form a central part of the discussion in Chapter 8. Without prompts to use the mobile resource in line with classroom activities, it was arguably less likely that students would use the resource as had been envisaged in Chapter 6. However, there is a need to recognise that students will not necessarily engage with learning resources as intended (see, for example, Laurillard 2012). There is a more philosophical debate to be had about whether a learning approach should indeed be prescribed, or whether learners should be able to make their own choices.

Second, a number of students explained that there was a degree of excitement and novelty when the mobile resource was given out, and a curiosity to explore the full set of materials. This meant that it was unrealistic to expect students to stay on the limited resources for each section of the classroom curriculum.

Ahmed's portrait also highlights the requests for Hindi translation in the resource, particularly when it came to vocabulary. I tended to agree with him that these vocabulary screens were not necessarily very clear. It had been a point of dissatisfaction during the construction of the resource that, beyond simple nouns and verbs, it was difficult to find images to accurately and unambiguously convey meaning. Yet, as discussed in Chapter 6, the use of Hindi translation was against the pedagogical rationale for the classroom curriculum. Furthermore, there were technical restrictions to implementing this, in the form of the Android platform's rendering of Devenagari script. However, several students repeatedly raised the issue of translation support over the course of Cycle Two, and so this design consideration was revisited and will be addressed later in this chapter.

7.1.2 Independent, self-paced learning

Krishna is a conscientious student, always extremely polite and focused in English lessons. The software was installed on her own handset – a Nokia C1. After one month, her logs showed a regular pattern of use, each evening between about 10.30pm and midnight. This time, she explained, was when she had finished her college work, her household chores were done, and she had some time to herself. She worked progressively through the units of resources, tackling Vocabulary, then Spelling, then Reading, Listening and Grammar in sequence, completing one unit before moving on to the next, following the order of the activities set out in the mobile resource menu. Occasionally, the logs showed that Krishna attempted the same exercise twice or three times. During an interview, she explained that she would return to an exercise if she got several questions wrong, or if she was interrupted in the middle. She also explained that she was motivated by the progress bar at the bottom of the screen, tracking its progress within each unit and making sure it was green in colour, not amber or red. Krishna had completed all the exercises within four

> weeks, explaining that she found the level of the resources "a little easy". She asked for more extensive materials. She did not try to match the resources with the material they were covering during the English lessons, preferring to work through them at her own pace. She rarely referred to the dictionary. When I asked why, she explained that her vocabulary was not the problem, rather she wanted some practice at using the vocabulary in context. Krishna took her collaborative role in the action research project seriously, pointing out small bugs in the software that had restricted her progress in certain exercises, and asking for more challenging resources in future iterations. A particular request was for more "conversation" resources, which would help her with dialogues for everyday scenarios. (Krishna, Cycle Two)

Krishna's portrait illustrates three important points. Firstly, Krishna is an example of a number of students who worked quickly and methodically through the learning resources that were available to them, independently of the material that was being covered in the classroom curriculum. Many of these students explained that they enjoyed having the opportunity to complete the exercises in a manner that was self-determined and self-paced, without any restricted access to content. Pegrum (2014) suggests the value of this sort of independence in learning:

> "Independent learning is a democratising supplement to institutional learning; and in contexts where there are few institutions, teachers or information sources it may be radically empowering…it dramatically enhances students' autonomy and opens up lifelong learning possibilities" (Pegrum 2014;35)

Yet, in order to do so, the nature of the resources must be suitable for the learners in question. Krishna is an example of a student whose level of English was beyond that of the majority of the language covered in the resources. Indeed, when discussing the cases with the principal English teacher, it was clear that the majority of the learners who approached the resource in this way had a relatively high standard of English (at least in some language skills). This suggests that some students identified the educational content, already open to criticism for its traditional pedagogical underpinnings, as unchallenging. Given the mobile learning resource content was aligned to the classroom language curriculum, this suggests a mismatch between the Youth Empowerment Program's curriculum and the learners. Given the range of language skills identified in Chapter 6, this is not surprising. However, it does identify the possibility for extension activities to be included in future iterations of the resource. The students who engaged with the mobile learning resource in this way often had higher level of familiarity with mobile phones, with the resource having been installed on their personal mobile device

Secondly, for the students who adopted this sort of learning strategy, their patterns of use were relatively regular and illustrated the ways in which they integrated the use of the learning resource into their daily routines. This supports Kumar *et al.'*s (2010) observations that opportunities for mobile learning become intertwined with the daily lives of young people. Notably, the young women who took part in the study reported that the great majority

of their use of the mobile learning resource took place in their home. A number of girls reported that they felt 'safer' using the phones at home, where they could also be accessible to other family members too. Sulbha, for example, explained that she would work through the exercises in bed most evenings, before she went to sleep. She described the way her husband would look over her shoulder, tutting when she entered an incorrect answer. Sometimes, she said he would take over and complete the exercise himself.

However, there were some (largely male) students who did use the software beyond their home environment. Moiz, another particularly extensive user of the mobile learning software, had a distinct pattern in his software logs. During weekdays, had short concentrated periods of activity between 9.15 and 9.45am, and again at around 12.15pm. He explained that this was the time he was in transit to and from college, and he would use the time on the train to complete the learning activities. When I presented this gender contrast to teachers and NGO representatives, they explained this with the assertion that "boys are permitted to go outside more freely" (Soft skills teacher; interview).

Finally, Krishna's portrait illustrates the way she, like Ahmed and a number of other students took the role as a research participant seriously, and provided constructive and valuable feedback on the nature of the mobile learning resource. She, like many of the students requested "more" resources to engage with, having finished the resources relatively quickly, and also requested material that would support more spontaneous "conversation". Such requests will be given further attention later in this chapter.

7.1.3 A need for peer support

> Asmabee, twenty-five, used the mobile learning resource on a loan Android device. She predominantly used the resource in the community centre, surrounded by other students. In an early interview, she described an incident in which she once got her mobile phone out to use on the train on the way to nursing college. She explained the way she felt conspicuous in the possession of a smartphone, and that she received unpleasant comments from her peers while she was using it. From this point on, she said she reserved the use of the device to the community centre or at home. She explained that she felt most confident exploring the materials with other people who knew more about mobile phones, who could help her when she didn't know the answers and who understood why she was doing it. She actively sought companions to embark on the resources during break times, lunchtimes, and she sometimes asked if I would like to work through the resources with her. One of her most frequent learning companions was Farid, eighteen, a confident user of technology despite using a loaned Android handset. He told me he appreciated the game like activities and found them excellent for "timepass".[16] His friendly and helpful nature meant that he fell into a sort of mentoring role. I observed on a number of occasions that Farid would support Asmabee in completing the interactive exercises, However, the pair

[16] Timepass definition (see Craig Jeffery's book)

> got into trouble with the English teachers (both volunteers) and, on one occasion, the computer skills teacher, for failing to concentrate in lessons because they were engrossed in mobile activities. (Asmabee; Cycle Two)

Asmabee's portrait illustrates the way in which the less confident users of mobile phones tended to seek help in safe, supporting places, like the community centre to use the mobile resource. The incident on the train suggests that, for some learners, the possession of a smartphone for the duration of the project was, at times, both incongruous and uncomfortable. This feeling, I should add, was not one that was expressed by all learners who had an Android smartphone device. By contrast, Farid was ecstatic at the opportunity to use the Android phone and described the pleasure he took in showing it off to his school friends. Nevertheless, I raised the issue with NGO representatives and teachers that, by introducing smartphones to students who would not usually be able to access or afford them might be creating inappropriate tension or desire within the community. This forms a point of discussion in Chapter 8.

Farid's support for Asmabee in the use of the resources illustrates the way in which students (three in total) developed as mentors to support less confident users of the software, helping them not only with the learning activities, but small technical problems such as reinstallation of the software via Bluetooth. I should add that I had not, rather naively, considered this method of installing the software, instead using a comparatively laborious method of copying files onto a memory card that I had historically used for software testing. In a period of absence, Farid explained to me that he had reinstalled the software onto other Android phones via Bluetooth because students had experience technical problems. I subsequently adopted this method of installation because it proved much less time consuming. This, therefore, is an example of innovation that came from the research participants. Farid simultaneously challenged one of my actions and found a new way to support his peers.

Kumar *et al.* (2010) describe such technically proficient and innovative students as "expert" or "power" users. There were two other such students in Cycle Two, who displayed great technical proficiency and spent a significant amount of time familiarising themselves with the mobile learning application, not only in terms of learning activities but in terms of its installation and storage on each device. From student and teacher accounts, it seemed that these mentors had provided very valuable support to less confident students, especially during periods of absence when I was not able to offer direct technical support. It was put forward as a possible approach to foster in Cycle Three.

The final point raised by Asmabee's portrait relates to the way in which the Youth Empowerment teachers expressed their disapproval about the inappropriate use of the phones

in the classroom. Indeed, one teacher blamed the mobile learning project as providing an excuse for poor student concentration in lessons:

> "There are some students – I think you know who – who are using the mobiles in our classes. And when I say "No, please put them away", they say they are doing it for the English classes. But I can see that is not what they are doing. They are doing Facebook or something. So you see it is very difficult for us to control these things because now they can say they are using the phone to learn English." (Computer teacher interview; March 2013)

Other teachers at various points echoed this sentiment during Cycle Two, and viewed the mobile phones as devices that needed to be 'controlled' and 'excluded' from the classroom, rather than a device that might facilitate learning, despite their original involvement in the way the mobile learning resource was conceived. There were also a number of requests for student use of the wireless internet in the community centre. The network was notoriously unreliable but students had observed its use by the teachers, roaming NGO staff and myself. On one occasion, I was reprimanded for giving Farid the password to access this network:

> "Farid has been pestering me for the wifi password for the last few days so he could access the Internet freely on his phone. At first I was reluctant to tell him because I didn't really feel it was my place to do so, but I hadn't explicitly been told that students were not allowed to use the network. So today I told him. I thought it was interesting from the research perspective that he was so keen to use our devices to go online, and I thought it was better for him to use the free wifi rather than a data connection via his loan Android device. But [computer skills teacher] was furious with me for doing so." (Reflective diary; March 2013)

The community centre staff maintained that this network was not for use by the students and that my behaviour had been inappropriate in disrupting this established institutional practice. Avison et al. (2001) note that action researchers struggle with the dilemmas that are embodied in the tension between the intentions of the researchers and the intentions of the members of the host organisation that may be collaborating in the project. Researchers and practitioners may not share the same values and they are likely to have different goals. On the one hand, action research is concerned to enlarge the stock of knowledge of the social science community. On the other hand, action research is also concerned with solving practical problems confronting the organisation in which the research is embedded. As this example shows, the "double challenge" of combining both practical action and research can lead to conflict where the roles of the collaborative members of the research team are different. Despite our initial efforts to set up appropriate terms of use of mobile phones in the community centre (see Chapters 4 and 5), it was agreed that we needed to revisit these in Cycle Three.

7.1.4 An app to compare and share

> Pankaj had a relatively expensive Samsung Galaxy Android, on which he had spent 9000 rupees. He was adept at using his phone, keen to show it off and most excited at the prospect of having a new app to add to his collection of games. After I installed the Android version on his device, he repeatedly told me it was "very nice software" and I initially observed him scrolling through the colourful screens in the community centre a number of times. However, after collecting the logs, it became clear that his actual use of the software was limited, totaling about three hours in total over the course of the three months. Yet, during interviews he explained that he had used it a great deal at his college. It became clear that, to Pankaj, 'using' the app primarily involved showing it to friends at college and sharing it with them via Bluetooth. Logs confirmed that he repeatedly accessed the main menu screen of the software, scrolled through a few screens and closed the application. Although it was not possible to track the number of times the application had been shared, I asked Pankaj to list the recipients and he mentioned twelve different students. He explained that many of his college friends had Android phones and were interested in the new application. (Pankaj; Cycle Two).

Pankaj's lack of engagement with the English language activities was concerning to teachers and NGO representatives. They suggested that there should be a way for teachers to see, online, "the students were using the resource and also the ones who are being lazy" (Teacher interview). This request aligns with the initial suggestion that the learning resource should act as a diagnostic tool through use of the logging data. This feature was thus reconsidered at the end of Cycle Two.

Pankaj's portrait also illustrated the tendency of a minority of boys, exclusively college students, who viewed the resource as a sort of "collectable" item that could be shared and swapped with other interested parties, usually their peers. It was not possible to ascertain the extent to which those who had received the shared software were actively using it to support their English language learning. There was a request, therefore, for additional features to the system: first, the ability to track the number of times an app had been shared, and second, the ability to remotely see the software logs to ascertain whether these new recipients of the software were using the resource. Although I already knew that these requests constituted a significant (and expensive) development challenge, I added them to the list of revisions to consider for Cycle Three.

7.1.5 Irrelevant or inappropriate

> Rukhsana was a quiet girl, consistently with her friend Zahra for the two cycles of the YEP she attended. While she did emphasise in interviews that the software was attractive and useful, her logs showed limited engagement with the learning resources. Over three months, her use of the application totalled less than 2 hours. Realising the inconsistency between her apparent enthusiasm and limited engagement, I discussed this with Rukhsana in the interviews. She admitted that this form of learning resource did not fit into her life. At home, she worked for the family textile business each morning, and after attending classes at the community centre

> until late into the evening. By the time she had finished work, she was very tired and wanted to relax. She didn't see the relevance, nor have the time, for using this mobile resource. I thanked her for her honesty, explaining that her opinions were just as useful as someone who had dutifully worked through the application.

It should first be noted that Rukhsana's experience was unusual amongst the students. Only one other girl, also from a Muslim family and also heavily involved in a family tailoring business operating from home, expressed the idea that the mobile resource had no real utility in her life. It is an important reminder that such a device, and such a piece of software, will not be a useful tool, or an attractive learning opportunity for all students, many of whom are heavily committed to household, work or other activities outside of the classroom.

Several authors have pointed towards understanding the *situational relevance* of access to technology and information from the individual's point of view, and, in particular, the relevance of the consequences or potential consequences of engagement with ICT for people (Selwyn 2004). Indeed Selwyn (2004) references Balnaves and Caputi (1997) to argue that where the impact, meaning and consequences of ICT use are limited for individuals, then we cannot expect sustained levels of engagement. Such an argument aligns well with Rukhsana's position.

> Fatima, an 18 year-old Muslim girl and sister of Ahmed, received the software on a Nokia loan device at the beginning of Cycle Three. Shortly after the project began, but after I had left the country, I heard that her father had returned the mobile to the community centre. It was no longer deemed an appropriate device for her to be using. It was not possible to speak to the father directly but, according to the teacher who received the phone, Fatima was spending too much time on the device and not enough time on her studies. Fatima confirmed this when I discussed it with her. Her parents felt that there was a tension between the mobile resource and her progress at school. However, her brother Ahmed had used the resource extensively during Cycle Two, without similar objections from the family. (Fatima; Cycle Three)

A soft skills teacher, who was working at a remove to the mobile learning project, reported Fatima's case to me. She had been the teacher in charge when Fatima's father returned the phone to the community centre. The incident had made this teacher uncomfortable, and the implication of their exchange seemed to be that Fatima's father was unhappy with the fact that his daughter had been given a mobile phone without his permission:

> "We should have consulted the parents more. Sometimes these students are not allowed to make decisions for themselves. If we do not ask the parents, they will react badly. We need to convince them that this project, it is a good thing." (Soft skills teacher interview, September 2013)

I presented this incident as a vignette on which the group of NGO representatives and teachers could reflect. Fatima was eighteen and therefore, by UK ethical standards, an adult and able to make her own decisions about whether or not to participate in the project. Indeed,

her brother Ahmed had participated very actively in the project before. It does seem, therefore, that the father was particularly unhappy about his daughter having a phone. This reinforces the gendered arguments that were made in Chapter 5. It also suggests that the NGO did need to involve parents in the consultative process to a greater extent. Indeed, we reflected on whether parents should have been involved in the action research project from the beginning.

While the students I worked with were all aged eighteen or older, and the ethical guidelines in the UK would indicate that a person at the age of eighteen is capable of making independent decisions about their ability to participate in such a project, parental responsibility for young girls (and husbands' responsibility for married women) was apparently strong in this community when it came to the use of mobile phones. Although students were provided with information about the project to take home to their families, and there was opportunity for their families to ask questions, it was agreed after Cycle Two by the NGO representatives to encourage greater parental discussion of the project from the outset. Unfortunately, this was not put into practice in Cycle Three due to the organisational changes described in Chapter 4, but I understand it continues to be a concern of NGO representatives and teachers as the project moves forward.

7.1.6 Disillusionment and disengagement

> Palaka was full of enthusiasm for the resource when the project began. Yet, during my periods of absence between installation and review, the frequent staff changes and lack of consistent technical and pedagogical support left her without a source of help when she experienced difficulties, and to reinstall the software when she deleted it by accident. When I returned, she seemed resigned to it not working for her: "I am just not good with the technology. You see, it is never working for me. Everyone else's is working okay, but my phone it is not functioning properly" (Palaka: Cycle Two).
>
> Ravi, twenty-one, had a similar experience on a loan Nokia device. When the software stopped working, he was unable to access the technical support he required. He explained that, despite enthusiasm for the project, this had been a negative experience (Ravi: Cycle Three).
>
> Salman, nineteen, had the software installed on his own Nokia C1 phone. He chose this Nokia model because it was a trusted brand and he said he already knew how to use it. A confident mobile user, he explained his frustration that the program on his phone was automatically deleted from his phone every few days. I could never get to the root of this problem and, because they were away from the field, representatives of the technical partner were also unable to identify the cause. I could only address it by reinstallation (Salman; Cycle Three).

These extracts show that, in the absence of adequate technical support, small but persistent technical issues could serve to discourage the students and leave them disillusioned with the project, often resulting in reflection on the project as a negative experience. While a

designated member of staff was assigned to resolve such technical issues, it was clear that either the students did not know to whom they should report problems or the designated staff member was not available regularly enough to support the students properly.

Such technical concerns were not limited to the mobile learning software. There were a number of issues related to hardware. For example:

> Shashikala, twenty-seven, found her Android loan device was not recharging well, and that it became very hot. She had no other technology at home and was nervous about the safety of her phone, so chose not to use it (Shashikala; Cycle Three).

The majority of students did have access to electricity on the grid for at least for a few hours a day at home. Occasionally families could access electricity via separate generators. However, from student interviews (and as set out in the technical issue log I kept over the course of Cycle Two), it appeared that many of the students' homes had power outlets with fluctuating voltages. This damaged a number of batteries and phone chargers. It was agreed that students could use the community centre's power supply to charge their phones if required. However, even this was intermittent and unreliable.

> Anil, twenty, had repeated trouble with the resource on his personal Nokia C1 phone because he was continuously changing what he stored on his phone's memory card. He had a large collection of music, videos and audio files on his 2GB microSD card. However, he was frustrated by the fact the mobile learning software was using up valuable memory (198MB in total). Sometimes, to make space for other files, he deleted some of the software files, and so the mobile resource would no longer work. He returned to me, frustrated, and I explained the issue. He would then sit down and go through a length process of deciding which of his precious files he wanted to keep, and which he could sacrifice so that the software could be reinstalled. This happened several times over the initial part of Cycle Two. Eventually, Anil asked me to copy the software onto a separate microSD, one he had borrowed from a friend, so his personal file collection remained in tact and he could swap in the other card when he wanted to use the software (Anil; Cycle Two).

There were several students who experienced Anil's frustration. Some resolved the situation by sourcing 4GB microSD cards and asking me to copy the files from one card to the other. However, for Nokia phones, there was no escaping the need for the software to take up limited external memory that could be otherwise used for students' personal files.

> Hasnain, nineteen, returned his Nokia loan device after six days because the phone's screen was broken and the battery was dead. There were no spare loan devices available and so he could not continue with the project. (Hasnain; Cycle Three)

Mobile hardware has a limited shelf-life, and daily wear and tear inevitably took its toll on the loan devices for the project. By Cycle Three, students reported that a large proportion of the devices had some sort of cosmetic damage or battery issue. There were also regular requests for new chargers, new headphones and new plastic cases to protect phones from the humidity

of the monsoon season. Responsibility for storage, repair and replacement of project hardware initially lay with me, during Cycles One and Two. However, the intention was to hand over increasing responsibility to the NGO. The challenges associated with this additional responsibility are discussed further in Chapter 8.

Software modifications: Reflections and feasibility

Over the course of Cycle Two, the learning strategies employed by the students, and the reflection upon them by research participants, suggested a number of modifications that could be made to the mobile learning resource system, its learning activities, and the way in which the project is delivered. Table 13 summarises these modifications, and provides an indication of whether they were taken forward.

Table 13: Suggested modifications to mobile learning resource at the end of Cycle Two

Suggested system modifications		**Suggested additions to learning activities**		**Suggested changes to software implementation and support**	
Install app via Bluetooth where possible	✓	Student vocabulary suggestions	✓	Teachers to make greater reference to mobile activities that supplement classroom curriculum	✓
Multi-user function (to track different family users at home)	×				
Develop a means to track app sharing	×	More difficult extension material for advanced learners	✓	Involvement of parents at early stages in cycle	✓
Means to collect software logs remotely so that they can be monitored by teachers	×	Activities to support "conversation"	✓	Appointing peer mentors	✓
		Hindi translation	✓	More consistent and readily available technical support	✓

7.1.7 System modifications

As table 13 sets out, although a number of technical system changes to the mobile learning resource were proposed, none of these were considered feasible to implement by the technical partner in the short space of time between Cycles Two and Three, and in the absence of the development budget. As noted in Chapter 4, there were significant and ongoing organisational changes taking place for the technical partner, and for the later stages of this study I had much more limited technical support available to me. There were thus clear tensions between participant expectations and technical development capacity. The implications of this will be discussed further in Chapter 8.

7.1.8 Additions to learning activities

The students made four clear requests for changes, or rather additions, to the mobile learning activities. It was very straightforward to add additional vocabulary put forward by the

students to the mobile learning resource. Similarly, I worked with teachers to develop a set of more advanced, 'extension' activities that were thematically similar to the existing resources but of demanded a higher level of language.

The request for "conversation" activities represented a more challenging addition. Whilst there are a number of mobile-assisted language learning initiatives that have sought to foster language dialogue that incorporates a degree of spontaneity and context dependence (see, for example, Kukulska-Hulme 2015), this level of sophistication was not possible within the constraints of the existing technical system. As a compromise, a new screentype, which set out model dialogues for different scenarios, was incorporated into the version of the software for Cycle Three. However, students commented in an informal manner that this was a overly simplistic and did not facilitate the spontaneous they required.

Finally, it was necessary to revisit the issue of providing translation of key vocabulary and phrases. As set out in Chapter 6, this feature had previously been discounted because: a) the Android platform would not correctly render Hindi script; b) a number of students were not comfortable reading the Hindi script and c) the use of translation was viewed as counter to the immersive pedagogical framework of the classroom curriculum. However, as this chapter has set out, several students complained that certain parts of the resource were ambiguous and confusing without some translation support. A compromise was put forward during incidental discussions by the students themselves, in the form of a transliterated Hindi (using Roman characters rather than the Hindi script). This was the form of Hindi in which they tended to receive text messages and communicate online. It was an obvious solution, and one that I felt embarrassed not to have thought of before, but it represented a departure from the formal Hindi that I had seen written on the board in computer skills and softskills classes. These translations, which were checked by the community centre teachers, were incorporated into the software for Cycle Three.

Although the suggested changes to the implementation and support of the mobile resource in Table 13 were agreed at the end of Cycle Two to be feasible and appropriate changes, Chapter 4 has noted the disrupted nature of Cycle Three, and the difficulties we faced in implementing the planned changes to our approach. This will the subject of reflection in Chapter 8.

Student digital engagement

The discussion thus far has addressed the ways in which students have engaged directly with the mobile learning resource, and the suggested modifications that have emerged as a result of reflection upon their engagement. However, I argue that for students who had not used a mobile phone before, learning took place through digital engagement with the loan devices. The nature of such engagement is illustrated through a series of student portrait extracts.

7.1.9 Digital skills

> Zareena spent a total of fourteen hours on the learning resources, working through them in a linear fashion and then revisiting her "favourite" activities. Yet her most enthusiastic accounts were of the other things she was able to do with the phone for the first time. With a SIM card she had borrowed from a cousin, she could now access the Internet on her phone, and had collected an impressive array of images from Google images in her phone's photo directory – they were generally what you might describe as stereotypically feminine images – hearts, flowers, kittens – all of which she explained were "making me happy". She also showed me some photographs taken at a family wedding she had recently attended. Placed in the centre of the table, her phone had become a device used by many of her family members to capture the day. She explained that she felt very special to be able to take the phone to such an event, and that she was able to play an important role. She emphasised that the negotiations over using the phone's camera took place in English – "Ready-Cheese – Snap – Delete" as if to justify her experiences (Zareena; Cycle Two).
>
> Gowardhan used a Nokia loan device because his own Eriksson feature phone would not support the software. After two weeks of use, Gowardhan explained that he used the software extensively at home, and logs did suggest periods of intensive use. However, he seemed more excited about the fact that, with the limited Internet access provided by his loan feature phone, he could look for jobs advertised online using his new phone. He said that he didn't always understand the English, but that he could understand enough to find relevant job adverts, and find a phone number, and call for further information. Four weeks into Cycle Two, Gowardhan left the Youth Empowerment Program because he had been offered a better job as a carpenter outside of Dharavi. I never saw him again, but he did make sure that a member of his extended family returned his phone. (Gowardhan; Cycle Two)

Zareena, Gowardhan, and several other students who had previously had limited access to a personal mobile device, described a range of processes by which they used loan devices to explore and improve their digital skills. Many of these skills might be defined as *instrumental* skills: the ability to operate hardware and software (van Dijk and Hacker 2003), which included operating the phone's camera, using in-built software features and games for the first time and setting up email accounts. Indeed, students also reported ways in which they had worked to improve the strategies through which they negotiated access to online networks and searched for, filtered and used information online, through searching for jobs and college courses, for example. van Dijk and Hacker (2003) might argue that these so called *informational* skills could also be considered to be *strategic,* in that the study participants

were using information for their own purposes, and with a view to furthering their own position in society.

7.1.10 Exploring online identity

> Falak Naaz is a quiet, extremely self-conscious teenager, who relished the opportunity to use a loan smartphone like many of her college friends were able to do. She was especially keen to use Facebook, creating her own English pseudonym "Rose". Her profile picture, a red rose, was a deliberate attempt to disguise her own online identity. Her page, she said proudly, was written solely in English, and while some of her friends would write to her in transliterated, abridged Hindi or "Hinglish", she maintained that she solely used English. "Sometimes it is not right, but it is getting better". (Falak; Cycle Two)

Falak's portrait illustrates the way in which a digital network can open up opportunities for independent, personalised exploration of linguistic and cultural contexts and communities. Indeed, Doran and Jeffrey (2013) suggest that mobile communication has enabled new ways of developing ideas about 'the self', about who one was and about how one presented oneself to others. Falak has chosen to negotiate these decisions using English language in an environment that is, scholars have argued, more forgiving of language inaccuracy (Pegrum 2014). Norton (2000) would argue that such positive digital online experiences represent students' investment in language learning and identity building.

Yet it must be recognised that mobile devices have an impact on the language we use (Baron 2008, 2011). For example, I observed the way in which Falak and other students made extensive use of *textspeak*, a heavily abbreviated and often playful form of language which serves to increase speed (with abbreviations being faster to type), decrease messaging costs (by keeping within the SMS character limit), avoid misunderstandings (by adding emotional content through abbreviations like lol and emoticons) (Pegrum 2014).

The English teacher who participated in this study expressed concern about this form of communication:

> "Using this text language is "the in thing". [The students] have not fully understood the structure of language but they still use the short form: 'how ru?' im nt coming to school today. They are not paying attention to spelling, the proper version of English" (Teacher interview; April 2013)

Similarly, textspeak has been a target in political and media discourses around falling literacy standards, but there is evidence to suggest that such attacks are misguided. A growing body of research demonstrates that there is a positive correlation between students' use of textspeak and their standard literacy skills (Kemp 2011). Authors have suggested that experiment with the rules of language if you already know what the rules are (Crystal 2008; Plester *et al.*

2009). However, there remains a concern amongst the teaching community in Dharavi that students also need to understand appropriate language use. Choosing an informal textspeak for the wrong purpose might, for example, suggest a poor grasp of language competence.

As this discussion has shown, the development of students' digital skills and exploration of online identity has, crucially, taken place via digital interfaces that are presented in English (Heift and Schulze 2007; Warschauer 2004). As Pegrum argues:

> "We should remember that digital language is not just something teachers can teach *about;* it's something teachers can and must teach *through.* It's no longer simply a case of technology use supporting language learning. For many students, it's a case of language learning, especially English learning, supporting technology use" (Pegrum 2014:140-141).

7.1.11 A springboard for personalised learning

> As the youngest of four brothers, Yusuf did not have a personal mobile phone. He therefore used the English language software on a loan Android device. Despite very little support being available, when I returned to Dharavi at the end of the fieldwork, Yusuf had not only completed the specially-provided mobile learning resources, but he had downloaded a number of other English language learning applications to support his learning. He noted that the Hindi English dictionary was the most valuable. At the end of Cycle Three, when it was time to take the mobile devices away, he pleaded to keep the phone to support him through his college exams, which were about to get underway. He had found another grammar application and a link to an English newspaper and was using these to help him revise and manage the difficult transition between Hindi-medium school and English medium college. He explained that using the mobile English language software had given him the idea to access the range of free applications that he could also download. I asked where how he had found these apps, and he explained that other students at college had showed him the Android app store. Now, he is saving to buy an Android phone of his own (Yusuf; Cycle Three).

Yusuf, and a minority of other students, showed an increasing sense of agency in his own learning of English throughout the Youth Empowerment Program, engaging in what might be termed *personalised learning*. Yusuf selected his own software via app stores and made choices within it to cater to his personal preferences, without waiting for information to be distributed to him. He described the manner in which he was using his own package of software to strategically negotiate the particular challenge articulated by so many study participants: the negotiation of vernacular to English-medium education, and demonstrated his belief in his package of mobile tools in supporting him through college exams. In this way, such learning could be argued to empower individuals as agents and (co-) designers of their own learning. As Pegrum (2014) argues:

> What matters most is that learners can make real descisions about their goals, approaches and materials, and begin to generate their own learning contexts and content. This carries the potential to enhance their sense of agency, control and

ownership, while simultaneously requiring them to take on more responsibility for their own learning" (2014:30).

The process of participation

> When I asked Palaka to reflect her learning as part of the mobile project, she referred almost exclusively to interviews, focus groups and more incidental conversations that we had had as part of the research process. She recalled the process by which we constructed her portrait, how she had had her picture taken, how her portrait had been put on the wall of the community centre. She explained how much she enjoyed the opportunity to explain something about her own life and the challenges she faced: "This has not happened to me before." She explained the fear she initially felt when speaking to community centre staff and me, a "foreigner", and how she had never had such a close encounter before. And she described her growing confidence in articulating her views and experiences with using the mobile software, including the many technical problems she had faced. Even though she couldn't necessarily explain her feelings in English, she valued listening to English, and the Hindi translation, so that she could engage simultaneously with the two languages she was trying to master. And she was pleased that some of her suggestions, including translation and the need for more consistent technical support were going to be listened to. For Palaka, the greatest learning was derived from the participative process, rather than in using the mobile as a device, or the mobile software per se (Palaka: Cycle Two).

Palaka's account may have been affected by the particular technical problems she faced with using the mobile technology. However, many of the students in Cycle Two (where the participatory activities were at their greatest intensity) ascribed particular benefit to their involvement in the mobile learning project and being given the space to articulate their struggles and experiences. For Lave and Wenger (1991) learning is seen in terms of a legitimate participation or, for Rogoff (1990) as an apprenticeship in thinking. In this conceptualistion, learning is presented as a process of becoming a member of a certain community. This entails, above all, the ability to communicate in the language of this community and act according to its particular norms (Sfard 1998). Such a metaphor for learning aligns well with Palaka's perspective. Here, participation is almost synonymous with "taking part" and "being a part," and both of these expressions suggest that learning might be viewed as a process of becoming a part of a greater whole. Crucially, participation necessarily entails the use of language and, even though Palaka and I relied heavily on translators for our exchanges, the very process of speaking, and being understood, was a positive and, one might say, empowering experience.

Indeed, for Farid, and the other students who played an active role in the technical support of the project, the opportunity to participate involved innovation and a resulting change in the nature of practice:

> "I enjoy the mobile project..[..]. because I really get the chance to learn about the mobile, the way the software is working and all. And then I can help the other

> students to do things in a better way and the teachers and Laura mam are also learning about this." (Farid; interview; April 2013)

As Reason and Bradbury (2001) have argued, this kind of participation, leading to innovation and change, gets to the very heart of action research:

> "One aim is to produce knowledge and action directly useful to a group of people — through research, through adult education, and through sociopolitical action. The second aim is to empower people at a second and deeper level through the process of constructing and using their own knowledge: they "see through" the ways in which the establishment monopolises the production and use of knowledge for the benefit of its members." (2001:182)

Such a discussion, however, has an uncomfortable relationship with this study's original emphasis on sustainability. If an important part of the learning that students derive from the mobile learning study is from the participatory research process itself, what, then, are the implications for sustaining this learning beyond the action research process? This will form an important part of the discussion in Chapter 8.

Conclusion

UNESCO (2013b) suggests that, to date, very little research has successfully used mobile devices to collect information about learning practices. With this in mind, this chapter has sought to present and explore the learning practices of the student participants in this study. A typology of strategies of engagement with the mobile learning resources suggests that few students used the learning activities in the way they were intended by NGO representatives and teachers, as a means to consolidate the language that was taught within the classroom.

On reflection, this was largely considered to be attributed to a lack of engagement of teachers in the mobile learning project. Rather, many students used it to support self-determined and self-paced study, or as an activity to share with other students in a communal space. Vavoula and Sharples (2008) have discussed the unpredictability of mobile learning, including the dynamic nature of the setting, unexpected interactions and unplanned approach.

For some students, there is a clear and growing sense of agency as English language learners. Through using the mobile software, some students do not just see themselves as passive recipients of material; rather, they are willing to engage with technology as a tool for independent language learning and demonstrate increased self-efficacy in both language learning and the use of technology. By contrast, some students indicate that the mobile learning resource - and, indeed, the mobile phone - is either inappropriate or irrelevant to their lives. Others still highlight the learning that has taken place through the process of

participation in the action research project, as opposed to from the mobile learning resource per se.

This discussion brings us to important questions about the very nature of learning that takes place using mobile devices:

> "Educational researchers argue that less emphasis needs to be placed on trying to quantify exactly what a particular intervention achieves. Instead, energy should be directed towards expanding educational offerings that appeal to and will benefit learners in myriad ways and settings, and investigating how their learning practices, rather than their learning outcomes, change and develop over the course of the intervention. At mobile learning's present stage of development, what is most important is *offering new kinds of learning opportunities that were not available previously*, rather than just making marginal improvements to traditional education" (UNESCO 2013b; emphasis added).

This chapter has suggested that some students have derived benefit from the pedagogically traditional learning activities contained within the mobile learning software and have engaged with them in a number of ways. However, student portraits indicate that often the learning opportunities that hold greater meaning for individuals entail the development of digital skills, or the participation in the action research process as a whole. A critical analysis of the extent to which the mobile learning intervention in this study has succeeded in offering such meaningful and sustainable learning opportunities will now be addressed in the final part of this thesis.

DISCUSSION AND CONCLUSIONS

8 SUSTAINABLE PRACTICE: A CRITICAL PERSPECTIVE

Introduction

> "A critical perspective is key to interrogating the competing discourses that surround mobile technologies – the positive stories of participation and empowerment on the one hand and the more negative associations with consumerism, exploitation and bullying on the other." (Merchant 2012:779)

The findings chapters of this study have gone some way to identifying the competing discourses that surround both mobile technologies and English language learning in the context of this study, and the variety of ways in which students have (dis)engaged with the learning resources that have been developed through a process of action research. The purpose of this chapter is now to provide a synthesis of these findings, drawing on wider literature and through a critical lens. It seeks to identify enablers for and constraints to using the mobile learning resource to support English language learning in a sustainable manner.

First, a critical discussion seeks to identify ideas or knowledge that is presented as "commonsensical and self-evident" and compares these to "the social and cultural conditions to which they pertain" (Friesen 2008:3-4), often revealing politically charged and contradictory ways of understanding the issue or phenomenon in question. A number of such assumptions have been identified through the action research process, and will be explored below. Such a discussion should, Friesen argues, serve as the basis for developing alternative forms of understanding and point to concrete possibilities for action (*ibid*.:3-4).

Second, then, this chapter must necessarily reflect on the actions that have been informed by these new understandings, and the extent they can (and, indeed, should) be sustained. As noted in Chapter 3, McTaggart (1994) argues that sustainability offers a criterion for considering how well action research initiatives contribute to the settings in which they are conducted. Building on this claim, Kemmis (2006) suggests that social practices should be changed "if the character, conduct or consequences of the practices involved were found to be unsustainable in any of four ways:

a. Discursively unsustainable: relying upon false, misleading or contradictory ideas or discourses;
b. Morally and socially unsustainable: excluding people in ways that corrode social integration; unjust or dominating in the sense that it constrains self-determination for those involved;
c. Economically unsustainable: too costly or creating economic disadvantage or hardship;
d. Personally unsustainable: causing harm or suffering; unreasonably 'using up' people's knowledge, privacy, resources, energy or time" (Kemmis 2010:470–471).

A discussion of sustainability also aligns well with the debates in the field of international development that were set out in Chapter 1 and such considerations will therefore be addressed in this chapter. Finally, a consideration of action research and methodological concerns relating to participation and ethics will be addressed.

The underlying premise for this study

This study has been a 'research-driven' intervention (Avison *et al.*, 1999), because I was looking to research the use of a particular type of intervention (a mobile learning resource) in a context that was viewed to be characterised by a particular problem (the need for English language learning opportunities). The alternative to a research-driven approach, (Avison *et al.,* 1999) argue, is a 'problem-driven' approach, whereby changes in action are derived in response to a particular problem in a particular setting. These authors suggest that one of the particular challenges of a research-driven intervention is that it is often more difficult to engage participants in attempts to change practice, because they might not recognise or prioritise the problem as requiring immediate attention. Indeed, at the outset, I understood little about the particular nature of the problem in the research setting, and the way in which the mobile learning resource could be used to support language learning was yet to be decided.

In this initial framing of the research, however, I made a technologically determinist assumption that the use of mobile learning resource would be, in some way or other, of potential benefit to the study participants. This assumption was informed by my own professional experience in the UK, what I reflect upon now as a relatively simplistic understanding of relevant research evidence, and my desire to use a pre-existing software development tool. One could argue that the NGO representatives, who granted permission for me to carry out the study in Dharavi, shared this assumption. I concede on reflection that the premise for this study was based on the understanding that there was some sort of causal relationship between technology and language learning. With a somewhat instrumental view of language learning software, the original purpose of this study was to establish the extent to which, and under what circumstances, this would be 'effective'. As I will emphasise throughout this chapter, by exploring a critical perspective, I have since sought:

> "to move beyond the deterministic assumption that technologies possess inherent qualities and are therefore capable of having particular 'impacts' or 'effects' on learners, teachers and educational institutions if used in a correct manner" (Selwyn 2010:68).

Understanding the educational "problem" at hand

> "In action research, one should expect to be able to derive one's solution from *an explicit understanding of the nature of the problem*. The problem and the way it is formulated both have to be acceptable to everyone upon whom the research will impinge, or else it is likely to end in confusion." (McIntyre 1990:4, emphasis added)

In this way, the following subsidiary research question was intended to provide a greater understanding of the "problem" at the centre of the action research.

> What are the motivations for and challenges with learning English for the young people enrolled on the Youth Empowerment Program and what are the associated implications for the design and implementation of the mobile learning resource?

Chapter 6 has exposed the variety of different relationships that student participants had with English, and a range of motivations to improve their language skills: to access better employment opportunities; to support and expand family businesses; and to negotiate the different stages of the education system. The Youth Empowerment Program necessarily had to cater for a highly linguistically diverse body of students with a wide range of asymmetric English language skills, acquired through schooling of variable quality and language medium. Several students were not comfortable communicating (or, indeed, literate) in Hindi, contrary to the understanding of the teachers and NGO representatives. English is presented as a language for empowerment, and it follows that the student participants shared a feeling of disempowerment and marginalisation by virtue of their inability to speak it. Some of these understandings were new to the NGO representatives, thus illustrating the way in which the action research process can enlighten its participants about the very nature of the educational context in which it the study is taking place (see Carr and Kemmis 1986; McIntyre 1992).

Chapter 6 has also presented a number of shifting political and pedagogical considerations that determine the delivery of an English language classroom curriculum for the Youth Empowerment Program. As Rogers and Taylor (1998) argue, 'curriculum' is seen often as a critical issue during discussions on quality of education, being considered, variously, as 'content', as 'product' and as 'process'. It is easy to make the assumption that a common understanding of curriculum exists, but in practice there are a host of definitions, approaches and ideological standpoints in play. Rogers and Taylor (1998) argue that there is still a strong tendency in practice to understand curriculum as a list of content, often developed in considerable detail, that students should be taught. Whether this is likely to result in learning is often not articulated, and the link between curriculum and quality of teaching and learning may not be well understood.

In practice, the NGO has been dependent upon international voluntary input to develop a curriculum that was based upon a well known British English language course made 'locally

relevant' to accommodate the needs and circumstances of the students. The curriculum, and the pedagogical background of its developers, could thus be imbued with official Western (and, indeed, British) notions of what it is to teach English. The process by which such a resource is made relevant to Dharavi's students is something I will later argue is problematic. At this stage, however, it is sufficient to acknowledge that, having struggled to obtain English language resources that were deemed appropriate for students from other local NGOs (many of whom have similar goals to Reality Gives), the NGO have turned to a bespoke (or, rather, adapted) curriculum with decidedly British origins.

However, with a sense that students were not developing adequate spoken English skills, deemed the most valued and in demand of all skills by students, the NGO made a strategic shift to a new curriculum, with a more communicative pedagogical foundation. This time, the curriculum was developed by the British Council, was used across other settings in Mumbai and Delhi, and was certificated, and was thus regarded as having greater credibility. It was to be delivered via an Indian corporate social responsibility organisation by volunteer teachers. The action research study thus takes place against a backdrop of significant strategic change, responding to dissatisfaction with the status quo and resulting change in pedagogical approach. This discussion also illustrates the fragmented nature of NGO sector struggling to find appropriate learning resources, the powerful position of an organisation such as the British Council in generating 'credible' educational content and the multi-sector partnerships that have formed to meet the demand for English language learning in disadvantaged urban India.

UNESCO (2013a) suggests "strong partnerships should be in place before pilot [mobile learning] projects are even designed, so that different sectors are working together from as early in the process as possible" (2013a:13). However, the discussion has shown the dynamic strategic shifts that took place while the action research was taking place, with significant implications for the positioning and implementation of the mobile learning resource.

A picture of 'socially shaped' digital inequality

As set out in Chapter 5, a dominant discourse presents the mobile phone as an accessible and affordable piece of technology with which young people are familiar and over which they have control. Scholars have noted the popular discourse tends to assume "a rich and rewarding relationship between young people and the technologies they use, to the extent that they are typically represented as the ideal beneficiaries of the digital era" (Davies and Eynon 2013:1).

Yet, I have argued that there is a complex picture of digital inequality for the students who participated in this study. At the beginning of each action research cycle, young people's existing practices using mobile phones were highly variable, closely intertwined with gender, life stage and socio-economic circumstance, and were influenced by a rapidly shifting local mobile economy. In this context, access to a mobile phone might be a young man's personal, highly sophisticated smartphone that is integral to the running of a family business or, by contrast, it might be a low-end device or household mobile, the use of which is tightly controlled by young woman's father or husband. As such, the often assumed ubiquity of mobile devices, and their position as a familiar and accessible technology, is a discursively unsustainable assumption.

Indeed, as literature addressing digital inequality and the so-called digital divide suggests, material access to a technology is of little use without the requisite skills, knowledge and support to use it effectively (van Dijk 2006). Indeed, Chapter 5 has illustrated that students have a wide range of skills and motivations to use mobile devices, and while some display impressive, strategic uses of their mobile phones, others have little or no familiarity with devices at all. Such issues, Selwyn (2004) suggests, have led some authors to refer to an 'access rainbow' of physical devices, software tools, content, services, social infrastructure and governance (Clement and Shade 2000), or 'various shades' of marginality between 'core' access, 'peripheral' access and non-access (Wilhelm 2000).

Chapter 5 has discussed the ways in which young women in particular do not have total control over the devices to which they have access. It might be that it is a household mobile, which is used for family business but is controlled by a male member of the family. The mobile phone, therefore, must not be viewed as a neutral device. Rather, it is best understood as socially constructed, shaped and negotiated by a range of actors and interests. I have argued that the mobile phone might serve to both reinforce and challenge social norms and expectations in this community, and its use is influenced by local economic factors and institutional constraints. Rather than a tool for empowerment, as it is often presented, particularly in reference to the empowerment of women, the mobile phone can indeed serve to reinforce the disempowering gendered relationships in this society. This is a perspective that is increasingly being explored in projects using mobile phones to support learning in developing regions (see, for example, Tyers 2012). However, as Chapter 5 sets out, this is not always the case. Some student portraits suggest that phones are beginning to negotiate and challenge traditional power structures and social institutions, such as arranged marriage. So, while the patterns of uptake and use of new technologies do appear to be falling into existing and deep-rooted lines of social and economic inequalities, there are still some indications that change is taking place (see Selwyn 2004). Yet, as Chapter 7 has shown, such negotiations

necessarily present a degree of social tension for some learners in this study, and thus represent a potential constraint to social sustainability.

Chapter 5 also suggests that there is evidence of important market forces at play, where particular mobile brands are positioned as desirable, disposable consumer items, which promote marketplace values (Merchant 2012) and hold particular professional associations. This is a reminder that any learning software will be used on a particular device, with which learners will draw particular social and market-led associations.

Finally, as Chapter 5 has shown, to some families, mobile phones might be perceived as risky devices and a threat to morality.The use of mobile phones may expose vulnerable populations to advertising (or "phishing" scams) of which they have little experience or critical understanding. Indeed, some young women are prevented from using mobile devices because the connectivity is perceived as dangerous, risky and contrary to the expectations surrounding the behaviour of women in society.

Selwyn (2004) notes that individuals' engagement with ICTs is based around a complex mixture of social, psychological, economic and, above all, pragmatic reasons. Debates surrounding digital inequality now suggest that engagement with ICT necessarily moves beyond issues of access and ownership but more about how people develop relationships with ICTs and how they are capable of making use of the social resources which make access useable (*ibid.*). The recognition and exposition of such a spectrum of access dimensions, and the range of social, political and economic factors that determine individual circumstance that have been set out in Chapter 5 serve to challenge the discursive notions of ubiquitous, access (a term which we have established is poorly conceptualised) to mobile phones that pervade much literature on the use of mobile phones for development projects. Such a nuanced understanding of digital inequality should be, I argue, an important point of departure for any study of the use of mobile technology for learning.

There are other discursive assumptions that require critical examination. The first is the assumption of 'youth' and 'young people' as an appropriate category for those enrolled on the Youth Empowerment Program. As the discussion in Chapter 5 has indicated, there is enormous variation in the nature of the student's family and economic circumstances, often relating to gender and marriage. The students therefore represent a diverse and diffuse segment of the community. As set out in Chapter 2, the 'community' in participatory approaches to development is often viewed as 'natural' social entity characterised by shared values (Cleaver 2001: 603). To treat Dharavi (a population of up to one million people) as a single community and young people as a homogeneous category is arguably problematic. The 18-25 age range, for which the Youth Empowerment Program (loosely) caters, represents a

period of turbulence, change and diversity for the young people concerned, and such diversity of experience has been presented in Chapter 5. Such a view suggests that it might be more appropriate to target a Youth Empowerment Program to a more specific group of young people.

The next important question is how to respond to the enhanced understanding of English language learning and socially-shaped and shifting digital inequality in Dharavi for the students of the Youth Empowerment Program when considering the use of mobile technologies for learning.

The purpose and pedagogy of a mobile learning resource

Chapter 6 has presented the process by which the purpose and nature of the mobile learning resource was discussed and debated by the action research participants, taking into account both the emerging political and pedagogical priorities for English language learning and the picture of inequality in existing engagement with mobile devices.

Once we had reflected upon the different dimensions of the 'problem' at hand, through which all participants reportedly gained new understandings of the research context, there was a tendency to approach the mobile learning resource as a means to address all aspects of the problem: those learners who were falling behind, those who were more advanced, and even those learners beyond the Youth Empowerment Program through other NGOs. It is important to remember that such a technological intervention is no "silver bullet" (Unwin 2009), and managing diffuse pedagogical aims presents a challenge to both resource development and evaluation.

In this case, the extent to which the mobile learning resource could address these pedagogical aims was arguably constrained by the pre-existing technical system, and the instructional, behaviourist nature of the learning resources it had the potential to produce. Diaz (2010) describes this form of mobile content delivery as 'the low hanging fruit' of mobile learning. Indeed, Unwin (2009) suggests that digital technologies tend to be used to reinforce established forms of education and didactic learning rather than to disrupt existing pedagogic practices. This could certainly be a criticism leveled at this study. By working within the constraints of a pedagogically traditional technical system, and by supporting an existing language curriculum (imbued with Western – or, more accurately, British - ideals about how language should be taught), this mobile learning resource does not demonstrate the 'disruptive potential' of the mobile phone that has been envisaged by some commentators (see, for example, Jeffrey and Doron 2013).

However, as Pegrum (2014) suggests, this relatively simple, traditional pedagogy can still allow for self-determined, self-paced, autonomous learning:

> "When well-designed, even pedagogically traditional apps can reflect current understandings of appropriate content; can bring learning to life through multimodal presentations and interactivity; and, in the case of language learning, can provide authentic verbal and written material accompanied by reliable, system-generated feedback, offering learning opportunities which may be far superior to anything previously available in some settings." (Pegrum 2014:86-87)

Unwin (2009) argues that the real challenge is finding design strategies that reconcile new, powerful and probably unfamiliar technologies, with local, maybe traditional, conservative expectations about learning and pedagogy. I would express a degree of caution about the methods by which such "local" expectations about pedagogy are put into practice. As an example, Chapter 6 and 7 have set out the way in which an assumed competence in both spoken and written Hindi across the Youth Empowerment Program students was proved to be unfounded, and this had important implications for the way in which a) the mobile learning project needed to be communicated to students and their families; and b) the use of translation support within the mobile learning resource itself. It is therefore important, as part of any participatory process, to challenge such taken-for-granted understandings about educational settings by those assumed to hold local insight, and to seek alternative perspectives to challenge dominant views.

As set out in Chapter 2, there is an increasing focus on the sensitive incorporation of local cultural context into mobile learning interventions. The Mobigam pilot project, based in Gujurat, India, has an explicit focus on coming to understand the local 'cultural ecology' through observation as well as interactions between foreign and local staff. Just as this study has sought to do, researchers are exploring patterns of digital inclusion and exclusion, and considering how mobile devices may impact these patterns, before beginning to develop concrete language teaching plans. Already, the original focus in English is shifting to a contextually sensitive focus on multiple languages, codeswitching and 'translanguaging' (see mobigam n.d; Pegrum 2014), suggesting similar complexities in another multi-lingual environments in India.

Equality of access to learning opportunities

As Chapter 2 has set out, many studies of mobile learning in developing countries have made use of devices provided specifically for the project, often in the form of a One-to-One model. For example, in Kumar *et al.*'s (2010) study of unsupervised mobile learning in rural India, the authors note:

> "most participating households owned cellphones, but it was necessary to loan cellphones to participants given the engineering complexity in ensuring that our prototypes were compatible across a diverse range of cellphone models" (2010:2).

However, the mobile learning literature has, in general, been critical of projects that use technology that is too advanced or expensive for the majority of target users, and is thus deemed inappropriate for the context. Yet those projects that have privileged the 'lowest common denominator,' that is, functionality of even the most basic mobile phone features such as SMS in mobile learning projects, must forego the more sophisticated pedagogies and richer interactions that smartphones (and some feature phones) can now support (see Winters 2014).

In this study, the imperative to provide equality of access to mobile learning opportunities while using, where possible, users' own mobile handsets meant that we adopted a hybrid model. The software was provided to some students on their own phones (BYOD), and those who had incompatible devices, or no device at all, received the software on loan devices (One-to-One). This approach arguably responded to UNESCO's (2013) particular recommendation for future mobile learning projects, to "ensure equal access to mobile technology and participation in mobile learning for all students and teachers" (2013b:35).

However, it is necessary to reflect on the implications of such a laudable recommendation in terms of student learning experience. Our collective attempts to tackle the middle ground meant using a hybrid model of One-to-One and BYOD, with the intention of providing the greatest possible equality of access to the students. The result was a rather messy, confused and contradictory reality; a complex picture of differentiated access to the mobile learning resource. Distinctions were drawn between:

> a) Those students who could access the software on their personal mobile phones and could keep and share the software going forward,
>
> b) Those students who had a personal mobile phone that was not compatible with the resources, and thus needed to use an additional loan device to access the software (and therefore needed to transfer total use to the loan device *or* compartmentalize the use of each device); and
>
> c) Those who had no access to a mobile phone and used a loan device for the duration of the project. These students could make use of any other features of the mobile device, on the condition that they should return the device at the end of the project.

To add to such complexity, the students had differentiated access to SIM card and therefore network connection, depending on whether they wanted to/were able to/ were permitted to use their mobile phone in a networked capacity. The range of different circumstances through which the young people used the mobile learning resource arguably had an effect on their learning experiences, as will be discussed later in the chapter.

As Chapter 5 set out, we made the decision (and financial commitment) to extend the software's original compatibility to work on Nokia feature phones, a lower end mobile platform. However, over the timeframe of the action research study, Nokia's share of the mobile market fell significantly, and this trend was accompanied by a rise in the number of relatively inexpensive Android smartphones from Lava and Micromax (cheaper Indian smartphone manufacturers).

Indeed, as the discussion later in the chapter will show, the process to determine compatibility with Nokia phones, and the process by which Nokia software was then installed, was relatively complicated and lengthy. Since the end of the action research study, as a result of both market trends and practical considerations, the NGO representative now responsible for managing software installations has largely abandoned the lower-end Nokia platform. The additional Java development work, which we prioritised at the end of Cycle One, became largely obsolete soon after the end of Cycle Three. This poses a question about whether we should have assumed that the Android platform would become dominant (as the technical partner advised).

Yet Selwyn and Facer (2013) maintain that a critical study of educational technology retains a firm "commitment to the here and now." It reframes the problem of the future by arguing, with Miller (2011:1), that "the challenge is not that we must find ways to 'know' the future, rather we need to find ways to live and act with not-knowing the future." Such an approach, as Massumi (1992) observes, locates possibility and potential not in the attainment of some future utopia, but in the messy realities of the present (in Selwyn and Facer 2013:12).

This discussion has shown the way in which, by dealing with such "messy realities" the approach taken to the use of mobile hardware in this project has created and negotiated new lines of inequality for the Youth Empowerment Students, arguably representing a threat to social sustainability. However, the ease of use and installation of software on the Android platform, and the apparent trend of convergence to this platform for the Youth Empowerment Program students, represents a potential enabler for sustained practice in this setting.

Implementing the mobile learning intervention

There are three important points of discussion relating to the implementation of the mobile learning resource: the involvement of teachers; technical support and management and issues of safety and risk surrounding mobile phones.

8.1.1 Involving teachers

In this study, I would argue that one of the biggest issues encountered in this project related to the engagement of teachers in the action research process, and in the incorporation of the mobile learning resource into classroom practice.

The Reality Gives English teacher was initially heavily involved in the action research process, and served as the translator for many of the student interviews. Despite being a supporter of the suggestion that the mobile resource should be directly complementary to classroom learning objectives, when it came to reminding and supporting students to use the resource in practice, at appropriate points during the Youth Empowerment Program, he was reluctant. As explored in Chapter 7, he maintained the view that the mobile resource was largely external to his own classroom practice. This was counter to the way in which it had primarily been conceived: as a directly linked, supplementary tool to reinforce and consolidate classroom learning. By way of justification, he referred to the highly prescriptive nature of the classroom curriculum, and his preference not to deviate from the detailed, step-by-step guidance.

It has been argued that mobile learning opportunities offer novel ways to 'help ensure that learning which happens inside and outside classrooms is mutually supportive' (UNESCO 2013c: 21). Yet, as Chapter 7 has shown, only a minority of students engaged with the learning resource as initially conceived, and a students' decision to do so in this way was largely made in the absence of teacher input and support.

The English teacher's abrupt departure at the beginning of Cycle Three meant that our reflections on the ways through which such practices were never put into practice. The volunteer teachers, who taught half of the students in Cycle Two, and all of the students in Cycle Three, did not engage with the action research project, apart from through one initial interview, due to time commitments and a lack of accountability to Reality Gives. Their accountability, after all, lay with a different organisation.

Much has been said about the need for adequate technological and pedagogical support for teachers as they integrate new digital technologies into their teaching and learning processes (see, for example, Cochrane 2014). I had originally envisaged teachers as central to the action research process, and made an assumption that engagement with the participatory process would translate into changes in practice. In this case, however, such changes in practice were minimal. On reflection, and with hindsight, I feel that it was my role as facilitator to work harder to build relationships with the teachers, or to ask the NGO for support in engaging them.

Yet, Warschauer (2011) suggests that "learning to use a new technology well is a multi-year process, and involves not only the development of teachers' technical skill, but also an evolution of their ideas about teaching and learning" (2011:107). UNESCO (2013b) maintains that, without guidance and instruction teachers will often use technology to 'do old things in new ways' rather than transform and improve approaches to teaching and learning. Further, Pegrum (2014) suggests that teachers neutralise the 'threat' of new technologies as best they can, trapping them with old pedagogical and organisational structures, or excluding them from their locus of control. As Chapter 7 set out, these sentiments emerged from interviews with other community centre staff, who noted the disruptive nature of student mobile phone use. There is a strong imperative, therefore, to develop strategies to support teachers in deepening their understandings of the complex relationships between mobile technology, pedagogy, design and implementation.

8.1.2 Technical support

There were a number of issues relating to technical management and support of the mobile learning intervention that were never fully resolved as part of the action research study. At the end of Cycle Two, technical support had primarily been provided by myself and, as Chapter 7 has set out, three 'expert' students. I kept a list of technical issues that the students had encountered, and used this as a basis for training a member of the NGO's team who would become the technical manager of the project in Cycle Three.

However, in Cycle Three, the complexity of assessing compatibility of lower end devices meant that it was felt to be too time-consuming, and too challenging a task for a member of the NGO's team to continue in the absence of external support. As a result, students were left without help, and this had a negative impact on many of their learning experiences. Also, there were practical issues of loan device storage, broken accessories, dealing with issues relating to devices beyond the software. There was confusion over who should be responsible for such issues, which are technically beyond the sphere of the mobile learning software and relate more generally to the functioning of the personal mobile device. As Chapter 7 has shown, some students became disillusioned and discouraged by technical issues. This group of students, albeit reasonably small, is very important to include, rather than to attribute them to normal attrition of a study sample. If we are to take a critical look at the project, the students who have become disillusioned with the whole study are perhaps some of the most important in understanding the constraints on sustaining practice.

This discussion draws to the fore the importance of adequate staff capacity and management systems to support use of the equipment (Rusten 2010). As Pegrum (2014) argues, the price tag attached to purchasing, repairing and upgrading hardware also represents a considerable barrier in mobile learning projects.

Such financial concerns are now being mitigated by the NGO in two principal ways. First, as the original loan devices become damaged and stop working, there is an increasing shift towards a BYOD model, whereby only those students with Android handsets are provided with the mobile learning software. Although the prices of Android handsets are falling (Chapter 5), it is still likely that a significant proportion of the students will not have compatible devices (that is, if they have meaningful access to any device at all). Second, there are calls on the NGO website for donations of Android phones, and for funds committed to the purchase of new mobile handsets that can be loaned to students. Whilst this approach does not guarantee enough loan devices, it does demonstrate a degree of future commitment to the continuation of the project. There is still a concern, though, that the original equity of access premise of the project has been put to one side as a result of technical and financial constraints.

8.1.3 Safety and social tension

Like any ICT, mobile technology can be used to access material that might be deemed inappropriate. In the wrong hands mobile devices can also enable undesirable behaviour – such as bullying, sending violent or sexually explicit messages, and interacting with dangerous individuals – which may exacerbate gender and other inequalities. Examples of such behaviour were experienced as part of the action research study and have been set out in Chapter 5. There is a growing recognition that institutions should increase student awareness about using mobile devices safely and avoiding the inherent hazards of open access to communication and information, As part of this action research study, we drew up a 'responsible use policy,' to help highlight and reinforce safe and healthy practice. The contents of this policy was agreed to fit well with the Youth Empowerment Program's computer skills course and has been integrated into this curriculum.

Despite the attention paid to responsible use of mobile devices, Chapter 7 has shown that there remained evidence of social tension caused by the provision of mobile devices to certain female students. Although it was never made explicit, the tensions were perceived to originate from the view that mobile phones and associated connectivity represent a threat to morality within some families; and that a mobile phone was not considered a tool that was considered educationally valid in this context (see Tyers 2012). These tensions arguably represent a

constraint to sustaining the use of the mobile learning resource. However, as explained in Chapters 5 and 7, NGO representatives felt that such tension was not a reason to discontinue the use of the mobile resource. Rather, it prompted the need for closer working with families and, in particular, parental engagement.

Similar challenges have been reported in UNESCO's Mobile Literacy Project in Pakistan. As part of this initiative, it was necessary to work to work with families to help them accept adolescent girls having mobile phones. Such work was conducted with the help of a local-well-respected NGO (Miyazawa 2009). Yet, Kilby (2011) highlights the way in which the majority of NGOs in disadvantaged areas of India do not hold much influence over the domestic sphere, and that there are ethical questions about the extent to which such organisations can, or, indeed, should, influence what is happening in family homes. It follows that there should be greater consideration over the best ways in which families of mobile students can be engaged in the this sort of initiative from the early stages, to minimise any such social tensions.

Capturing learning experiences

As set out in Chapter 3, this study has privileged the observation of learning and usage dynamics, rather than an experimental assessment of language acquisition for a number of both practical and ethical reasons. The use of student portrait data in Chapter 7, combined with the construction of a 'typology' of learning strategies, has served to illustrate the variety of learning practices employed by the students during Cycles Two and Three, as well as exposing instances of disengagement.

Yet, there are debates about capturing and demonstrating the "success" or "impact" of an intervention such as this. As stated by one senior NGO representative, it could be difficult to invest in the future of such a project without "tangible evidence that it enhances students' language skills" (Interview; January 2013). Such a statement prompted much reflection across the group of participants about how we measure the success or impact of the project.

As Boody (2001:7) points out, many of the discussions of the benefits of digital technology in education take the form of "means-end thinking"—that is, thinking that starts from a given end and then strives to find the means of accomplishment (in Selwyn and Facer 2013:7). Selwyn and Facer (2013) suggest that this sort of means-end thinking brings with it the elusive search for research evidence that "proves the "added value" or the demonstrable cost-benefit analysis of digital technologies as compared with textbooks or teachers" (2013:7-8). The request for this sort of evidence from the NGO representative illustrates such a position.

However, as Selwyn and Facer (2013) continue:

> "this means-end thinking fails to consider fully the nature and value of the educational end goal to which the technology is to be harnessed, and often overlooks the *by-products or unintended consequences* of its implementation or the *connections between this given end and other important ends"* (2013:8; emphasis added).

In this study, there were arguably such unintended consequences, in the form of students' use of language through increased digital engagement with mobile phones. Chapter 7 sets out a number of ways in which students the employed in-built functionality and connectivity of their loan devices to develop digital and language skills simultaneously by, for example, setting up online social network profiles using English language, and accessing authentic videos in English language. Indeed, there are examples of students who displayed an increasing sense of agency as English language learners, downloading additional language apps and applying them strategically in their own education or working lives. These observations were outside the conceived sphere of the mobile learning project but were still a consequence of the use of mobile learning devices and the action research project as a whole. Indeed, in terms of sustained practice and pedagogical innovation, such examples might be considered more important, because they arguably offer opportunities for more flexible, context-dependent and personalised learning, i.e. the sort of pedagogy to which the mobile language learning community increasingly aspires.

As two other senior NGO representatives suggest, such increased agency as English language learners and, indeed, as users of technology, align well with their conceptualisation of empowerment for the young people. Indeed, the concurrent application of language and digital skills using mobile devices sits comfortably with the Youth Empowerment Program's computer skills curriculum. It follows, therefore, that digital skills and English language might be better considered as skills to be applied and developed in tandem. It is thus appropriate here to reiterate Pegrum's statement:

> "We should remember that digital language is not just something teachers can teach *about;* it's something teachers can and must teach *through.* It's no longer simply a case of technology use supporting language learning. For many students, it's a case of language learning, especially English learning, supporting technology use" (Pegrum 2014:140-141).

Such a perspective, I argue, should necessarily inform future mobile language learning initiatives.

As a final reflection on student learning experiences, there were some reports and observations of other interesting dynamics, which were not captured fully or systematically as part of this study. These included informal engagement that took place in the domestic sphere

between family members, and instances of Bluetooth sharing of the app amongst peers with Android phones. It was not possible (nor ethically viable) to collect such data. Yet, the UNESCO mobile literacy project reports similar patterns of informal sharing lessons with mothers and sisters, thus expanding the reach of the program in informal ways (Pegrum 2014) and Kam (2013) also noted patterns of informal engagement with mobile learning opportunities that could not be captured as part of the MILLEE project. Researchers could thus usefully explore ways in which to investigate such informal usage as part of future mobile learning projects.

Sustaining control over educational content

As is the case for many technology startup companies, the technical partner in this study has had to evolve and change and seek new markets in the UK. Indeed, the two main developers have transferred to different roles in new companies. The *modus operandi* of the organisation has shifted, and the system being used has been much migrated and significantly updated (and geared towards iOS as well as Android). As a result, the technical support available to me dwindled towards the end of Cycle Three. Now, without significant further funding, it becomes difficult to see how the technical partner would continue to provide further development support for the project. This limits my ability, and that of the NGO, to update and change the software, or the means to deliver it. The software is thus is rendered relatively static and inflexible. Given the shifting strategy of the NGO, and the shifting nature of the mobile economy and thus the devices that are accessible, desirable and affordable within the community, this inflexibility represents a significant constraint in sustaining the use of mobile learning initiative in a way that aligns with the curriculum and goals of the Youth Empowerment Program.

Indeed, there is often a lack of acknowledgment of commercially-driven and proprietary nature of educational content, or the systems which allow it to be developed, in mobile learning projects. The GSMA (2010) notes that "[c]ontent and the provision of it costs money and it is not yet clear who should pay – governments, local authorities, the consumer or other" (GSMA, 2010:24; also quoted in UNESCO 2013b and Winters 2013).

There have been a number of community-based initiatives which allow local communities to exercise a greater degree of control over the educational content, encouraging and supporting communities to make the most of so-called 'open source' products and processes to access and build their own learning tools (see Ngimwa and Wilson 2013).

One of the advantages of this user-created content is seen to be its relevance and usefulness, with content being produced in a variety of national languages and local dialects, and

combining official information with indigenous knowledge (Unwin 2009). The Vidiyal mobile telephony programme in Southern India is one of the most celebrated initiatives, through which women's self help groups have been able to share information and support self-employment (see Balabrumanian *et al.* 2010). However, Ngimwa and Wilson (2013) suggest that the biggest challenges facing the readiness to adopt OERs in an African context are related to socio-economic, cultural, institutional factors, and not low levels of technology.

To sustain or to scale?

As Chapter 6 noted, one of the originally suggested goals for this study was to produce a mobile learning resource that can be shared with other local NGOs, many of whom have similar goals in supporting English language learning. In Cycle 1, this was allocated low priority, because it was deemed important to establish and learn from an initiative with one group of students and in successive cycles before widening the reach of the initiative.

However, since the end of the last action research cycle, NGO representatives have distributed the app to four other local NGOs via student Android phones. In total, they report approximately 100 students who have received the software. While the reach of the software is increasing (which could be perceived to be an inherently good thing), it only stands to benefit those with a smartphone. And, as it has moved away from the classroom curriculum with which the resources were designed to align. It must stand alone (or alongside other language provision) rather than as a supplementary tool to the Youth Empowerment Program curriculum, as it was originally conceived.

Such a shift in emphasis calls into question the extent to which sustaining the use of the mobile devices for the Youth Empowerment Program in a manner that is sensitive to local circumstances and student experience, and expanding the scale at which the resource is used via a network of local NGOs, are compatible objectives. The thesis thus far has been concerned with the specific circumstances, negotiations and struggles of the Youth Empowerment Program students, and the way in which a mobile learning resource can supplement a specific classroom curriculum in a sustainable manner.

Yet, since the action research cycles have drawn to a close, the game has changed. It is no longer just about a mobile learning resource for the Youth Empowerment Program, but about providing a resource to a diffuse (and largely unknown) group of learners without the same, if any, pedagogical input. Haiken and Duncombe (2013) have noted the different meanings attached to the concept of sustainability by those working in ICT for development projects. These include extending to a wider group of end-users, the financial capacity to continue

delivery, or the empowerment of the community to continue to develop the initiatives unaided.

This raises an important tension, therefore, in user-informed, participatory approaches that yield interventions that are specific to particular settings, and are thus less adaptable to extension and scale beyond the setting of the research.

Participation and ethics

The action research methodology that has framed this study has supported the participation of teachers and young people from Dharavi, a marginalised community, alongside those of an internationally-run NGO and a British technical partner and a British Council-led curriculum provider. Such participation aligns strongly with the goals of participatory development, in which communities are actively involved in issues of their own development. Yet, as Chapter 2 makes clear, participatory development approaches have been subject to a range of strong criticisms (see, for example, Cooke and Kothari 2001; Williams 2004) including the claim that they fail to adequately address embedded power structures within a particular 'community'. It follows that the emancipatory ideal espoused by proponents of action research should also be subject to critical review.

Indeed, reflection on the nature of the participatory process that took place in this study presents a number of key problems. First, key participants discontinued their involvement in the project at various stages of the action research cycles. If action research is about empowering people through the process of constructing and using their own knowledge (Reason 2001:182), much of this inherently personal, constructed knowledge, derived through practice, was lost. However, as noted in Chapter 4, the departure of key participants also resulted in the gain of new ones, offering new perspectives and challenging the nature of the intervention in different ways.

In this way, Locke *et al.* (2013) suggest the recursive nature of an action research cycle, allows the nature of the intervention, the research questions and methods to be revisited. As indicated in Table 16, they view action research as allowing for changes in participants and participant roles.

Table 16: Action research as a dynamic process (adapted from Locke *et al*. 2013:113)	
Stable factors (all)	The setting The collaborative relationship
Stable factors over a single cycle	The research questions
Dynamic factors	The participants The character of the intervention The nature of the data The role of the participants

However, what is arguably more important is the nature of the participatory processes that took place. As Kemmis (2006) argues:

> "It is far from easy to establish the social and discursive conditions in a project where people can equally, openly and fearlessly ask and answer such questions, and conduct themselves civilly towards reaching intersubjective agreement, mutual understanding and consensus about what to do. In practice, the process is always subject to distortion, discussion is frequently brought to a premature end by the pressure to act or move on." (Kemmis 2006:x)

I did find, as a facilitator of these discussions, that it was difficult to create an environment in which all parties felt they could speak freely, particularly given the multi-lingual environment and the assumed hierarchy within which students, teachers and NGO representatives operated. The construction of student profiles, as described in Chapter 4, was an example of an attempt to act as an advocate for the students, presenting their views and experiences in a form that could then inform our future action. In practice, though, as Kemmis (2006) describes above, we often resorted to pragmatic considerations when deciding on how to take action, related to how long something would take, which would be the least expensive and so on, rather than more morally orientated questions about what is true and what would be right. We have to ask, therefore, the extent to which the action research process was really able to challenge the inherent power imbalances within the study setting.

Yet, there were some examples of students - arguably the group of participants with the least power in the educational setting - expressing views that contradicted inherent understandings of other groups, providing support to peers and innovation in the use of technology, and displaying a sense of agency and independence in their own learning. In this way, the students' use of the mobile learning resource could be argued to have disrupted the traditional balances of power. Indeed, the engaged nature of participatory research means that some students reported the participatory activities (interviews, focus groups, the construction of portraits, and giving feedback on mobile learning resources) as the most beneficial aspect of the whole experience. This perhaps suggests that greater, sustained efforts to involve students in other forms of decision making might be beneficial for the students, but also indicates that

the research process has shaped the student experience to such an extent that it distorts our sense of the way in which the mobile resource might have been otherwise used.

A further methodological consideration relates to the ethical framework within which the study was carried out. Traxler (2013b) observes:

> "ICT researchers work with other cultures. These are cultures where ideas ethics, ideas about what is right, what is ok, what is appropriate, what is acceptable, what is nice, in interactions, in gestures, in language, in jokes, cannot be taken for granted. And the nearer we get to the life of communities, of families, of the marginal, the disengaged and the dispossessed, and the further away from ministries, universities, schools and officials, the less our own tacit assumptions and instincts about education and learning are trustworthy and relevant." (2013b:1)

It follows, therefore, that signing permission forms and giving oral consent, as is dictated by institutional ethical clearance, is not enough when working with other cultures, other contexts. While this study operated under a form of "process consent", whereby consent was renegotiated with participants at each stage of the process, the use of mobile phones as inherently personal devices, on which personal information was stored, combined with cultural beliefs surrounding young women and the use of such devices, presented some difficult ethical issues over the course of the study. As Traxler (2013b) notes, we should be moving towards "user-generated" ethics, which are developed in-situ with those who are involved in the research process. What these might look like, and the process through which they are negotiated, require further attention.

Conclusion

Action research should, McAteer (2013) argues, be a process that begins with a specific context, and through an exploration and analysis of it, should allow us to theorise about our own practice. Green (1999), in making the point that action research is always concerned with the particular, goes on to suggest that:

> "its generalisations come from understandings about the way a very particular context can be recognised and explored and about the nature of professional judgments made in response to those explorations" (1999:106).

Through a synthesis of study findings, and reflection upon the experiences of carrying out action research in context, this chapter has sought to develop and qualify such understandings.

In particular, the discussion has highlighted a number of unsustainable discourses, relying upon false, misleading or contradictory ideas or assumptions. These include the notion that mobile phones are ubiquitous, accessible and affordable to young people and over which they

have control; and that learning English is, by its nature an empowering process. Indeed, it has challenged notions of youth, community and curriculum, arguing that these are unhelpfully broad and contested categories for a targeted learning intervention.

It has identified issues that represent constraints to the sustained use of the mobile learning resource, including lack of flexibility and control over pedagogical content; a lack of continuing technical support, and a lack of consensus over what counts as learning. Although Kemmis' (2006) positioning of action research and sustainability has been helpful in framing this chapter, it has also been necessary to reflect on the nature of sustainability, presenting growth and scale and local ownership as alternative goals for mobile learning interventions.

What remains now is to refer back to the original research question, to draw together findings into recommendations for policy and future research, and to suggest both the contributions and limitations of this study.

9 CONCLUSIONS

As this thesis has set out, action research is concerned with improving practice, challenging and reorienting thinking about practice and transforming – through dialogue and collaboration – a particular context for learning (Locke *et al.* 2013). McAteer and Dewhurst (2010:34) suggest that, through understanding practice in a deeply considered and examined way, action researchers can develop a contextualised educational knowledge that not only provides the basis for an appropriate conceptual framework, but also can become an analytic device (*ibid.*). They argue that through developing a deep and sophisticated understanding of our own professional contexts, practitioners can also become more adept at understanding other contexts, and the overarching educational policy agenda. So while the data collected is inherently specific to the research setting, it can hold a degree of external validity, since the theory developed can be interpreted and refined by others in other real-world situations (see, for example, Avison *et al.* 2008).

In partnership with an NGO's Youth Empowerment Program, its teachers and students, this study has used action research to frame an investigation into its central research question:

> How can the use of a mobile learning resource provide a sustainable means of enhancing the learning of disadvantaged young adult participants in an English language program in urban India?

In this final discussion, I will emphasise what I believe to be understandings that have emerged from this study, the contributions the study has made, and particular recommendations for policy and future research. I will also seek to acknowledge the limitations of the study, and the implications of these limitations for the claims to knowledge that have been made in this thesis.

Study contributions

This study has presented a highly contextualised picture of the use of mobile technology by young people in Dharavi, and has suggested that, while some young people are highly strategic in their use of relatively expensive mobile handsets, others do not possess the digital skills nor material access and control over mobile phones in a way that they can use them to their advantage. This picture is closely linked to gender, life-stage and economic circumstance. Selwyn and Facer (2013) suggest there is a need for accounts that concentrate on developing such "thick" descriptions of the present uses of technologies in situ rather than speculative predictions and forecasts of the near future. They argue that these can be seen as state-of-the-actual questions—that is, questions concerning "just what is going on" when a digital technology meets an educational setting and what institutions, histories, agents, tools,

and concepts are and have been in play in this process. I have presented the ethnographic portrait as a means to convey such sociomaterial practices in play for individual students.

Through the variety of individual experience which has been presented, such practices serve to counter the presumed "spontaneous appropriation" of digital technologies (Crook 2008) by students, teachers, and others. Instead, it has presented the ways the local contexts frame learning processes and practices for individual learners. Indeed, the picture of digital inequality is so diverse and complex for this small group of students, that such a nuanced understanding of digital inequality should arguably represent a useful point of departure for any study of the use of mobile technology for learning.

Second, this study has contributed in a small way to the understanding of the nature of English language learning for a particular Indian community. As Graddol (2010) suggests:

> "The place of English in India cannot be understood without simultaneously understanding both the local detail and the bigger national picture. We ideally need to draw on detailed ethnographic studies, including close observation of classroom practices, detailed linguistic research into the use of English in different communities in modern India, and case studies of how English has affected the lives and careers of individual Indians" (Graddol 2010:4)

I hope that this study has provided some of this local detail, as well as articulating the nature of the negotiation and struggle of a particular NGO, in trying to provide English language education for which there is such fierce demand. Together, these findings are derived from a critical approach to the use of technology in education settings, acknowledging the multitude of actors involved and challenging dominant discourses and immanent knowledge.

Third, this study has offered some explicit implications of the negotiations of the BYOD and One-to-One models for mobile learning. In attempting to ensure equality of access to mobile learning resources, learners to used their own handsets wherever possible, but loan devices were provided to those students without material access to a compatible phone. The result was a messy, confused and contradictory reality; a complex picture of differentiated access to the mobile learning resource, which created a differential set of learning experiences for the students. As projects in which learners use their own devices as part of learning experiences become increasingly common across the developing world, I would recommend careful consideration of the ways in which learners who do not have their own mobile devices are supported in gaining equal access to learning opportunities, so as not inadvertently reinforce or exacerbate existing structural inequalities.

Fourth, this study has offered a means to capture student learning practices, by using a combination of software logs, interviews, observation and analytical tools to prompt

reflection. Such an approach serves to add to the growing body of ethnographically-informed research into the use of mobile learning, seeking to encompass cultural, social, political, pedagogical and institutional factors (Kam 2013; Kukulska-Hulme 2009; Pachler 2009), including the relationships between relatively formal and informal learning (Looi *et al.* 2010; Vavoula and Sharples (2009). A preference for the understandings of learning practices suggests that "means-end thinking" (Selwyn and Facer 2013) fails to consider fully the nature and value of the educational end goal to which the technology is to be harnessed, and often overlooks the by-products or unintended consequences of its implementation or the connections between this given end and other important ends. Indeed, the initial framing of the mobile learning project had failed to consider the educational value of the mobile phone as a tool, proposing instead a rather blinkered view of the software as an independent entity. Yet, some students, illustrate a clear and growing sense of agency as English language learners who are willing to engage with the mobile phone as a means to explore independent language learning, finding their own learning resources and negotiating their own online identity in English. It follows, therefore, that we should be asking questions not only about how mobile software can improve language, but how language can improve digital skills, and how the two interact with each other.

Fifth, this study has employed a framework through which to understand the sustainability of an intervention. As noted in the introduction to this thesis, ICT4D projects that could be said to have had an 'impact' in particular communities and localities have rarely 'reached' beyond their specific contexts or 'survived' beyond the terms of their funding (Heeks 2010). Similarly, Unwin (2009:3) suggests that "despite all the rhetoric of success, very few ICT4D activities…have yet proved to be sustainable." There have been a number of constraints to sustaining use of the mobile learning resource, including the inflexibility of the technical system to adapt to changes in pedagogical approach and to change and update content, and the difficulty of securing technical support and involvement of teachers. Yet it is unclear whether sustainability is in fact the most appropriate goal. Attention needs to be paid to the ways in which mobile learning interventions can 'scale' to become available to a larger number of learners. This raises an important tension, therefore, in user-informed, participatory approaches that yield interventions that are specific to particular settings, and are thus less adaptable to extension and scale beyond the setting of the research.

Finally, this study has sought to provide an example of a "realistic, in situ, context rich analyses of the social conflicts and politics that underpin the use of technology in educational settings" (Selwyn 2009:1). As Selwyn and Facer (2013) have recently noted:

> "despite a long history of eagerly anticipated but largely unrealised technological transformation, many studies in the field continue to focus on the "what ifs" and "best case" examples of education and technology—often producing persuasive evidence of educational potential, but only on occasion acknowledging the individual and institutional "barriers" that are presumed to be restricting the realisation of this potential *in practice*" (2013:3; emphasis added).

I have acknowledged not only such institutional barriers, but also a range of technical, social, and pedagogical barriers that have constrained practice in this action research. It is through identification of these barriers, and developing understandings about why they exist and how they might be overcome, that it is possible to put forward recommendations for future research, policy and practice.

Recommendations for future research, policy and practice

The study findings and discussion suggest a number of particular recommendations for researchers and practitioners who focus on the use of mobile phones to support learning, and for policy makers who aim to support governments and non-governmental organisations in using mobile phones to support learning.

1. Researchers, policy makers and practitioners should consider critically the premise on which mobile learning projects are initiated in order to negate technologically determinist assumptions. To what extent is there an assumed causal relationship between technology and learning? To what extent, indeed, is this problematic?

2. A nuanced, in-situ understanding of the dimensions of digital inequality is a helpful point of departure for a study of the use of mobile technology for learning.

3. More research is needed on the ways in which mobile phones are reinforcing and/or renegotiating lines of inequalities in local cultural contexts.

4. There should be more careful consideration of the ways in which learners who do not have their own mobile devices are supported in gaining access to learning opportunities. What are the implications, for example, of providing loan devices for some students, while others access learning opportunities on their own mobile phones? And to what extent do such approaches expose or create social tensions?

5. There is a need to develop strategies to support teachers in deepening their understandings of the complex relationships between mobile technology, pedagogy, design and implementation. In multi-partner projects, it should be ensured that teachers have sufficient capacity, motivation and support to meaningfully participate, and position themselves as central rather than external to the development process.

6. Care should be taken over what is deemed 'locally appropriate' in the creation of mobile educational software and content. As this study has suggested, the understandings of local community organisations do not necessarily align with those of the learners they serve to represent.

7. Mobile language learning interventions should consider questions not only about how mobile software can improve language, but how language can improve digital skills, and how the two interact with each other.

8. Mobile learning studies should seek to ways to capture incidences of informal use or resources and sharing of amongst family members and peers.

9. The sustainability of mobile learning interventions beyond the initial research or implementation phase should be given, but attention should be paid to the nature of goals relating to sustainability, and whether, indeed, they are appropriate or achievable in dynamic social, political and technical contexts.

10. Researchers should pursue the employment of "user-generated" ethics as means to determine a sensitive ethical framework in engaged iterative and participatory research activities.

Study limitations

McNiff (2013) argues that undertaking action research should initiate a process of personal emancipation. My background and accompanying values and assumptions, presented a challenge in providing critique to my own (and others') actions. Now, I have recognised the way in which I began with a rather instrumental focus on the use of a piece of software. This might be attributed to my involvement in the development of the technical system and my links with the technical partner. Yet, at the end of the project I feel that the most useful perspective can be focused on provision of devices and supporting digital skills and practices that support language learning. I regard such a change as a positive thing, representing a shift towards a more critical perspective on the use of technology in educational settings. However, it does mean that the initial framing of the study, a research-driven use of action research, might be considered to be technologically deterministic in its approach.

The sheer volume of data that I collected during each phases of fieldwork, and the overall responsibility for developing and delivering the mobile learning resource meant that, at times, I felt overwhelmed. I should have allowed longer for each action research cycle, and should have built in flexibility to stay longer in the field when required, to be able to better cope with changes in NGO timings and personnel.

Indeed, the study has privileged an examination of student learning practices and strategies over a detailed linguistic analysis of changes in student language skills or use. The reasons for this have been articulated clearly in this thesis, but such an approach may render the study findings less 'useful' in the eyes of some policy makers and organisations who remain concerned with issues of 'impact' and 'effectiveness' (see Traxler and Wishart 2011).

A number of criticisms could be leveled at the nature of the data collected in this study, especially the use of a translator. The experience and expertise of the translator is likely to

affect the quality of translations and become especially important during the qualitative coding and data analysis processes (see, for example, Edwards 1998; Squires 2009). Poorly translated concepts or phrases will change what themes emerge from the analysis and may not reflect what the participant actually said. This threatens, for example, the credibility and dependability of a cross-language study (Temple and Young 2004). Indeed, much of the data generated and analysed has been translated by NGO representatives and teachers who possess fluency in English language but not necessarily the depth of knowledge and understanding to articulate ideas and concepts with the same accuracy as a professional translator.

The use of software logs has represented an effective means to integrate data on engagement with the mobile learning resource with personal accounts and experiences. Yet, as I have set out, the collection of these logs was problematic due to technical issues or loss or damage to student devices. I have chosen to incorporate log results into this thesis in a qualitative way, rather than to present the plethora of graphs and chart, so as to privilege rich individual experience over the problematic interpretation of software logs alone.

The use of student portraits as a means to present a large portion of the study findings could be called into question. A portrait is necessarily an interpretation, bringing together a range of data sources and incorporating some analytical work. The use of "portrait" as a term implies both an attempt to capture a subject faithfully but also the imposition of some form of artistic vision or interpretation. It illustrates the use of a portrait as a deliberately crafted account, with a number of different voices and influences. They are not positioned as 'representative' cases, but would be disingenuous to claim that the choice of the portrait is not deliberate. In general, the quality of a portrait is necessarily dependent on the quality of interactions I had with the students.

The way that we couch findings in qualitative research is often with big disclaimers, and I make clear that such analysis is necessarily partial and situated, my account and my interpretation of the data I have collected. Indeed, there is a growing imperative to define research impact and knowledge exchange. In this way, portraits might be seen as political acts, balancing scholarly jargon with accessible and humanistic narrative. As such, they are potentially a way in which academic writing can engage broader audiences.

Looking ahead

Research into mobile learning in development contexts is a field that still lacks strong theoretical foundations. As such theories are developed, Pegrum (2014) suggests it is important to draw on real-world examples where projects are making a difference, to ensure that our theoretical understandings remain grounded in practical experience as we explore

what is possible in widely varying contexts. Action research has provided a framework for engaged, responsive, sensitive research, which explicitly recognises the possibility of acting differently as a result of experience in a dynamic educational setting. Yet it is also important to reflect on the need for broader work to tackle structural inequalities that have been exposed in this thesis: access to quality education, teacher training, and tackling social and economic structures that prevent young people from continuing their education and accessing employment opportunities. Mobile learning initiatives thus need to be positioned as part of (and not separate to) this work towards development goals.

AFTERWORD: REFLECTING ON DHARAVI

By the end of five spells of fieldwork in Dharavi, amounting to seven months altogether, there is something comforting and familiar about the narrow lanes of Kumbharwada, the din of traffic at the formidable junction of 60ft and 90ft roads, the strings of immaculate school girls with identical plaited hair, looped in matching ribbon, still staring with giggling curiosity as I pass on my walks to and from the community centre. I have witnessed many changes to the local infrastructure – signs of building work towards Sion station; rumours of a leisure centre; a concrete surface to many of the roads and, to my relief, more regular refuse collection, reducing the stench and depth of the stagnant monsoon rainwater. My early efforts to read Hindi were put into practice on new signs and graffiti that appeared in alleys around the community centre. Often, after a lengthy process of decoding and mispronunciation, I would realise that what was written was in fact an English phrase – "No parking" – or – "Keep left" – that had been transliterated into Hindi characters. These are a reminder of the complex relationship between English, Hindi and other Indian languages, a colonial legacy that has been twisted, reworked and etched into the sprawling urban form.

And there are many familiar faces who have provided help and support along the way: the man selling bananas, a nutritious and easy lunchtime staple that didn't require any washing, and thus the safest option for the stomach. Mr and Mrs Kumar at the local chemist, who had a bottle of cool water ready and waiting as I approached, flushed and uncomfortable from the heat, on an almost daily basis. On the occasions I asked for packets of biscuits to keep up my energy levels, Mr Kumar would inevitably remark "today hungry?" with his toothy grin. He was generally willing to practise his broken English and test my Hindi, and each time I returned to Dharavi after a period in the UK, I looked forward to their warm and welcoming smiles. And the numerous men who worked at the mobile phone and stationery kiosks, who provided memory cards, headphones, protective mobile phone cases, battery repairs, as well as printing and photocopying services, consistently bemused by my strange requests communicated through faltering Hindi and exaggerated hand gestures.

At the outset of this study I listed a range of portrayals of Dharavi as a social space: the Dharavi of the popular imagination: a dirty, crime ridden place; the Dharavi as portrayed by Reality Tours and Travel: a place of diversity, of intense productivity and of surprising contentment; the Dharavi in the local media: a space at the centre of longstanding political dispute over redevelopment; and the Dharavi as portrayed by the NGO workers: a place of poverty and disempowerment.

The part of Dharavi I have come to know well has been a place of great joy, of colour, of celebration; of festivals that occur with unfathomable regularity to draw students away from their classes and into the streets to eat, to dance, to throw paint or rice or flowers or firecrackers depending on the time of year. I have been welcomed to marriage ceremonies, in birthday parties. Yet the setting for this study has also been a place of sadness. Several students have had prolonged absence from classes because they had typhoid or dengue fever; one student was infected with tuberculosis and I heard lengthy conversations with the NGO about ways in which the student's lengthy course of treatment could be funded. Several students' families have been displaced as part of redevelopment schemes and were forced to seek new lodgings – a challenging task in such an overcrowded neighbourhood - and many students spoke of the struggle with alcoholism of their fathers, brothers, uncles and the difficulties it brought to their families. Such issues have often put my trivial struggles with software compatibility and grammar questions into stark perspective.

There have been experiences that remind me of my position as a cultural outsider, unable to adapt to the local customs and environment: my inability to wear Indian *kurti* with the correct type of trouser; to bring lunch in the correct sort of *tiffin* box. Much of my time, particularly in the hottest time (April – June) was spent slumped in a corner, dazed from the heat and unable to concentrate, whilst the female students I had come to know well would gather around, many in burkas that covered them head to toe in heavy black polyester, drinking hot, sweet *chai* without a bead of perspiration. I reflected often on the stark lack of choice available to many women of my own age. Some clearly articulated the way in which they perceived their lives to be on a predetermined trajectory towards marriage, children, and a life in the domestic sphere. Many girls struggled to understand how I had come to be in Dharavi, away from my husband, my family. They expressed pity that I should be separated, albeit temporarily, from my loved ones, and they showed great relief when I travelled back to place I considered home, the part of life that they valued above all else.

Yet students and I shared unexpected points of cultural familiarity. We exchanged childhood memories of watching old British films: Mary Poppins and the Sound of Music were particularly common. While students had not necessarily understood the English storyline, they recalled scenes and melodies with striking accuracy. At a talent show, in which Youth Empowerment Students were invited to take part, the chosen performance piece was a rendition of "He's got the whole world in his hands," in recognition of one of the teacher's Christian heritage.

I have been involved in a range of other activities for the NGO. I have raised money for Reality Gives by running a half marathon. I have written blog posts, both relating to the

research project and on a range of other issues. I have developed a set of spoken English language lesson plans to be used by future volunteers who wish to support students in their language learning. I have attended students' weddings, birthday celebrations and family meals.

I list these activities and experiences, partly because I feel it is important to acknowledge the ways in which we become entangled in our research (Mills and Morton 2013) so that we might legitimately and explicitly draw upon the additional insights this involvement brings. And partly because, through the necessarily sharp focus on tightly defined research questions, adhering to academic guidelines and conventions, there is a often degree of abstraction from the context when a piece of research is reported. And yet, as has been emphasised at a number of points throughout this thesis, the very nature of action research is highly contextualised and highly personal (McAteer 2013) and makes explicit reference to the emotional aspects of undertaking research and to express anxieties and complexities of research relationships in this fieldwork. Devereux (1967) argues that fieldwork is something that creates anxiety, and that it is important to be honest about anxiety and allow it to be part of the story we tell about research:

> "The subjectivity inherent in all observations [is] the royal road to an authentic, rather than fictitious, objectivity…defined in terms of what is really possible, rather than in terms of "what should be." (Devereux 1967:xvii)

The extended length of a thesis provides an opportunity to present some of this contextual colour, and to describe, however briefly, some of the most poignant experiences of the fieldwork I undertook. And so the thesis has deliberately begun, and ended, with a situated, personal reflection on the experience of the research context, so that the reader might gain some insight into the way in which the researcher has experienced the study and a sense of issues of moral and social tension and discomfort, which represent an important points of negotiation in the course of the action research.

When I came to the end of the third action research cycle, the community centre staff and teachers presented me with a selection of gifts that were both a source of humour and an insight into local understandings of my presence and work in Dharavi. First, I received a selection of ladies clothes that were "too long" for any other members of the community – a tribute to my tall stature that, as I was regularly told, is considered unusual for a women. Second, I received a memory card, on which were scores of files of pictures and video collected by students from "Google" on their mobile phones, sent to a single coordinator of the project and collated on a single microSD card. The pictures are an array of scenes from Mumbai, pictures of me with students, pictures that students had extracted from the mobile learning resource and seemingly random pictures of babies, religious characters and

Bollywood scenes. I interpreted this as both a demonstration of the students' digital engagement, and of the view that, given my enthusiasm for technology, I would appreciate a selection of digital artifacts as a parting gift. And third, I received a mobile phone cover adorned with the recognisable Reality Gives logo, a seemingly fitting tribute to the mobile learning project I had initiated.

And on my very last day in Dharavi we shared a meal, to which students, teachers and NGO representatives each brought a dish. The dishes originated from all over India: lamb *biryani* from Hyderabad, *idli* and *dosa* from Kerala and Tamil Nadu, a selection of Gujarati sweets, *kheer* from the Northern regions, and so on. And there were Mumbai's own street foods: *pani puri* and *sev puri*, put to my surprise and delight inside a toasted sandwich. The feast we shared on my last day in Dharavi was special, not only because the culinary variety had been one of my favourite aspects of living in Mumbai, but because it was a reflection of the diversity of custom, language and culture in which this study has been situated.

Since the end of the action research, in October 2013, I have kept in touch with NGO representatives and some of the teachers and students who were involved. For NGO representatives, this has largely been through more formal channels of communication (email and Skype), but contact between students and teachers has often been via Facebook. Facebook is also used to communicate the activities of the NGO, which have recently included pictures and testimonials from other NGOs in Dharavi who have received and used the mobile learning application. The recipients of the resource, who are largely women taking part in other women's empowerment activities, are increasingly depicted using the Android software on tablets rather than smartphones, showing that, to some degree, the software can adapt with technological shift.

As the body of thesis has shown, there are a number of constraints relating to sustaining the use of the mobile learning software, and debates about the extent to which it should continue to be used at all. However, from a personal perspective, it is rewarding to see that a resource from which some learners derive some benefit, either from the learning activities themselves or a by using it as a springboard for further language learning and digital engagement, remains in use in Dharavi nearly three years after the study began. It is also rewarding to see the appointed technical manage derive such pleasure and pride from his new role. It is my hope that it will continue in some form.

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APPENDICES

Appendix I: Memoranda of Understanding Between Partner Organisations

Memorandum of Understanding

This Memorandum of Understanding is between Laura Hakimi (LH), a PhD student at the University of Oxford, and Reality Gives.

This collaborative project will investigate the use of a learning resource for mobile phones as a complementary tool for English language learners enrolled on a Teach India "English for Employability" course. LH seeks to use an existing mobile content development system, which was created by a UK based company called Anspear Ltd, to design some culturally appropriate English language resources for mobile phones. These resources will be developed collaboratively through a process of action research, and the design and delivery will be revised according to NGO, teacher and student feedback.

Curriculum development

LH will develop a set of pilot mobile learning resources that are aligned to the learning outcomes and language themes in Teach India "English for Employability" curriculum. LH will not, as part of this project, develop the resources using material that is already included in this curriculum, but rather make develop complementary and additional material to be used in alongside the English for Employability course, in consultation with Reality Gives Staff and teachers.

Software development and licensing

LH will design a mobile learning resource using a system developed by Anspear Ltd. This software will be able to run on Java, Android and iOS mobile platforms. The learning resources will be licensed to LH, although the license to the system that generates the resources will necessarily remain with Anspear Ltd.

Project delivery

LH will work with Reality Gives to deliver this resource to batches of students enrolled on its Youth Empowerment Programme from January 2013. Where possible, the mobile learning resource will be loaded onto the students' own mobile phones, and they will be able to use the resource for the duration of the English for Employability course in their own time.

Improvement of the Mobile Resource

Feedback from Reality Gives, teachers and students will be used to inform the revision of the mobile resources over time. Reality Gives will be able to continue using the resource without cost following the completion of the research project, should they so wish.

Commitments for Reality Gives

As part of this agreement, Reality Gives agrees to:

- Provide access to the students of the Youth Empowerment Program and encourage them to take part in the project
- Allow teachers to be available for interviews on a regular basis
- Provide representatives to be available for interview on a regular basis

Letter of Intent for Java Development Work

This document sets out the development work to be completed by Anspear Ltd. for a mobile learning project in Dharavi, Mumbai, which seeks to support disadvantaged young people in learning English language, a skill which is highly valuable in securing employment in the Indian economy and internationally. The project will employ Anspear's system for mobile content development to create a bespoke learning course. This system currently generates software that will run on Android and iOS mobile platforms. However, a pilot study in June 2012 suggests that smartphone technology is not affordable for the majority of learners. With this in mind, it is necessary for Anspear to resurrect preexisting software for Java (feature) phones, which remain the dominant handsets in circulation amongst young people in Dharavi. While this approach will not ensure 100% compatibility with the students' existing mobile handsets, it will certainly represents a platform which is more appropriate, affordable and sustainable for local residents.

Technical specification:

In order to run the software the minimum specification for JavaME devices will be:

- CLDC1.1/MIDP2.0
- 2Bb of heap (program memory)
- Memory card to store data (2GB should be supported)

Most Java enabled phones now fall into this category.

Necessary development work:

The following work is needed to ensure that the learning software is compatible with these devices. This work needs to be completed by November 2012.

- Preparation of the preprocessor to generate XML once again for the J2ME devices
- Migration of all the existing screen types to accommodate recent changes to data structures
- Code for any new screen types and system features
- 6 extra SVG template files
- Testing: Although there is a facility for automated testing, the testing process on J2ME is time consuming. In order to ensure the widest compatibility, it will be necessary to test with a range of different handsets, touch screen, and to address installation issues.

Costs:

The estimated total cost for this development is approximately £3000. This accounts for one experienced programmer's time for a period of one month, and one week of additional programmer/editorial staff time for testing on multiple devices.

Contributions:

Kellogg Centre for Research into Assistive Learning Technologies has kindly offered a contribution of £1000. The balance will be covered by Laura Hakimi's ESRC Research Grant.

[LJH: September 2012]

Appendix II: Timetable of Action Research Activities

This appendix sets out a chronological outline of research activities undertaken as part of this study.

Cycle One: Reconnaissance; June – December 2012

Week	Activity	Description	
1-2	Orientation and familiarisation	Tour of Dharavi with Reality Tours and Travel Two weeks of (participant) observation with staff and students at the community centre	
2	Introductory, semi-structured interviews*	Interviews students (28) and teachers (3) individually in order to understand a) how students were already using mobile technology and b) the motivations for learning English and the challenges they faced in doing so. Interviews with NGO representatives (3) about the views and hopes for the project. Interviews with local mobile phone suppliers (5) to provide a different perspective of the local mobile economy.	
3	Collate list of suggestions for purpose of mobile resource	Suggestions for the way in which mobile learning resource could be used to support students, and issues for clarification, drawn from interviews with study participants	Iterative development and review of reflective diary
3	Development of prototype mobile learning resource	Prototype mobile resource designed to demonstrate capability of technical system (see Appendix IV) and to incorporate emerging design criteria.	
4	Trial of mobile learning resource*	Students were allocated one of five Android devices to trial overnight. Each student in the group of 28 used the phone over the course of the six-day week (lessons also took place on Saturdays).	
4	Focus groups with students	Students were gathered in groups of seven or eight for focus groups to gather feedback on the resources.	
4	Co-construction of student profiles*	Work with students to create short profiles of their motivations and experiences of English language learning and technology to be shared with teachers, NGO and a broader audience.	
5	Meeting with NGO representatives and teachers to agree desirable criteria for mobile learning resources	Discussion of a) student profiles; b) student feedback on prototype resource	
6	Return to UK		
7-26	Hindi course	I undertook an intensive Hindi course at Department of South Asian Studies in Oxford	
7-26	Development of mobile learning resource in preparation for Cycle Two	Drafting of mobile language content, based on structure, learning objectives and target language of "English for Employability" Curriculum. Periodic contact with NGO via email and Skype to update on progress, share content and to check, for example, the cultural relevance of particular scenarios presented in resources. Construction of resource using online system.	

*Consent negotiated, often orally, at the beginning of this activity

Cycle Two: Implementation (January – May 2013)

Week	Activity	Description	
1-2	Reorientation; informal meetings with teachers, NGO representatives and new students	Reestablishing contact with teachers and NGO representatives and demonstration of the mobile learning resource, providing an opportunity to trial and give feedback. Discussions about ways to integrate the resource in to classroom practice.	Iterative development and review of reflective diary; maintenance of technical issue log
2	Introductory, semi-structured interviews*	Interviews with students (27) and volunteer teachers (2) individually in order to understand a) how students were already using mobile technology and b) the motivations for learning English and the challenges they faced in doing so. Interviews with local mobile phone suppliers (3) to provide a different perspective of the local mobile economy.	
3	Source loan mobile phones	Investigation into possible loan devices (available locally and relatively inexpensively in Dharavi) and purchase of Android (10) and Nokia phones (8), plus micro SD cards and accessories for project.	
3	Distribute mobile learning resource to students*	Installed software on those students with compatible handsets, and distributed loan devices to those students without a (compatible) mobile phone.	
3-4	Support students in using mobile software	Troubleshooting in both short formal sessions following English classes and informally (through presence in community centre)	
4	Co-construction of student profiles*	Work with students to create short profiles of their motivations and experiences of English language learning and technology to be shared with teachers, NGO and a broader audience.	
5-6	Collection of log data; interviews with students*	A rolling process through which I arranged to collect student log data from their phones, a manual process in which files were copied from the phone's memory card, quick review of this data, then interviews with students the following day to discuss their use of the mobile learning resource and to identify/address technical problems.	
7-8	Collection of log data; interviews with students*	A rolling process through which I arranged to collect student log data from student phones once again, quick review of this data, then interviews with students the following day to discuss their use of the mobile learning resource and to identify/address technical problems.	
9	Debriefing with staff and NGO representatives before returning to UK	Presentation of emerging findings/issues; including vignettes relating to mobile phishing scams and Bluetooth sharing. Presentation of most common technical issues and ways in which to resolve them, so that staff might be able to support students in my absence.	
13	Return to field		
13-14	Collection of log data; interviews with students	A rolling process through which I arranged to collect student log data from student phones once again, quick review of this data, then interviews with students the following day to discuss their use of the mobile learning resource and to identify/address technical problems.	
15	Return of student loan handsets	Students who have been using loan devices returned handsets, clearing off personal files and setting beforehand. Sometimes I was asked to help them with this process.	
15	Focus groups with students; meetings with teachers and NGO staff.	Focus groups with smaller groups (4-5) of students to discuss emerging findings and suggestions for modifications to the mobile learning resource.	
16-20	Make modifications to mobile learning resource where possible	Incorporation of agreed changes where possible; keeping in touch with NGO where appropriate via email and Skype.	

Cycle Three: Detachment (May – October 2013)

Week	Activity	Description
1-2	Delay to the start of the Youth Empowerment Program	
3	Training of dedicated member of NGO team to install software and manage technical issues	Based on issue log collected in Cycle 2, and using installation instructions presented in Appendix IX, I worked with a member of NGO staff who had shown particular interest in the technical side of the project during Cycles One and Two, and had been allocated the responsibility for technical management of the initiative going forward.
4	Initial interviews with students*	Interviews with students (24) about how they were already using mobile technology and b) the motivations for learning English and the challenges they faced in doing so.
4	Preparation of loan devices for distribution	Alongside the technical manager, I made sure the loan devices were loaded with software and headphones and chargers were working and that they were ready to distribute to students as required.
5	Return to UK	NGO and teachers left to establish consent, distribute devices, support learners to use the software and keep in touch via email and Skype.
13-14	Return to field to conduct interviews with the 20 students who had received the mobile learning resource*	A rolling process through which I arranged to collect student log data from student phones once again, quickly reviewed this data, then interviews with students the following day to discuss their use of the mobile learning resource and to identify/address technical problems.
15-16	Final debrief activities	I conducted final set of focus groups with participating students to check the emerging meanings from their interviews, and a series of lengthy and reflective interviews with NGO staff, the remaining teachers and critical friends in which we discussed the future of the project and the lessons we had learned from the process.

*Consent negotiated, often orally, at the beginning of this activity

Appendix III: Outline Interview Schedules

Interviews with Students

These interviews should last approximately 20 minutes, and be semi-structured in nature. The interviews will be audio recorded if the participant gives permission. A translator is required. The questions to be covered will address each research question, and will include the following:

Outset of Action Research Cycle:

a) What are young people's existing practices using mobile technology, and what are the resulting implications for the design and implementation of a mobile learning resource in this setting?
    - Do you have a mobile phone? Who does it belong to? What type of mobile phone do you have? [During Cycle Two I use the term "household mobile"]
    - How do you normally use a mobile phone?
    - Do you feel confident using a mobile phone?
    - Do you have any other technology in your home?
    - Is there any kind of technology you don't use now but you would like to use in the future?
    - Do you think mobile phones / technology are important in your life? [During Cycle Two I ask about family views about technology]
    - What do you think about the idea of using a mobile to help you learn?

b) What are the motivations for and challenges presented by learning English for the young people, and what are the resulting implications for the design and implementation of a mobile learning resource in this setting?
    - Why did you join the Youth Empowerment Program?
    - Which languages do you speak?
    - Why do you want to learn English? Have you learned any English before?
    - Which aspects of English do you need most/least help with?
    - Can you tell me about your previous experiences of education?
    - What are you doing at the moment?
    - What do you hope to gain from the Youth Empowerment Program?
    - What would you like to do in the future?

During/At End of the Action Research Cycle:

c) In what ways do the students use the mobile learning resource provided to them to support their learning of English language?
    - How often have you been using the mobile learning resources?
    - Where do you usually use the resources?
    - When do you use the resources?
    - For how long do you usually use the resources?
    - Do you use the resources with other people? If so, with whom?
    - What are the most useful elements of the mobile resource?
    - What are the least useful elements of the mobile learning resource?
    - Do you think the resource is missing anything?
    - Do you feel the resource is helping you to learn English? If so, how?
    - How confident do you feel when using English?
    - Have you encountered any technical problems?
    - Have you been using your mobile phone to learn English in any other ways?

Once logs from the students' phones, these interviews also include a discussion of particular patterns of use, based on information in the log analysis.

d) What are the enablers for and constraints to using a mobile learning resource to support English language learning in this setting in a sustainable manner?
    - What do you think about using a mobile phone to help you learn English?
    - Have you encountered any problems taking part in this project?
    - If this project was to happen again, how could we improve it for other Youth Empowerment Program students?

Interviews with Teachers

These interviews take place at least twice during each action research cycle. These interviews last approximately 30 minutes, and be semi-structured in nature. These interviews will be audio recorded if the participant gives permission. The questions to be covered will include the following:

- What are the aims of the Youth Empowerment Programme?
- To what extent are these aims being met?
- How are students recruited/encouraged to attend?
- What sort of students generally attend the programme?
- How has the curriculum been designed?
- What is the importance of the mobile phone in Dharavi?
- What do you think about using mobile phones to support the Youth Empowerment Programme?
- How are the students progressing in their English language studies?
- What are the results of the students' latest assessments? What are your views on these results?
- How are the students finding the use of the resources? Have you witnessed any technical problems?
- How, if at all, do you think the mobile resources are serving to support the English for Employability curriculum?
- How, if at all, do you think the mobile resources are serving to distract from the English for Employability curriculum?
- Are there any ways in which the resources, or the way in which they are delivered, could be improved in the next cycle?
- Have you encountered any technical problems surrounding the use of the resource?
- Have you encountered any social or institutional problems surrounding the use of the resources? [In Cycle Two I began to introduce my own observations to prompt discussion about important issues]
- How do you see the future use of this resource? Do you foresee any problems in continuing its use?
- If you can foresee any problems, can you think how they could be addressed?

Interviews with NGO representatives

These interviews occur at least twice during an action research cycle. These interviews will last approximately 30 minutes, and be semi-structured in nature. These interviews will be audio recorded if the participant gives permission. The questions to be covered will include the following:

- What are the aims of the Youth Empowerment Program? To what extent do you feel these aims being met?
- How is the impact of the programme being evaluated?
- How are students recruited/encouraged to attend?
- What is the general profile of students who attend the programme?
- What is the importance of the mobile phone in Dharavi?
- What do you think about using mobile phones to support the Youth Empowerment Program?
- How has the curriculum been designed?
- How do you see mobile learning materials being able to support the delivery of this curriculum?
- How, if at all, do you feel the use of the mobile learning resource complements the goals of the Youth Empowerment Program?
- Are there any ways in which the resources, or the way in which they are delivered, could be improved in the next cycle?
- Have you encountered any technical problems surrounding the use of the resource?
- Have you encountered any social resistance to the use of the resources?
- Do you feel there are any a) financial, b) institutional or c) social barriers to the use of the mobile resource with students?
- How do you see the future use of this resource? If you can foresee any problems, can you think how they could be addressed?

Interview Schedule for Mobile Phone Suppliers in Dharavi

These interviews last approximately 15 minutes, and are semi-structured in nature. These interviews will not be audio recorded. The questions to be covered will include the following:

- What are the most popular mobile phone handsets in Dharavi? What are the most popular tariffs/networks?
- Who are your principal groups of customers?
- What is the value/role of the mobile phone in Dharavi?
- How do you see the use of mobile phones changing over the next few years?

Appendix IV: Negotiating Consent

Information Sheet for Reality Gives Representatives and Teachers

Invitation

You are being invited to take part in a research project. Before you decide to participate, it is important to understand why the research is being conducted and what your participation entails. Please take time to read the following information carefully. Please ask if there are any aspects of the project that are unclear or if you would like more information. Take time to decide whether or not you would like to take part in this research.

What is the purpose of the project?

This study is an exploration of the way in which mobile phones can be used to support students enrolled on the Youth Empowerment Program to learn English language. The purpose of this pilot work is to gain a better understanding of the Youth Empowerment Program, and of the goals and motivations of Reality Gives, the teachers and the students. The project will involve interviews with Reality Gives representatives and teachers on the Youth Empowerment Program and some observation of the Youth Empowerment Program and classroom practice. It is hoped that this information will help to inform the design of locally relevant curriculum resources that will be of benefit to both teachers and students.

Do I have to take part? What are the risks and benefits of taking part?

It is your decision to take part in this study. You can decide to stop participating at any time. You do not need to answer questions that you do not wish to. Every effort will be made to preserve confidentiality but as this cannot be fully guaranteed by the nature of this research it is possible that you may be able to be identified in the final report. Other than this, there are no known risks to taking part. The benefits are helping to create an educational resource to support the Youth Empowerment Program and its students.

What will happen to the results of this project?

The results of this research will form the basis of an Oxford doctoral dissertation. Some results maybe published in academic journals concerned with exploring educational policy. If you wish to obtain a copy of the published results, please inform the researcher. The study will take place over the next two to three years after which time the published results will be publicly available.

Who is funding and organising the research?

The research is funded and organised as an independent doctoral research project in conjunction with the Department of Education, Oxford University.

Contact for further information or follow-up

Should you have any further questions about this research, please feel free to contact: Laura Pearson Department of Education, 15 Norham Gardens, Oxford, UK OX2 6PY, laura.hakimi@education.ox.ac.uk. Your enquiries are most welcome.

Information for Students

Invitation

You are being invited to take part in a research project to support learning using mobile phones. The project is taking place throughout [dates for action research cycle]. Here is some information to help you decide if you would like to take part. You are welcome to ask us any questions you have about the project, and you don't have to take part if you don't want to.

What is the purpose of the project?

This project is about using mobile phones to help students on the Youth Empowerment Program to learn English language. You are being asked to talk about your experiences of the programme, your reasons for learning English, and what you would like to do in the future. You are also being asked to try out some English language resources on mobile phones, and to tell us what you think in interviews a group discussion. When you try these resources, the program will be recording what you do. With your permission, your photograph may be taken as part of this process. Your contribution will help to design some English language resources that can be used by you and other students on the Youth Empowerment Program in the future.

Do I have to take part?

It is your decision to take part in this study. You can decide to stop participating at any time. You do not need to answer questions that you don't want to. Every effort will be made to keep confidentiality, although this is not always possible.

What will happen to the results of this project?

The information collected in the project will form the basis of student research project in Oxford, UK. Some results maybe published in academic journals about educational policy. If you wish to see the published results, please tell the researcher.

Contact for further information or follow-up

If you have any further questions about this research, please feel free to contact: Laura Pearson Department of Education, 15 Norham Gardens, Oxford, UK OX2 6PY, laura.pearson@education.ox.ac.uk. Your enquiries are most welcome.

Information for Mobile Phone Suppliers

Invitation

You are being invited to take part in a research project to support learning using mobile phones. Here is some information to help you decide if you would like to take part. You are welcome to ask us any questions you have about the project, and you don't have to take part if you don't want to.

What is the purpose of the project?

This project is about using mobile phones to help students on the Youth Empowerment Program to learn English language. It is important to understand as much as possible about the way mobile phones are used in Dharavi. This information will help to design some English language resources that can be used by young people in your community in the future.

Do I have to take part?

It is your decision to take part in this study. You can decide to stop participating at any time. You do not need to answer questions that you don't want to. Every effort will be made to keep confidentiality, although this is not always possible.

What will happen to the results of this project?

The information collected in the project will form the basis of student research project in Oxford, UK. Some results maybe published in academic journals about educational policy. If you wish to see the published results, please tell the researcher.

Contact for further information or follow-up

If you have any further questions about this research, please feel free to contact: Laura Pearson Department of Education, 15 Norham Gardens, Oxford, UK OX2 6PY, laura.hakimi@education.ox.ac.uk. Your enquiries are most welcome.

Consent Form for Participants

This form will be translated into Hindi and Tamil where necessary. Where literacy levels are low amongst participants, the contents of this form will be explained clearly and carefully in English. Where a student's level of English is insufficient, a translator fluent in English, Hindi and Marathi will read aloud the translated form.

Project Working Title:

Mobile Learning in Context: English Language Learning in Dharavi, Mumbai

Researcher:

Laura Hakimi

Declaration of Consent:

I have read the participant information sheet and have had the opportunity to ask questions about the study and receive satisfactory answers to questions.

I understand that I may withdraw from the study at any time by advising the researcher, and any data already recorded will be discarded.

I understand that this project has been reviewed by, and received ethics clearance through, the University of Oxford's Central University Research Ethics Committee.

I understand that my personal data will be treated in total confidence, kept securely in a password-controlled server.

I understand that I will have the opportunity to review and comment on any analysis before publication. I understand how to raise a concern and make a complaint, and agree to participate in this study.

I agree to voluntarily take part in this research project.

I confirm that I have read the associated information sheet and understand the intent and purpose of this research.

I agree that data captured by this research can be shared among the research team on this project.

I agree/do not agree for an audio recording to be taken of the interview. *[Please delete as appropriate]*

Name of Participant: _____

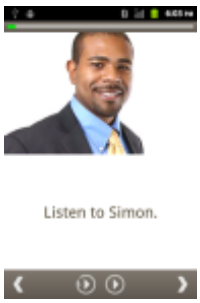
Signature: _____

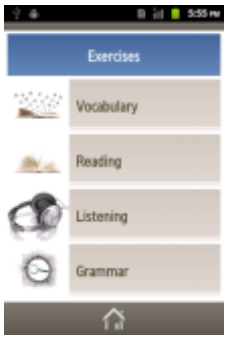
Date: _____

Name of Researcher_____

Appendix V: Prototype design

This document sets out the design criteria identified during Cycle One and identifies, where possible, how these criteria were incorporated into a prototype for learners to trial. Where appropriate, brief comments about the views of students on the prototype resources have also been included.

Design criteria	**Prototype design feature**	**Evidence**	**Relevant student feedback**
Be aligned to learning objectives of "English for Employability" curriculum	At the time of prototyping, discussions were still underway with Teach India negotiate access for the learning materials. The prototype materials do not use any particular learning objectives, rather seek to demonstrate different features and functionality.	See Appendix V for a demonstration of the ways in which the learning objectives for this curriculum will be incorporated into the mobile resource in the main study.	Not applicable.
Support correct models of pronunciation in a range of spoken accents (including UK, US, Indian)	The prototype resources take advantage of the phone's audio player to provide audio for each piece of vocabulary and extended listening passages in a range of accents.	 **Audio play:** Each vocabulary screen provides audio to accompany text, as well as the opportunity for the learner to record their own voice.  **Listening comprehension:** Extended audio passages in a range of accents, and comprehension questions with audio support for each question.	The audio was generally very clear and helpful but ambient noise is sometimes too loud to hear it. The volume of the audio therefore needs to be louder. A greater range of accents would be helpful.

Design criteria	Prototype design feature	Evidence	Relevant student feedback
Provide material to support vocabulary, listening, reading and writing skills	The exercises in the prototype resource attempted to provide activities that practised each language skill. However, the writing practice was limited to gap-fill grammar exercises. Within the existing constraints of the system, there is limited scope for extended writing, so practise was limited to spelling and gap fill activities.	 **Activity menu:** Activities tested a range of different language skills.	Grammar exercises were particularly popular.
Provide Hindi translation for more difficult vocabulary concepts	A written Hindi translation was provided with each piece of vocabulary, both in the dictionary and on vocabulary screens. NB: The Android platform has a problem rendering conjuncts in the Devenagari script correctly, and so there were some inaccuracies in the Hindi were present.	 **Hindi translation:** In the dictionary and on vocabulary screens.	The inaccuracies in Hindi translation were distracting. Translations will only be helpful for harder, more abstract vocabulary concepts. [Cycle Two indicated that some students did not read Devenagari script; and a transliterated version would be more appropriate].
Provide locally relevant situations/ scenarios	Example scenarios for the language material were checked with teachers to ensure they held currency and relevance to the students.	 **Relevance in scenarios**: An exercise in selecting the correct possessive pronouns.	Students enjoyed the local imagery, but requested some more globally-relevant images and scenarios

Design criteria	Prototype design feature	Evidence	Relevant student feedback
Contain locally-recognisable imagery	Imagery was photographed locally where possible, or purchased from Indian stock photo websites.		Students enjoyed the local imagery, but requested some more globally-relevant images and scenarios.
Have broad compatibility across lower-end mobile handsets	The phones used in the pilot study ran the Android platform, because this represented the fastest platform for which to generate prototype resources. Development work later ensured that the resources would run on a range of Java handsets, which are more affordable.	Java development, funded in part by the Kellogg College Research Centre for Assistive Learning Technologies, was completed by December 2012.	Students enjoyed using the Android handsets, which were generally (but not always) more advanced than the handsets they owned, if they owned a handset at all.

Appendix VI: Mobile resource design

The following table provides an example of the ways in which learning objectives from the English for Employability curriculum, and the associated target language, have been incorporated into the mobile resource for this study.

Module 1: Unit 1

<table>
<tr><th>Learning objectives</th><th>Target language</th><th>Incorporation into mobile resource</th></tr>
<tr><td rowspan="5">Introducing yourself face to face and over the phone

Greeting others appropriately</td><td>Verb: to be</td><td>Presentation of different forms of verb to be in present tense, with audio playback to hear pronunciation.

Gap-fill exercises in which learners choose the correct form of the verb</td></tr>
<tr><td>‘Wh’ questions</td><td>Listening exercise: Simple dialogue of introductory conversation between two workers. Comprehension questions using What/Who/When?

Word order exercise: Rearranging parts of What/Who/When questions into the correct order</td></tr>
<tr><td>Personal pronouns</td><td rowspan="2">Presentation of model sentences which denote personal pronouns and possessive adjectives:

She is a beautician. Her name is Jyoti.

Gap fill exercises asking learners to choose the correct personal pronouns and possessive adjectives. Audio to be provided with each correct phrase to model pronunciation.</td></tr>
<tr><td>Possessive adjectives</td></tr>
<tr><td>Vocabulary for introductions and jobs, including:

Hi. My name is…
What’s your name?
Nice to meet you
businessman
accountant
beautician (+ other professions)</td><td>Presentation of the following pieces of vocabulary/phrases + audio + appropriate image + Hindi translation + opportunity to record own pronunciation:

Revision and review of pieces of vocabulary via flashcards and dictionary.</td></tr>
</table>

Appendix VII: Participant agreement

This form was provided students at the time of software distribution. It was translated into Hindi (or another local language) where possible and necessary.

Mobile English Language Learning Project

Participant Agreement

Thank you for agreeing to take part in our mobile learning project. You are helping us to explore the best ways to use mobile phones to support English language learning. We hope that your feedback will help us to provide mobile learning opportunities to many more people in the future.

Some general rules:

- Please continue to inform your families about this project. Please invite them to come and discuss the project with us at any time.
- You can use the mobile learning software at any time ***outsid****e* lessons. **You must not use it during classes.** If this happens, your phone will be taken away.
- Please report any problems or difficulties you have with the phone or the program to Mayur or Jyoti.
- You can also call Mayur (7666464248) for technical support.

For students who have been given a phone:

- You are responsible for keeping the phone safe. Please take good care of it.
- You can show the software to other people but do not lend your phone to anyone else.
- You must return the phone at the end of the Youth Empowerment Program.
- You can use any other features of the phone (camera etc). The phone does not come with a SIM card, but you can insert your own if you wish.
- Do not give out your phone number to anyone you don't know.
- Do not respond to advertising SMS messages – they

Name: _____

Signature: _____

Date: _____

Appendix VIII: User Guides to Mobile Resources

These user guides were provided to learners when they received the mobile learning software, according to the mobile platform they were using. They also received a description of the different types of activities contained in the resources.

Using your Mobile English Language Learning Software

Android Version

Cards
Review the vocabulary and phrases you have learned with these vocabulary cards.

Settings
Manage your user settings here.

Picture dictionary
Access a picture dictionary, containing all the vocabulary in the resources, here.

Lessons
Browse the lessons here. Use the lesson index to help you.

Things to remember

1. Look for the Anspear icon in your menu to access the program
2. Make sure the phone is set to the correct date and time
3. Do not restore your system data - you will delete the program
4. Take good care of the phone, charger and headphones.

Having problems? Call Mayur: 7666464248

Lesson Index

These mobile activities can be used alongside your English for Employability classes. For example, the activities in Unit 1 correspond to the language you will learn in Module 1 of your English course.

Unit	Vocabulary & phrases		Listening	Reading	Grammar
1	Personal details Question words Describe people Professions Useful verbs Positions Clothes Accessories Colours In the office	Who is it? In a shop How are you? Saying goodbye Where is it? Whose is it? What are you doing?	Introduce yourself Could you spell that please? How are you? Who are you? On the phone	Who is it? Business cards	Asking questions Verb: To be Contractions Possessive adjectives Prepositions What are they doing?
2	Family members Talking about family Numbers (1-20) More numbers (21-1000) Telling the time Times of the day	Days of the week How often? Useful verbs Communication Adjectives Questions & answers Shopping phrases	Asking about family Daily routine Simon's job At the restaurant At the pharmacy Buying a shirt	Families New jobs Company profiles	Questions with do and does What would you like? Present simple Comparatives Prepositions of time
3	Months of the year Seasons and weather What's the weather like? Ordinal numbers Writing dates Groceries Drinks	Holidays Fruit & vegetables Meat, fish & dairy Directions Getting around Travel & transport Useful verbs Describe places Culture & festivals	What's the weather like? Directions I'm lost! Booking a hotel Compliments Going to Jaipur	City guides Festival descriptions	Prepositions of movement After/before + doing
4	Health Parts of the body How are you feeling? Emotions Customer services	Could you repeat that please? Animals Useful verbs Describing events	Could you repeat that please?	Train travel Movie reviews	Body functions What should you do? Questions and answers
5	Education Banking and finance Useful verbs Apologising		Life stories Lost debit card	Money and credit Big issues	Past simple: regular verbs Past simple: irregular verbs Past continuous + past simple Going to (for future)
6	Employment Useful verbs What are your skills?		If I could do anything.... Job opportunity What are your skills? Interview practice	Job hunting Preparing for interviews	In the future If anything was possible....

Using your Mobile English Language Learning Software

Nokia Version

Bookmark
Use the bookmark to return to your place in the mobile resources.

Settings
Manage your settings here.

Lessons
Browse the lessons here. Use the lesson index to help you.

Picture dictionary
Access a picture dictionary, containing all the vocabulary in the resources, here.

Back to menu
Use this button to leave an exercise and return to the menu.

Quit application
Use this button to quit the application

Replay audio
Replay the audio on any screen with this button.

Help
Use this button to get help for any question.

Things to remember

1. Access the program by selecting the Anspear icon on your **Home Screen** or in **Games**
2. Make sure the phone is set to the correct date and time
3. **Do not move or delete anything** from the anspear folder on your memory card: This will stop the program from working.
4. Try to avoid removing the memory card where possible.
5. Take good care of the phone, charger and headphones.

Having problems? Call Mayur: 7666464248

Lesson Index

These mobile activities can be used alongside your English for Employability classes. For example, the activities in Unit 1 correspond to the language you will learn in Module 1 of your English course.

Unit	Vocabulary & phrases		Listening	Reading	Grammar
1	Personal details Question words Describe people Professions Useful verbs Positions Clothes Accessories Colours In the office	Who is it? In a shop How are you? Saying goodbye Where is it? Whose is it? What are you doing?	Introduce yourself Could you spell that please? How are you? Who are you? On the phone	Who is it? Business cards	Asking questions Verb: To be Contractions Possessive adjectives Prepositions What are they doing?
2	Family members Talking about family Numbers (1-20) More numbers (21-1000) Telling the time Times of the day	Days of the week How often? Useful verbs Communication Adjectives Questions & answers Shopping phrases	Asking about family Daily routine Simon's job At the restaurant At the pharmacy Buying a shirt	Families New jobs Company profiles	Questions with do and does What would you like? Present simple Comparatives Prepositions of time
3	Months of the year Seasons and weather What's the weather like? Ordinal numbers Writing dates Groceries Drinks	Holidays Fruit & vegetables Meat, fish & dairy Directions Getting around Travel & transport Useful verbs Describe places Culture & festivals	What's the weather like? Directions I'm lost! Booking a hotel Compliments Going to Jaipur	City guides Festival descriptions	Prepositions of movement After/before + doing
4	Health Parts of the body How are you feeling? Emotions Customer services	Could you repeat that please? Animals Useful verbs Describing events	Could you repeat that please?	Train travel Movie reviews	Body functions What should you do? Questions and answers
5	Education Banking and finance Useful verbs Apologising		Life stories Lost debit card	Money and credit Big issues	Past simple: regular verbs Past simple: irregular verbs Past continuous + past simple Going to (for future)
6	Employment Useful verbs What are your skills?		If I could do anything.... Job opportunity What are your skills? Interview practice	Job hunting Preparing for interviews	In the future If anything was possible....

Activities

Vocabulary

Vocabulary screens present a written word or phrase, an image and audio. Press the play audio key to hear how the word or phrase is pronounced. Select the record icon to practise saying the word or phrase. Speak into the phone to record your voice. When you have finished, select the listen icon to hear your recording. You can add pieces of vocabulary to your 'favourites' by selecting the heart in the top right hand corner.

Spelling

Spelling screens show an incomplete word or phrase, display an image and play audio. Select from the characters underneath to complete the word. Check the answer using the 'check answer' button. Correct characters will be highlighted in green. Incorrect characters will be highlighted in red.

Word fill

Word fill screens provide a chance to practise completing sentences with the most appropriate word or phrase. Touch the word in the box to view the available options and make your choice. Check the answer using the 'check answer' button. Correct words will be highlighted in green. Incorrect words will be highlighted in red.

Word order

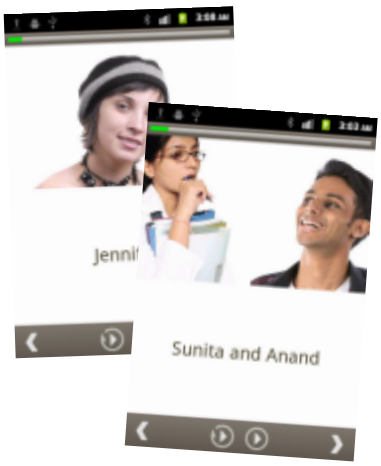
Word order screens provide the chance to practise putting words, phrases or parts of a sentence in the right order. Drag the words or phrases into the correct sequence. Check the answer using the 'check answer' button. Items in the correct place will be highlighted in green. Words or phrases in the incorrect place will be highlighted in red.

Quadrant

In quadrant screens, four different images are displayed on the screen. Touch the most appropriate image to select your answer.

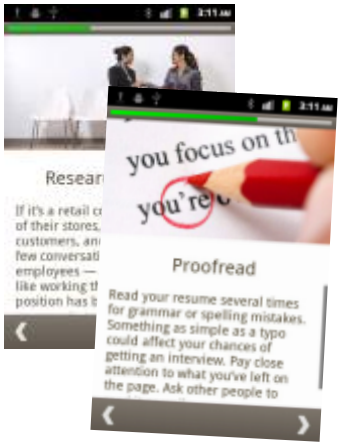
Option

Option screens present a written question or phrase and accompanying audio and require you to choose the most appropriate response from the options underneath. Sometimes these options will play audio. Touch an option to select your answer.



Listening

Listening screens play an extended piece of spoken English. Press play to hear the clip, and then answer the questions on the following screens. You can refer back to the audio screen by touching the question mark.



Reading

Reading screens present a short piece of text on the screen. Scroll down to see the text underneath.

Dictionary

The dictionary contains the words and phrases from every vocabulary exercise in the course. It can be accessed from the home screen. You can search for words alphabetically, or scroll through the entries in the list. Select an entry to see a larger image and to hear the pronunciation.

Appendix IX: Installation Instructions

These instructions have been provided to community centre staff so they are able to manage the installation process onto student handsets.

Nokia version

The Nokia version of the software is a folder that sits on the memory card (microSD) of many Nokia phones.

Is a phone compatible?

Not all phones are compatible. The phone requires a microSD card reader. If the phone has a touchscreen, the software probably won't work. However, the models below definitely support the software.

Nokia C1 ; Nokia X203 ; Nokia Xpress music ; Nokia ASHA 200

If you think a phone will support the software, take the following steps.

- EITHER take out the microSD card already in the student's phone OR format a microSD card using the phone.[17]
- Using a card reader and a PC (or via USB), copy the **anspear** folder from the Reality Gives Dropbox onto the micro SD card. The folder size should be around 300MB. Insert the micro SD card back into the phone. Find the memory card icon in the phone's menu and locate the folder **ANSPEAR**.
- Go into the ANSPEAR folder and scroll down. You should see a few folders, followed by this icon and **Anspear_English**. **If you do not see this icon, the phone is not compatible.**

[17] To format a memory card once it is inserted into a phone, find the memory card in the phone menu, select 'Options' then 'Format memory card'.

Setting Permissions

Before you open the application, you need to **set some permissions.** This allows the application to access features of the phone's system.

- In the ANSPEAR folder, scroll down so the icon is highlighted. With the icon highlighted, select 'Options' on the left hand side.
- Go to **Application Access** > **Data access** > **Multimedia recordin**g and select **Always allowed**.
- Go back into **Application Access** > **Data access** > **Read user data**. Select **Always allowed.**
- Go back into **Application Access** > **Data access** > **Add and edit data**. Select **Always allowed.** You have now set the correct permissions for the application.
- Choose **Back** and now select the **Anspear_English** application**.**
- You should now be inside the application.

NOTE: If the student has been playing around with the memory card, sometimes the permissions become undone. Repeat the steps above to reset the permissions.

Moving the Application

It is a good idea to move the application from the memory card onto the phone, so it is less likely to get deleted.

- Inside the ANSPEAR folder, scroll down until the Anspear_English application is highlighted.
- Select '**Options**' on the left hand side, then **Move**. I normally put the application in **Games.**

Setting up a Shortcut

You can also set up a shortcut on the phone's home screen, via **Settings** > **Display** > **Home Screen Mode** (ON)> **Personalise View** > **Select Shortcuts > Applications.** This makes it very easy for the student to access the program.

Common problems

- Students have removed the memory card and the permissions have become unset. In this case, reset the permissions and the application should work fine.
- Students have deleted something inside the ANSPEAR folder. They will be told not to do this, but if this does happen, the whole folder will need to be recopied onto the memory card and reinstalled. Sorry!
- The program will not work because the time and date are not set correctly. This affects the software licensing. Check that the time and date are correct.

Android version

This application has been installed directly onto Android phones via USB. It is not easy to set up a way to replicate this installation on another computer.

If a student loses the Android application, or needs it to be installed on their own phone, I would recommend asking another student to share the program via **Bluetooth**. I will distribute the program to as many Android phones as possible, including guides' phones, so that the program may be shared easily.

I will remind the students to keep the time and date correct, and to be careful not to delete the application by mistake.

If you have any trouble with Android phones, email me: laura.hakimi@education.ox.ac.uk and I will try to set up another distribution channel for the software.

Thank you very much for your help!

Appendix X: Mobile Safety Training Resource

This information is adapted from the Internet & Mobile Association of India's Safer Surfing Campaign[18], and is designed to be discussed with students as part of the introduction for the mobile learning project.

MOBILE SAFETY TIPS

In today's 24/7 digital world, we rely on our mobile devices more and more to access the Internet, find information, and connect with friends and family. It's very important that we know how to be good digital citizens, how to manage our online reputations, and how to make personal safety a priority on a mobile device.

- **Don't believe everything you read!** It's quite common to receive 'phishing' or scam SMS or emails promising you money or competition winnings. Try to ignore them and do not give away any personal details to people you don't know. Be careful before clicking on any link asking you to log in, change your password, or provide any personal information, even if it appears to be from a legitimate source.

- **Think before you share a thought or photo.** Imagine your grandmother, employer, or teacher receiving it. Is what you're sending suitable for anyone to see?

- **Protect your personal information.** When you send email, texts, photos, or instant messages to people who are not trusted friends or family, don't give out personal information they could use either to find your physical location or to exploit you.

- **Consider a "password" for your mobile phone**. Many phones can be locked so that the only way to use them is to type in a code. People can find or steal unlocked phones and use them to steal your personal information, make calls, or send texts that look like they're coming from you. Someone using your phone could send texts that look like you're harassing people in your address book with inappropriate images or words.

- **Control negativity.** Think carefully about whom to communicate with and whom to ignore. Yahoo! Mail, Yahoo! Messenger, and Yahoo! Pulse let you block people. If you receive abusive or harassing messages, report the abuse where and when you see it. Ask for help at the community centre if you need it.

TIPS FOR SHARING SAFELY

As more and more cell phones come equipped with digital cameras and with free wireless access available at almost every street corner cafe, it's easier than ever to record and share what's going on in your life with friends and family. Whether it's by email, text or a social network, you can share information almost instantly. Keep these simple tips in mind so you can share what matters to you, safely.

- **Be proud of what you're sharing**. Remember that what you post on the Web is permanent. When you upload photos, send email, or comment on other people's pages, once it's up, you can't take it back. Even if you delete the content, you have no way of knowing if it has been copied, altered, or forwarded to others.

- **Know your connections**. As much as possible, only let people you know in real life connect with you online. When people try to add you as a connection, if you don't really know them, block them so they can't contact you again. Use your privacy settings to help ensure you're sharing with the right people.

- **Be an upstander not a bystander**. If you choose to stand by and watch, laugh or do nothing when you see bullying happen, you become part of the problem. Don't be a passive bystander. Report inappropriate content or behaviour.

18 See http://iamai.in/safesurf/login.aspx?ReturnUrl=%2fsafesurf%2f

STRONG PASSWORDS

A strong password is your first line of defence against intruders and imposters.

- **Never give out your password to anyone**. Never give it to friends, even if they're really good friends. A friend could accidentally share your password with others or become an ex-friend and abuse it.
- **Don't just use one password for different websites**. If someone finds that one password, they could use it to break into your accounts at other sites.
- **Create passwords that are easy to remember but hard for others to guess.** Think of a phrase such as "I left King School in 2004" and use the initial of each word like this: "IlKSi2004." The longer, the better. Longer passwords are harder to crack.

Appendix XI: Continuing the use of the mobile learning resource

a) Resource available on Android App Store

Search Sign in

Apps

My apps

Shop

Games

Editors' Choice

Learn English

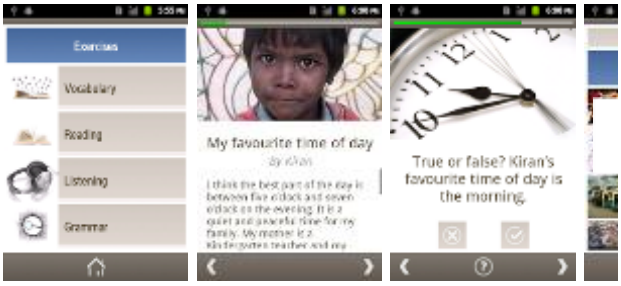
Reality Gives - 25 February 2014

Education

Install Add to wishlist

(2)

+3 Recommend this on Google



Description

An engaging, interactive application for beginner English language learners in India, including vocabulary, reading, listening and grammar exercises and picture dictionary. Hindi translations are provided for each piece of vocabulary.

This app has been developed for Reality Gives (http://www.realitygives.org/), an NGO that helps underprivileged community in Dharavi, Mumbai, and beyond. Using a system developed by Anspear Ltd., it has supported young adult learners in their learning of English. It is now available for wider distribution.

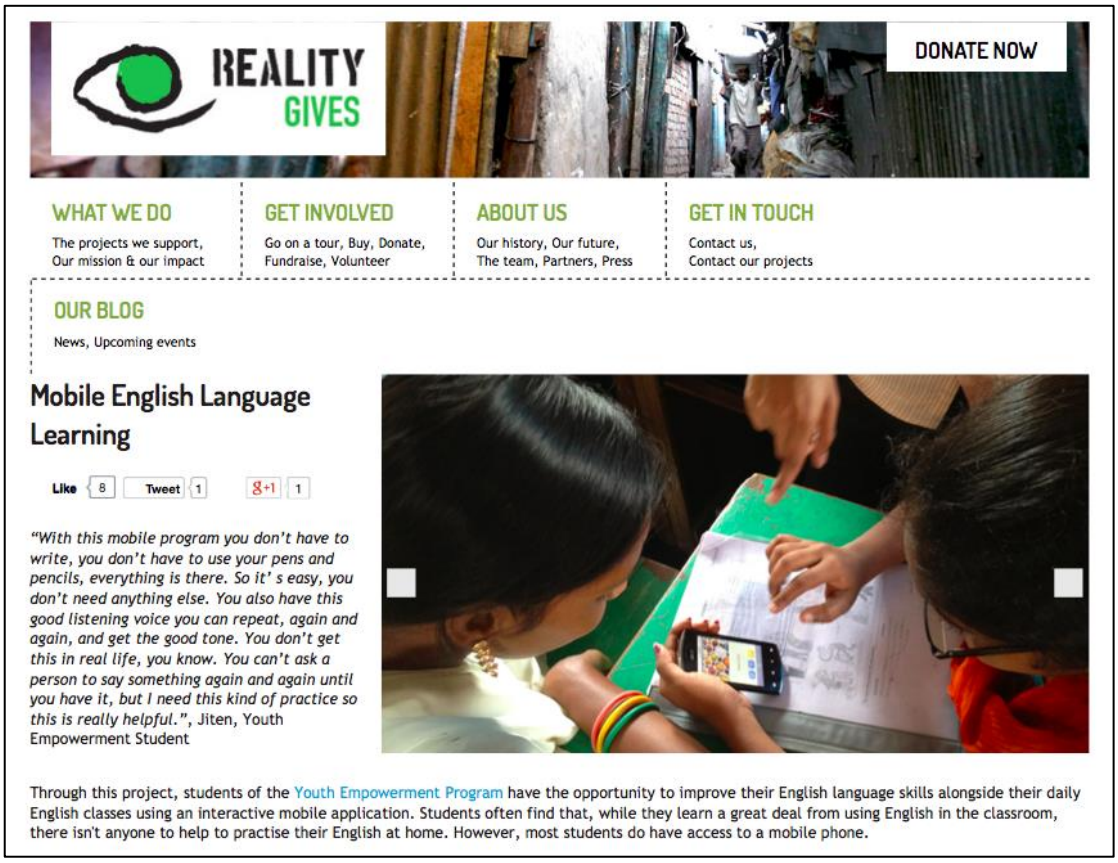
Main features:

-Professional and engaging images and native speaker audio of all words and phrases
-Vocabulary flashcards to keep track of your learning and refresh your memory
-Interactive picture dictionary
-Opportunities to record your own voice and compare it to a native speaker to perfect your pronunciation
-Spelling screens to develop writing skills and vocabulary retention
-Listening exercises and quizzes to test your audio comprehension
-A variety of word games for interactive learning including: sentence ordering, gap fill exercises, true or false and multiple choice questions
-All content is stored locally, no network connection necessary

Learn more about Reality Gives: http://www.realitygives.org/
Visit the developer site: www.anspear.com

Images are provide courtesy of Fotolia www.fotolia.com.

b) Resource presented on Reality Gives website



c) Resource distributed to other NGOs and presented on social networks (reproduced by permission of Reality Gives).

Reality Gives
3 hours ago

Last Friday Jonny and Mayur introduced our Royal City School teachers to the Reality Gives Mobile English Language Learning App.

The aim of the app is to help people learn vocabulary, spelling and pronunciation and to improve their general comprehension of English. The teachers' curiosity was palpable and their feedback extremely positive.

If you want to improve your English and have a smartphone, you can download the app here: tinyurl.com/qxo8vp8 . You can also learn more about the program at http://www.realitygives.org/mell_project.php . — with Mayur Parmar and Jonny Clarke. (5 photos)

Reality Gives added 11 new photos — with Mayur Parmar.
11 February ·

Some photos from this week's workshop with Foundation for Mother & Child Health - FMCH INDIA staff where we introduced them to our Mobile English Learning App.

As well as helping them to learn English, we trained them to be able to share it with their beneficiaries.

If you have an android phone and want to download the app, click here: bit.ly/realitygivesapp and remember, it's free!