Gītakāra
A radio and SMS-based system for collaborative composition and broadcasting

by

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A thesis exhibition presented to OCAD University in partial fulfillment of the requirements for the degree of Master of Design in Digital Futures

49 McCaul, April 16th - 19th
Toronto, Ontario, Canada, April, 2013

Cathy Pin-Chun Chen 2013

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Abstract

The idea of ICT4D, that technologies can be designed to encourage development of disadvantaged communities, is inherently tied to the contentious definition of "development." Following Escobar (1995), this thesis aims to repurpose the idea of development to recognize, encourage and support local subjectivities, goals and practices among rural Indian youth who cannot attend school regularly and are thus isolated from peers. To provide opportunities for these youth to engage with peers intellectually and creatively from a distance, this thesis describes a system that uses the local technologies of community radio stations and SMS messaging to enable youth to collaboratively author song lyrics. The project's design process was guided by the methodology of appropriate technology, and several user tests and questionnaires were conducted to evaluate the system. Overall, study participants expressed that Gītakāra is a platform where they can have fun and creatively collaborate, think and compose with their peers.

Key Words: Development, ICT4D, appropriate technology, local practices, open source, Indian youth, social media, constructivist learning, community radio station, M4D, mobile technology, SMS

Acknowledgements

First of all, I would like to express my immense gratitude to my primary advisor David McIntosh, who consistently offered his very honest opinions while providing me with motivation, encouragement and guidance. He was instrumental in helping me to strengthen the Gītakāra's theoretical backbone, and was available to provide immediate assistance whenever needed. I am also very grateful to Martha Ladly for providing warm encouragement and knowledgeable feedback that helped improve the project concept, as well as her great assistance and guidance in completing my first ethics application.

I wish to thank various people for their contributions to this project: Osama Manzar, Chitra Chauhan and Pradeep Kothari from the Digital Empowerment Foundation in New Delhi and Chamba provided assistance for all the coordination, planning and communication that was done on the other side of the earth; all the Digital Futures professors at OCAD University, especially Tom Barker and Nick Puckett for constantly providing thoughts and advice whenever needed; Sabrina Lindo for offering to help with user tests and helping me run after Tom whenever I needed his assistance and signature; my fellow Digital Futures classmates, who supported the project throughout its development, especially Harjot Bal and Elizabeth Coleman for providing English and/or format opinions whenever needed – you guys were always available for me; everyone who helped to coordinate my user tests, as well as all participants; Jane Burns for my constant visits inquiring about ethics board applications, amendments and approvals; Rhonda McEwen and Jack Lochhead for sparing me a moment in their busy schedules to provide their expert feedback; Suzanne Stein for taking the extra effort to connect me with Osama Manzar; and DruMeBa members for their patience and accepting my lack of attention to and absence from our project.

I would like to express my very great appreciation to my parents for their support and for understanding my constant ignorance of their many, many, many missed calls when my mind was not in a place to receive their love and consideration.

Finally, I cannot express how much gratitude I have for Andrew Hilts, for his technical assistance, English assistance, encouragement, support, patience and love for my ups and downs and tantrums throughout every stressful period.

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1. Introduction

In a Ted Talk by Raghava K.K. (2011), the Indian artist describes how he teaches children about different perspectives on life in an interactive children's e-book he developed for the iPad. By shaking the iPad, the image of two male parents washing their baby transforms into two women washing their baby. The user sees a different sexual orientation each time he or she shakes the iPad. This interactive feature is based on Raghava's proposal that "the only way for us teach creativity is by teaching children perspective […] only when you teach perspective, will the child be able to imagine" (2011). These two terms, perspective and creativity are very much interrelated. They form key conceptual components of Gītakāra, a system developed for rural Indian youth to remotely collaborate on creative works using locally available technologies. This thesis describes the motivation, design and development of the system.

Information and Communication Technologies for Development (ICT4D) refers to the practice of designing information technology to be used by individuals in regions with low economic status. The technologies developed and utilized in these projects are often claimed to fundamentally alter the lives of the intended users, often located in "developing" countries. However, this notion of "development" is very much culturally constructed to equate progress with the flourishing of capitalist market value. This definition neglects local conditions, culture and practices and thus often ICT4D projects similarly neglect these issues. The Gītakāra (Hindi for "songwriter") research project probes into the concept of "appropriate technology" in local rural India for those youth who are unable to attend schools due to household responsibilities and socioeconomic

conditions. By engaging rural Indian youth in a system that combines the local technologies of community radio station and SMS text messages to facilitate the collective authoring of song lyrics, they may be exposed to various perspectives and develop a sense of communal ownership over their creative, collaborative works.

This document discusses my personal experiences and motivation underlying this project, a discussion of the existing scholarly literature that form the project's theoretical context, the Gītakāra design concept, the user testing methodology used to evaluate the system, and a discussion of the field study, and its outcomes and results.

2. How it all started

The *tuk tuk* dropped my sister and I off in front of one of the temples in Angkor Wat. I don't remember which one it was, however, like many of them, as soon as the *tuk tuk* stopped, children swarmed up to the visitors, yelling "sister, sister, sister; *jiejie, jiejie, jiejie*; two for one, ten for five." Various languages, mainly the little English they had learned, poured out of their mouths.

"You should be in school, not here," my sister said to one of the little girls.

I nodded. At first thought it sounded reasonable. When I was a child, education and school had always been deemed necessary, whether we liked it or not. However, as I began to better understand the conditions of the Cambodian children, far away from school, performing household chores and facing an array of economic issues, I wondered to myself whether traditional education is what would be most useful to them. From there, a core question about where and how learning could take place began to preoccupy me: is it fixed or can it be flexible?

Education has been an interesting experience for me, growing up in two very different educational backgrounds, in Taiwan and Canada. Born in Taiwan, I was raised to be disciplined, punctual, organized and humble, to be respectful of my teachers and elder peers, to never break rules and to never brag about my achievements. In Taiwanese schools, there is a fixed daily schedule, starting as early as 6:30am. Students sing the national anthem, waiting for the flag to be raised. Every day, students strive to meet an expected mark on an assignment; from this, student status is determined. The teacher calls out the marks in public, from highest to lowest; as the marks go down, the teacher's tone becomes progressively more annoyed, eventually throwing the lowest marked papers on the ground for students to pick up. School ends at 4pm or later, never earlier. When the prospect of coming to Canada at the age of eight was given to me I imagined it as something bizarre. I heard students could chew gum in class. Students didn't have to raise their hands to speak. Students could call anyone, regardless of age, by their first name; students didn't have to sweep the garden or mop the classroom and classes started at 9 am and ended at 3pm. I wondered what they could possibly learn at school?

The transition from living in a tightly disciplined environment to a relaxed, seemingly playful Canadian educational environment was something that took me many years to understand and appreciate. I eventually understood how each culture benefitted me and how each weakened me. For a long while, I was stuck in the concurrent streams of being a Canadian who does not speak up for herself and a Taiwanese who has too many nonconformist thoughts. Typical as it is, this transcultural learning experience

influenced the way I perceive how education and its environment can influence how we experience and learn about the world.

I've learned that learning comes from many perspectives and it can happen anywhere and everywhere (Cross, 2013). With the accessibility of information on the Internet, there are a growing number of learning experiences online that do not depend on grades and humiliating evaluations, such as online communities and DIY project websites. Growing out of my Cambodian experience, and my own earlier educational experiences, I began exploring various potentials for what learning can look like in various places. I looked into the field of e-learning in ICT4D (Information and Communication Technology for Development), looking into the possibilities of approaching learning without restricting oneself to a specific space or place. To ground this journey in reality, as a graduate student at OCAD University, I requested an opportunity to explore the potential of e-learning experiences in a place where conditions are quite different than where I grew up. An internship opportunity with the Digital Empowerment Foundation in India emerged in the summer of 2012 from this request, and I took it.

I lived and traveled in India for two months and interacted with a range of local communities. I began to better understand regional issues and the reasons why technology is different and utilized differently in a range of communities in India compared to the technology we have and how we use it in Canada. I started looking at how children use their local technology, how they go to school, and what happens when children have chores to do at home and cannot attend schools regularly. Everywhere that I have resided,

ready access to both school and technology is often taken for granted. However, this is not the case in many places—most definitely not in rural Cambodia or India. This understanding led me to focus my attention on understanding how rural Indian communities function in relation to different approaches to information and knowledge.

2.1. Local Conditions

To better understand attitudes and practices of learning in rural Indian communities, I traveled to many rural villages during the course of my internship. I met local teachers, youth and educators and observed how learning is approached inside and outside of the classroom. I observed that in addition to the general lack of school facilities, infrastructure and equipment such as computers and network connections, there are a variety other issues in these communities that interact with local learning practices.

According to Manzar (2012), 10-20% of students have computers at home, with less than 10% having access to the Internet. Even though schools often have 6-8 computers, these are shared among all students. Dissemination of multimedia content is also an issue. For example, an instructor I met can only use his small laptop computer to show media, so that very few students are able to see at once, taking up a significant amount of time to deliver the course content to all students.

Even though there are technology-oriented community centres, such as *panchayats* that aim to facilitate digital learning in many rural communities, these places only admit a certain number of children. They often have sets of criteria (such as school grades) that are used to determine who can be admitted to the community center for free

to acquire computer skills. This method of admission resembles very much the Taiwanese culture where I grew up, in the way that a mark can determine one's fortune.

Many children, especially girls, in rural India have limited access to school, as they need to stay at home and help with household chores. According to Ritu Sharma (2013), many children in India under the age of 14 do not attend school due to a lack of facilities and infrastructure, and the fact that household chores are deemed more important than school attendance.

However, one of the most discernible phenomena I observed is that while many communities lack Internet connection, technical facilities or infrastructure in rural India, many community members manage to take learning and information acquisition into their own hands. The following section presents various anecdotes from my experiences in different rural Indian communities that allowed me to understand how these communities adapt technology to their own needs and to explore the facilities that support creative collaboration for children in rural India.

2.2. Stories from rural India: Taking Learning into one's own hands

2.2.1. Chamba

When I was in Chamba, I mainly stayed at a community radio station. As is the case in most rural Indian communities, Chamba's Internet connection is not very stable. Youth came to the community radio station, volunteered there and learned how to use tools to edit audio tracks (music) and host radio station broadcasts. They wrote out scripts by hand, and then transcribed them into text on the computer. They did not need Internet

access to do their work. They did need electricity, and had a power generator as a backup for when the electricity went down.

2.2.2. Tilonia

Many children in the community aged 9 to 15 are members of the "Children's Parliament," a group that deals with local issues, such as advocating their right to education (Klötz, 1999). They act as intermediaries between villagers and Tilonia's Barefoot College[1]; they approach villagers to understand the issues they face and organize community events. However they will often approach Barefoot College to ask for assistance in disseminating their message. For example, if there is an issue that they want to address, they will approach the radio station manager at Barefoot College and ask him to broadcast it and help with promotion.

Women from various countries come to the Barefoot College to learn about basic electronics and how to build solar panels and cookers, using an instruction book. The book is designed and illustrated by instructors in Tilonia. The pages on the left side of the book are in Hindi text, the right side pages of the book mirror image the left side, however there is no text, just blank lines. This allows people to fill in their translations in their own language. Women can then bring the knowledge back to their own village in their country and implement their skills there (See Figure 1 below).

[1] Barefoot College is a non-governmental organization that provides basic services and solutions to problems in rural communities, with the objective of enabling them to be self-sufficient and sustainable.

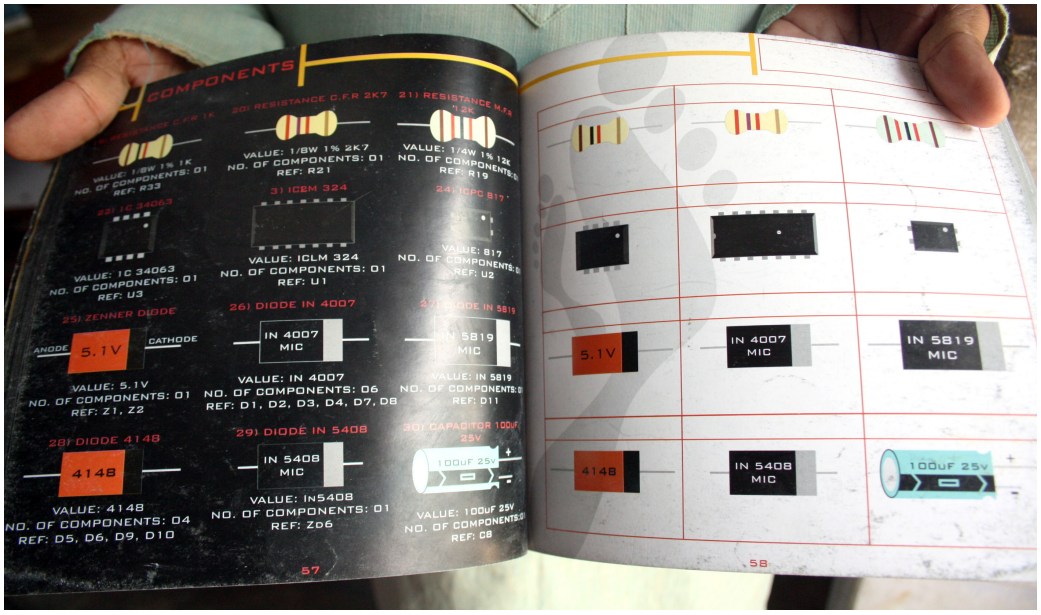

Figure 1: A page in Barefoot Solar Manual Tilonia (researcher's personal photo, 2012)

Some children are required to perform chores at home throughout the day, which impedes them from going to school. The community organized a night school for those children, so that they could finish their chores during the day and attend school in the evening. When I talked to these children, they all expressed how much they loved school. To them, it does not seem like an obligation. They have fun and they can be with their friends.

2.2.3. Chanderie

I accidentally dropped my cellphone while in Chanderie, causing it to malfunction. Internet connection there was limited; the cellphone was my only resource for contacting people. Therefore, I had to find a way to fix it, and so I told my tour guide about the problem. He handed the cellphone to his son who was about nine years old, and

in five minutes, the son had replaced some elements in the cellphone and fixed it. I am not sure how he acquired the skill at such a young age, and this amazed me.

2.2.4. Varanasi

I visited a nearby rural village where women learned how to read numbers by studying the numbers on their cell phones. A community member is selected as the instructor. The community also provides spaces, which usually consist of walls of mud and roofs of straws, where these women can come together to learn. The instructor will then teach these women how to read numbers on the cellphone. With this skill, they can call people and do simple math and finance for their households.

Inspired by these observations in various villages, I decided to focus my research on how youth in rural India engage with local technology. Rural Indian youth, even though they often lack stable infrastructure to obtain access to the Internet, have to take learning into their own hands by leveraging available resources, notably cellphones and text messaging, which are ubiquitous. For those children who are obligated to provide financial assistance to their family, they may lack formal, school-based opportunities to engage in creative, collaborative activities, such as art and music, with their friends and peers. As a result of these preliminary observations during my internship in India, I decided to focus my thesis efforts on researching and designing an interactive system that utilizes local technology to facilitate local creative collaboration among youth in rural India.

3. Research Question

Primarily, this thesis project investigates the question: How can rural Indian youth utilize repurposed local technology to engage in local creativity and distance collaboration? The sub-questions below help to provide additional detail in answering the primary question:

1. What local rural Indian skills can an interactive system be based on in order to sustainably operate?
2. How can one leverage existing practices to allow local users to integrate the proposed system with their existing technology?
3. How can local technology be utilized in a system for Indian youth to share and perceive multiple perspectives?
4. How can the use of local technology allow Indian youth to feel ownership of their contribution?
5. How can a system encourage a shared mental ground among youth?

4. Literature Review

To approach my goal of an interactive system based on local technology, I explored the literature around the core concept of "development." This section includes theoretical discussions of the term's history and meaning, its use in the IT realm as ICT4D, and its relationship to the idea of "appropriate technology" and open source technology. I then explore the predominant local communication technologies in rural India—mobile phones, SMS, and community radio. Afterwards, I touch on some relevant issues regarding social media. Finally, to address the issues of learning and creativity, I

examine the literature on constructivist learning to understand how youth can be encouraged to build their own learning models in a social, collaborative manner.

4.1. Development

One of the main questions of the thesis project is to understand how a designed interactive project can integrate rural Indian youth's existing skills and enables them to grow, alter and sustain the system using their own knowledge, to become subjects of their own development. Development is a term often used in association with endeavors by one group of people aimed at improving another group's lives via economic progress. Vandana Shiva's work and Arturo Escobar's discussions of this idea of "development" both posit that the notion is constructed within cultural, social and historical contexts; one of the main components of this definition is that value and progress are measured according to economic and market standards. This definition, underpinning a wide array of business undertakings and government policies, is problematized as it does not accurately reflect and respect local realities—the goals and practices of those communities under development.

This notion of value in capitalist society is well exemplified in Antoine de Saint-Exupery's famous book The Little Prince:

> Grown-ups like numbers. When you tell them about a new friend, they never ask questions about what really matters. They never ask: "What does his voice sound like?" "What games does he like best?" "Does he collect butterflies?". They ask: "How old is he?" "How many brothers does he have?" "How much does he weigh?" "How much money does his father make?" Only then do they think they know him.

Indeed, numbers in capitalist society correspond to profits and markets, things that are countable and manageable. Here, what defines progress is the increase of economic value, and as a product of this ideology, "development" predominantly refers to the progress of the market economy for commodity production (Shiva, 2010, p. 9). Underlying this market-based notion of development, Shiva's perspective on the topic focuses on the relationship between men and women, relative to nature, science and the state. (p. 5). Shiva sees development as a patriarchal Western term where women and nature have become passive objects; instead of being the creators and sustainers of life, they are regarded as resources in the model of "Maldevelopment, which sees all work that does not produce profits and capital as non or unproductive work" (p. 4). Man, as the general agent of "development" and science, is supported by the socio-political economic system of the Western capitalist patriarchy (p. 25). She articulates the notion of reductionist science where with political support from the state, its development policies and programs provide the ideological support for the use of nature for profits. However, this perspective fails to account for the connection of nature, women's lives, work, and local knowledge, with the creation of wealth that does not abide by a capitalist notion of profit and market (p. 24). Development is thus transformed from an ideologised myth into reality through the support and creation of the state. The ideology of "development" is entrenched in this power relationship between women/nature and men/science/state. This understanding of the historical changes of "development" helps the researcher to approach her design area in a more sensitive manner.

The deconstruction of the notion of development is similarly undertaken by Arturo Escobar in his work Encountering Development (1995). Instead of looking through the lens of the subjugation of women and nature, Escobar posits that the notion of development, particularly the notion of the "developing world" or "the third world," must be explained and understood within the context of the relationship between institutional knowledge and its representation of the global agenda (p. 10). In essence, he argues that we must perceive the present notion of development as very much historically and culturally constructed. Moreover, Escobar's concept of development as a historical experience is analyzed along three axes:

> the *forms of knowledge* that refer to [development] and through which it comes into being […] objects, concepts, theories and the like; the *system of power* that regulates its practice; and the *forms of subjectivity* fostered by this discourse, those through which people come to recognize themselves as developed or underdeveloped (p. 10, emphasis mine).

Escobar (1995) suggests that the systems of knowledge and power are an essential element to consider when discussing development as they determine how people are categorized as third world subjects, and how categories and terms are legitimatized by various interventions from institutions to supposedly help third world subjects move toward a more Western norm of progress (p. 7). This relationship creates a geopolitical imagination that helped shape the meaning of development, forming the basis of a "regime of representation" (p. 9).

A regime of representation, according to Escobar (1995), is a mechanism that supports the construction of the representation of the idea of the "Third World" (p. 10). People whose livelihoods fall beneath a standard economic value are categorized

together, regardless of their cultural backgrounds or their location. They are considered the same due to their economic status; they are poor and thus underdeveloped. The area that reifies this definition of economic status is defined as the "Third World." The people of this region are viewed for what they lack, what they are not, rather than for what they have. These concepts are normalized by the West's judgments. These constructed concepts of development created underdevelopment, and hence the method to help solve the basic problems of "development" becomes "maldevelopment."

Grounded in an understanding of how development has been historically and culturally constructed, one may then endeavor to consciously re-make development as a concept grounded in local realities. According to both Shiva and Escobar, there are three main principles that one needs to consider in such a project, which has helped to guide my own approach to framing an IT system for development, in the Gītakāra project.

4.1.1. How can I include those who may be excluded?

Escobar (1995) presents the ideas of hybrid models and a community of modelers where cultural differences should be regard as a transformative force where development evolves in relation to these differences. These transformations may present a space for destabilizing the dominant modes of knowing. This allows those who reside in the group to intervene in the process of their own sense of development, a space that allows for "a set of contested forms of knowledge" (p. 223). In essence, it is vital to provide people with a space to develop their own subjectivities, their own practices of knowing.

4.1.2. Where does the information come from and who accounts for knowledge and the producers of values?

In relation to the first point, Shiva (2010) points out that the wealth and sustenance created by nature and women are often deemed invisible because they are decentered, local and in harmony with local ecosystems and needs; the more effective the sustenance is, the more invisible they become (p. 44). These people, along with many others, have the knowledge relevant to their own sustenance of life. In this case, development should embrace the diverse and inclusive knowledge that many have to offer. There is a great deal of value in access to multiple perspectives.

4.1.3. How can one build an understanding of what wealth and values can be, beyond their relation with capitalist market value?

Similar to the last notion, where knowledge lies in diverse people who are experts in their ecological survival, the value that they create can mean something much different than monetary value. Shiva (2010) explores how women can bring the concern with living and survival back to center stage in human history, where it is inclusive and the production of sustenance becomes survival itself (p. 224). In my case, the understanding of what value means rests with those who create knowledge.

These three notions -- diverse subjectivities, recognition of a variety of perspectives, and a nuanced understanding of value -- are closely tied to the design of this thesis project in order to conscientiously address rural Indian youth's perception of development in their own context (see the Design Concept section for an explanation on their specific role in helping shape the project).

4.2. ICT4D

Technological innovations consistently emerge that claim to integrate with "developing" communities to support livelihoods in various sectors such as health, education, business and many others. These projects are often classified as information and communication technology for development (ICT4D), an active area of contemporary research and practice. This thesis project entails the use of information and communication technology in rural India to wish to address how rural Indian children can use their available technology to involve in local collaboration and creation.

Many ICT4D projects are often designed by those outside of the target communities and intend to address social and economic development goals (Pitula and Radhakrishnan, 2011, p. 323). Many believe that technological interventions will produce progressive changes in a country's development (Keline & Unwin, 2009, p.1045). Hence e-learning and mobile projects related to development claim to use technology as a tool to bridge the digital divide between "developed" and "developing" countries (van Reijswoud, 2009, p. 2).

However, as described in the previous section, many of these ICT4D endeavours follow the discourse of the constructed relationship between technology and ideology; the ICT4D rhetoric is often in line with those key international donors, governments and technology companies that focus on economic growth, or on achieving the Millennium Development Goals to reduce poverty through economic development (Keline, & Unwin, 2009, p. 1049). Furthermore, many ICT projects are simply "dump-and-run" approaches

where community ownership and contextual sensibility are not considered and so they provide no effective system or benefit for the locals (van Reijswoud, 2009).

As a classic example, Negroponte's One Laptop Per Child project, employs hardware and software intended to foster self-learning that is suitable for the environmental condition of the target countries (Kraeme, Dedrick and Prakul, 2009, p. 68). The project hopes to promote affordable laptops and enable the use of computer networks in school; the software was also developed to meet explorative naturalistic concepts that relate to learning, openness and collaboration (Kraemer et al., 2009, p.69). However, as exciting and revolutionary as this project may seem, there are local elements that the project bypassed. Local school teachers asserted that they received limited training in the usage of the proposed technology, which affected their willingness to integrate this new approach into their everyday curriculum; children were initially excited about this new machine but were confused about how to use it, and if the machine failed or the children lost the machine, it was up to the family to replace it (p. 69). Kraemer et al also claims "innovative information technologies do not stand alone" (p. 72). Indeed, ICT4D projects need to integrate with the community context.

According to Kentaro Toyama (2010), technology cannot make up for the deficiencies of society, such as low economic status or poverty; it is simply a tool that can amplify human ability, but not substitute for it. Toyama believes that researchers and ICT4D designers should focus on human capital instead of technology itself. This notion further exemplifies how ICT4D initiatives need to be grounded at a local scale such that they consider relations to local culture, the environment, community organization,

available resources, economic and political circumstances and the desired impact. Toyama emphasizes that technology is ineffective in fixing social problems when the human components of the social problems remain unaddressed. Human relations need to be addressed first before committing to the technology; hence people cannot simply dump technology into the community and expect that it will benefit the local people (Toyama, 2010).

In responding to various concerns of ICT4D, my research employs open source technology and context-appropriate technology as an alternative context-sensitive approach to ICT4D. First, the Gītakāra project deploys open source materials to address the decentralized nature of the network society we all inhabit and employs collaborative models in advocating local knowledge production, following Keline and Unwin (2009, p. 1062). Secondly, Gītakāra follows the dictum that ICT4D initiatives should focus on designing context-appropriate technology, understanding socio-cultural norms, building relationships with local governments, inviting participation of the community and providing services that meet the local needs (Rhea, 2010,) which aligns with the concept of "appropriate technology." Both concepts are discussed in depth in the following sections, as well as in the Design Concept section. The understanding of ICT4D in this research project adopts these two notions of information and communication practice, open source and appropriate technology, to further embrace the multipurpose nature of ICT to enable individuals, who are considered the local subjects of their technology, the space to define their own frame of development.

4.3. Appropriate Technology

The concept of "appropriate technology" may be employed to help situate ICT4D projects in a local context. This notion arose from F. Schumacher's theories of "intermediate technology" (Rhea, 2010), which looked at the progress of various development efforts and the specific suitable technologies and systems that can be utilized in particular regions to meet the needs of the local population. Hence, the idea is not to apply the most advanced technology in all areas, but to understand the community's needs and the available technologies. From there, one may design according to the existing community resources and tools to best address local needs. This method provides the local community with easier access and less of a learning curve when using technology. The concept of intermediate technology implies sophisticated enough technology to accomplish the core needs of local communities (Rhea, 2010).

Local community involvement in the process of appropriating technology is necessary in order to better integrate local people's own ways of doing things into the technology itself. Who is using the technology should not be thought of as the "object" of the design, but should be the "subject" involved in the design process (Roberts, 2012). This can be seen as similar to an aspect of Shiva's (2010) notion of development, whereby the appropriate relationship with nature does not comprise its domination, but rather a cooperating relationship that allows for "let grow and make grow" (p.43). In general, technology is simply a tool that facilitates processes, but the actual work is carried out by local people, who constitute the "human capital" (Toyama, 2010). Toyama believes that the success of a project is dependent on the intentions and capacities of the

people handling the technology. Only when humans believe that the system can be used to their own benefit is the potential to learn the technology deemed relevant and valuable. Hence, appropriating technology requires a foundation of competent well-intentioned local people who believe it can amplify their own capacity and lead to relevant outcomes. Moreover, according to Nathan Eagle (2010), if values and skills are balanced in the design, users are more likely to participate. Hence, the underlying value of the workforce lies in local knowledge. People have unique understandings of communities, culture, neighbors and societal networks, which need to be leveraged in the design process.

4.4. Open Source Technology

This idea of allowing people to have a voice in the design of their own technology is embedded in the notion of open source technology. Open source technology enables anyone to adapt the programming code and overall structure of the system to his/her own terms (Roberts, 2012). Open source technology has a particular license agreement that gives designers and users freedom to alter and improve upon the original. The idea of having free and modifiable access to a system allows users to learn how the system is constructed, and thus support improvements and collaboration that can help grow the system in new directions. Users can also adapt and share this technology with other people so others can experience the same benefits (Roberts, 2012). Open source technology allows for such flexibility in a way that can allow people to build local thinking into a system. Instead of being shaped as passive recipients of a development program, they can shape their own direction with the framework. Utilizing an open source approach in combination with the appropriate use of local technology – mobile phones,

SMS and Community Radio Station (CRS) – may allow local users to have control over content as well as the use and development of the proposed project.

4.5. Mobile Phones, SMS & Community Radio Station (CRS)

Some of the most predominant communications technologies in rural Indian communities are mobile phones and community radio stations. Mobile technologies (primarily cellular phones) have the capability to provide simple interpersonal connectivity in areas with limited technical infrastructure. According to Tenhunen (2008), mobile phones have been adopted in a changing rural Indian society to serve a variety of purposes such as aiding political reforms, disseminating new information about agricultural methods, and mobilizing women's movements (p. 530). Projects such as "SMSOne" support youth workers working with rural people to encourage socio-economic development. Specifically, SMSOne allows these youth, who know their community's local situation best, to organize and disseminate information about their communities to others (Rao & Sonar, 2012, p. 145).

However, when mobile phones are combined with community radio stations (CRS), this combination allows for an interactive mode of communication for more of the local community. CRS use short-range FM broadcasts to disseminate local community information for the area. The stations are typically run by non-profit organizations and are operated by local communities (Koradia, Premi, Seth and Balachandran, 2010, p. 21). Community topics such as health and hygiene, local amenities, agriculture, cultural events or local folk arts are potential subjects for CRS programs; these programs are very often

participatory-based where content may be provided by local community members, which allows for empowerment of the rural communities (p. 21).

The combination of these two media (CRS and mobile phones) may provide people with the ability to directly collaborate with each other across distance while also delivering such messages to the wider public. In doing so, interpersonal collaboration can be communicated with a mass audience. An innovative combination of community radio and the Internet is shown to provide village people with a way to acquiring new information. The initiative is called Radio Web Browsing (Pringle & David, 2002, p. 2). Pringle & David (2002) outline RWB's implementation in the Sri Lankan village of Kothmale, at the local community radio station (p. 2). The intent of the radio program was to raise awareness about the Internet. The broadcasters surfed the Web on listeners' behalf and then verbally share the information obtained in response to listener requests. The RWB's notion of spreading and exposing Internet content through radio broadcasts indirectly made web-browsing into the basis of daily radio shows, allowing people to obtain information from the Internet in some other fashion to overcome the limitations of infrastructure (Pringle & David, 2002, p.3).

The Kothmale project employed available technology (radio and SMS) to ensure the success of ICTs in the rural context. The use of these two local tools utilizes the technical capacity that local environment can provide. Therefore, this appears to be an appealing combination of local technologies that can be similarly leveraged in this research project to promote local content production while allowing rural youth to obtain a sense of communal ownership over their contributions.

4.6. Social Media

In order to design a system to encourage local youth's creative collaboration through local technology, in which they can share and learn others' perspectives, it is important to understand that this will be a social experience. As such, concepts relating to social media are important to review.

The emergence of social media systems allows many people to develop an online social life that provides a space for identity negotiation—perhaps a useful means by which subjects can "develop" their own subjectivities. Social media is a paradigm on the Internet outlining a way for people to develop an online social life by connecting with others and sharing information (Coenen, Denis, Damme and Matthys, 2006, p. 189). According to Ahn (2011), when using social media in a learning context, youth negotiate identity and learn social skills (p. 148). Social network space is also a mediated space that does not have formal etiquette that allows people to express their personality and connect, to meet new people or re-connect (Coenen et al, 2006, p. 190).

As social media can be seen as a mediated space, it can be regarded as a space for informal information exchange and sharing. These informal experiences occur outside of formal classroom settings, which engage youth to connect with others without regular formal curriculum constraints (Cain et al, 2011, p.1). This concept is important in that the use of social media in informal communication allows for everyday information flow in multiple directions, such as updating status, and current emotional state, or commenting on other's communications. These posts represent cognitive and emotional immediacy to an individual or group of people at a specific moment. People's ability to respond and

produce feedback can then add content to the original message with a different perspective.

Mobile social networks can impact how people interact not only due to their facilitation of social connectivity, but also by the portability and accessibility of the device that connects to the network. This can then exemplify what Fisher and Counts (2010) refer to as the "information ground," where people come together for social purposes and exchange various forms of information (p. 98). What is essential about the information ground is that it can occur anywhere at any time, and when people form around an instrumental purpose, information sharing emerges as a by-product of social interaction (p. 99). Another aspect of social media that is particularly relevant to my thesis project is everyday information flow. By using mobile phones and their SMS systems, users can access and contribute to information sharing and exchanges. They are not as constrained by locations and time. Moreover, even though a small number of children in India have access to Facebook on their cellphones, most children still lack access to the mobile Internet. Therefore, this thesis pursues a framework that combines the core capabilities of social media with the simplest use of mobile phones (SMS).

Information grounds involve different people, resulting in various roles in the information flows where youth may take on to negotiate identity, discuss concerns and update their activities. These different roles contribute to multiple perspectives, an important notion in involving diversity and cultural differences, and one of the important principles of constructivist learning (addressed below). However, when designing a system that incorporates aspects of social media, one needs to be aware that people may

find it difficult to contribute knowledge to an undefined audience if users do not understand or cannot see the "return on investment" that they will obtain from sharing knowledge (Coenen et al, 2006, p. 190). This may be the case when the system structure is too vague and too broad; when there is no focus of activity, users may become lost and discouraged. These concerns will need to be addressed in any social media platform, including the Gītakāra project's system.

4.7. Constructivist Learning in Sociocultural Perspective

As this thesis endeavors to design a system that encourages youth to engage in local creativity in a situation where they lack adequate educational support, constructivist learning, with an emphasis on a sociocultural perspective, offers a valuable framework that helps to provide an alternative form of support. Several concepts of constructivist learning relevant to this project are: contextual learning, multiple interpretations, and intersubjectivity. These concepts help to inform responses to some of this project's research sub-questions: how can local technology encourage the sharing of multiple perspectives; how can local technology allow youth to feel ownership for their contribution; how can one create a common ground among youth to share? The insights from this body of literature help to inform the design of a platform for rural Indian youth to creatively collaborate.

According to Vygotsky, who advocates for the sociocultural perspective of constructivist viewpoint, individual mental functions are situated in a social, cultural, institutional, and historical context; to understand human thinking and learning, one must examine the context and setting in which that thinking and learning occurs (Bonk and

Cunningham, 1998, p.35). This implies the importance of the learner's environment and experience in acquiring, retrieving what he/she understands and adapts to other contexts. This notion of being in the context relates to how people in India can integrate their local cultural knowledge and experience into the learning process.

Furthermore, social constructivists emphasize human dialogue, interaction, negotiation and collaboration (Bonk and Cunningham, 1998, p.35). The collaboration on the construction of meaning allows for the formation of communities where ideas and discussions emerge, further enriching the learning environment (Savery & Duffy, 1996, p.138) as well as providing multiple viewpoints for a single event. This approach can be seen as complementary to Escobar and Shiva's ideals towards "development," in which an appreciation for local subjectivities and the value of different perspectives is seen as important. Through the social dialogue learning process, learners perceive the way information is obtained, they understand and evaluate various situations and become more aware of their own self-learning (Legg, Adelman, Mueller and Levitt, 2007, p.66). These are several approaches of socio-constructivist learning that show potential for further relevance to ICT4D, as they align with the interaction principles afforded by social media.

Lastly, the idea of intersubjectivity refers to the temporary shared framework and understand among learning participants; when individuals can have a shared mental ground with each other, they can exchange ideas and knowledge and negotiate meanings easier (Bonk and Cunningham, 1998, p.41). Hence, the concept of intersubjectivity may encourage sharing of thoughts and afford understanding among users to inspire creative

collaboration. The space fosters a situational understanding between learners where they can negotiate meaning, knowledge and perceive multiple perspectives (p.37). For example, social media and local networks allow for the creation of this common space for learners to exchange dialogues and share and viewpoints. This space becomes relevant in the context of local Indian youth community where youth can exchange creative expressions on a shared ground.

Despite the ambiguities and generalities that some practitioners claim for the use of a constructivist learning approach, my motivation advocates for user participation in knowledge construction and support for multiple interpretations of various issues. This structure is open-ended enough for youth to explore, which reflects the capabilities of social media that allow for spontaneous information flow in multiple directions at any time and anywhere in the information ground. This helps those participants to feel ownership over their contributed knowledge, and further allows individuals to understand the learning process and recognize the way they obtain information and develop knowledge. Developing a concrete method of facilitating these activities is an exciting design challenge that is central to the Gītakāra project.

5. Design Process

5.1. Appropriate ICT Framework

Taking the concepts of development, ICT4D, open source, and local technology into account, the appropriate technology approach is a suitable design process for this research, and the Gītakāra project. As a progressive approach to development involves

local subjectivities, abilities and acceptance, many ICT4D approaches thus question a techno-centric approach, and instead appropriate existing technology innovatively to address local issues. However, in this thesis research, I did not have the privilege to conduct my fieldwork with the local people, as would have been ideal. Nevertheless, I did have the opportunity to live with them to observe their ways in using technology and thus consistently reflected back on my experience with the locals throughout the design process. It is my hope that this reflection helped to mitigate the lack of the direct involvement of rural Indian youth in the research itself.

With these issues in mind, I decided to adopt the appropriate ICT framework that van Reijswoud (2009) proposed as a guide for my design concept. This model centrally focuses on cultural and social issues, considering local conditions and environments, and thus recommends involving and incorporating users in the project development process. As many of this project's research sub-questions deal with the concept of local technology, this framework provides a useful conceptual model for describing how local technology can be incorporated into a design. van Reijswoud states that to successfully develop an ICT4D project using appropriate design, culture, environment, organization, economy, and political climate, must consistently be integrated during each stage of the design process (p. 6), which involves:

1. Definition: goals and problems
2. Design: resolution of issues
3. Construction: implementation
4. Installation: Rollout of services

5. Operation/maintenance: problem solving, user support and improvement

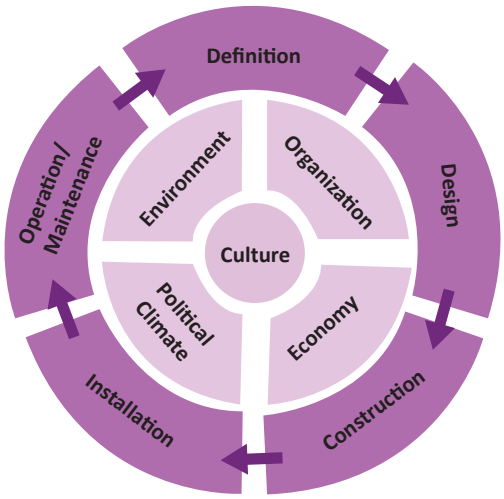

Figure 2: The Foundation of the Appropriate ICT Framework (van Rejswoud, 2009)

Most importantly, culture must be at the core of this integration. The design framework proposed by Van Reijswoud's (2009) detailed in Figure 1, along with the contextual variables, guide the way I apply appropriate design to my research process. The first three steps of van Reijswoud's design model – definition, design and construction – informed the initial design process addressed in this thesis.

5.1.1. First Step: definition

What are the needs and expectations of the user and how are the environment and local organizations in place to address these needs? I approached the needs of rural Indian youth based on my experiences involving them taking learning into their own hands, coupled with my analysis of relevant literature; from these I determined that an informal learning experience, collaborative creation and exchange of multiple perspectives are

important needs. In terms of organizational support, during my summer internship research I saw that a community radio station is involved in many villages I visited. Furthermore, various scholarly articles mentioned the use of community radio station in conjunction with SMS (Pringle & David, 2002; Manalo & van de Fliert, 2012), such as the Kothamle Model mentioned in Section 3.5. Hence, after several design iterations that purely focused on SMS, I turned to the combination of using both local technologies to foster more a greater connection to local community organizations and existing communication practices.

5.1.2. Second step: design

In this phase, I considered organizational and economic factors while exploring possible approaches for a prototype. I asked questions such as what do the locals have; what are the physical constraints; what are the financial constraints? In such a system, what are the information needs of the intended user? Culturally, how do people perceive the use of community radio station? These questions helped guide my reflections towards my Indian experience and provided me with a means of understanding local technology constraints.

5.1.3. Third step: construction

I adopted an iterative approach to specifying the system for the Gītakāra project; elements changed continually to further improve the system to better integrate with local technology. Some questions I considered during this phase are: how can the system be constructed so local people can easily integrate this new system with their existing practices; how can local skills be adapted so they can sustain the system themselves; are

there new interactions and knowledge introduced with the introduction of this system; how will this system change the community radio station's role? Construction using open source technology enables anyone who is interested to adapt the programming code and overall structure of the Gītakāra system to his/her own terms (Roberts, 2012). This is one of the means I adopted the help keep costs low and allow others to alter the codes when needed.

These three initial steps of the framework guided the design process. The Gītakāra prototype underwent two major changes while following this framework to better align with suitable technology and local practices. Using an "appropriate technology" methodology as a starting point helped the design process to focus on ensuring the functionality and applicability of the design, to consider whether the proposed design serves its purpose and provides useful value and to determine whether the choices of local technology are practical.

6. Design Concept

I began this project intending to conduct user tests and questionnaires in Chamba, India. This would have enabled me to assess my system's design and alignment with local cultural practices and technologies (SMS and Community Radio Stations). This section describes the design concept of Gītakāra in detail. As will be shown below, the design concept analytically addresses the research sub-questions 1 – 5.

Based on this plan, I designed Gītakāra to be implemented at Chamba's Community Radio Station. Gītakāra has been reviewed and approved by the office of Research Ethics at OCAD University.

6.1. Chamba's Community Radio Station.

The community radio station (CRS) in Chamba is called Henvalvani Community Radio Station (HCRS). From Monday to Friday, they broadcast one 2.5-hour program during the morning and one in the afternoon. HCRS uses a radio station program called GRINS that allows them to integrate radio content, telephony and SMS into a single cohesive automated system (Koradia et al, 2010, p.21). This system thus allows HCRS to receive listener's text messages, often regarding issues of community events and their personal questions and concerns. Listeners can also use their phone to listen to the radio content. They can simply dial a number and when connected will receive the radio station's broadcast as a regular phone call. Aided by these capabilities, the use of CRS in conjunction with cell phones is prevalent in the village, which can be sustained by the local community through their knowledge even after the first implementation of the project. This responds to the first sub questions: What local rural Indian skills can be interactive system be based on in order to sustainably operate?

Responding to sub-questions 1 and 2, Gītakāra adopts existing local technologies and practices of interaction to provide a way for Chamba youth to creatively collaborate with one another through the use of SMS and CRS. It would be possible for youth to utilize the system during the HCRS' normal programming or their children/youth program, Gali Gali Sim Sim (GGSS), which is broadcast twice a week, Sunday from 9:30

am to 10:30 am and Thursday from 3:30 to 4:00pm and tailored towards those youth who are not able to attend school regularly due to household chores. Using local technologies and practices, Gītakāra has been designed to help its users to perceive creative collaboration with other youth without having face-to-face interaction.

6.2. General Interaction Flow

Similar to the Kothmale model, Gītakāra introduces a way of leveraging the Internet connection of the community radio station to provide new features to community members interacting with the station. At its core, this open source system involves Chamba's local technology: community radio station (CRS) and SMS. In essence, a radio station broadcast is centered on communication between a program host and listeners' collaborative text messages.

The interactive process I have designed, outlined in Figures 2 and 3, begins when a story is sent to the program host by a community youth with the express purpose of being featured on the program. Through SMS or telephone, the storywriter then works with the program host to choose a melody appropriate to the story. The program host will then broadcast the story and make an on-air request for the audience to reflect on the story and a chosen melody and send in a short line of poetic text via SMS. Each text message is considered as one lyrical component to a song about the story that was broadcast. After receiving several "lyrics" in this manner, these messages are compiled into a full lyrical composition associated with the story and melody. The completed song is then broadcast over the radio for the audience (including all who helped to create it) to enjoy.

The three main stages of the interaction are: story (call to action), reply (response to the call to action), and song (the product of the call and response). Responding to research sub-question 5, the story stage involves participants' sending their lyrical contributions about a story to the community radio station. I propose that this allows participants to relate to their community context and adapt their local knowledge to the creation of a lyrical story for the radio broadcast. Thus, the process was designed to help build a shared mental ground and encourage connections among users.

The second stage is reply, a response to the call to action. Each participant who sent in a lyric receives someone else's lyric, and they are asked to compose and send in another lyric as a response to it. Responding to research sub-question 3, this stage thus emphasizes participants' dialogue between each other around a common but evolving ground, which helps participants to be exposed to multiple perspectives on the same topic, and to reflect and respond with their own subjective interpretations. Within the 160-character limit of text messages, they can use the SMS system to express themselves at any location with cellphone reception. This functionality reflects the aforementioned idea of the "information ground" (Fisher and Counts, 2010, p. 98), in that participants can share their opinions from anywhere and send in their stories at any time to the radio station.

The last stage is the product of the call and response: the completion and broadcasting of the song. The original story provider arranges the various lyrical contributions from each participant into a narrative sequence, forming a full song. The song is then performed on-air, based on the chosen melody. Responding to research sub-

question 4, this broadcast of collective creativity is meant to allow participants to perceive ownership through recognition of their contribution. Participants will recognize that their own SMS contributions become a part of a larger creative collaboration. This is also a shared space where participants can share a mental ground and relate to each other.

All three stages adopt elements from constructivist learning notions and are designed to provide an informational playing field for youth in rural India to creatively participate with each other, without Internet connectivity. The accessibility of the system allows for marginalized individuals who can't go to school to participate; it is meant to allow anyone who participates to be a part of the knowledge creating community and moreover, allow them to feel ownership of their contribution. (Please consult Appendix A for a detailed outline of each main stage.)

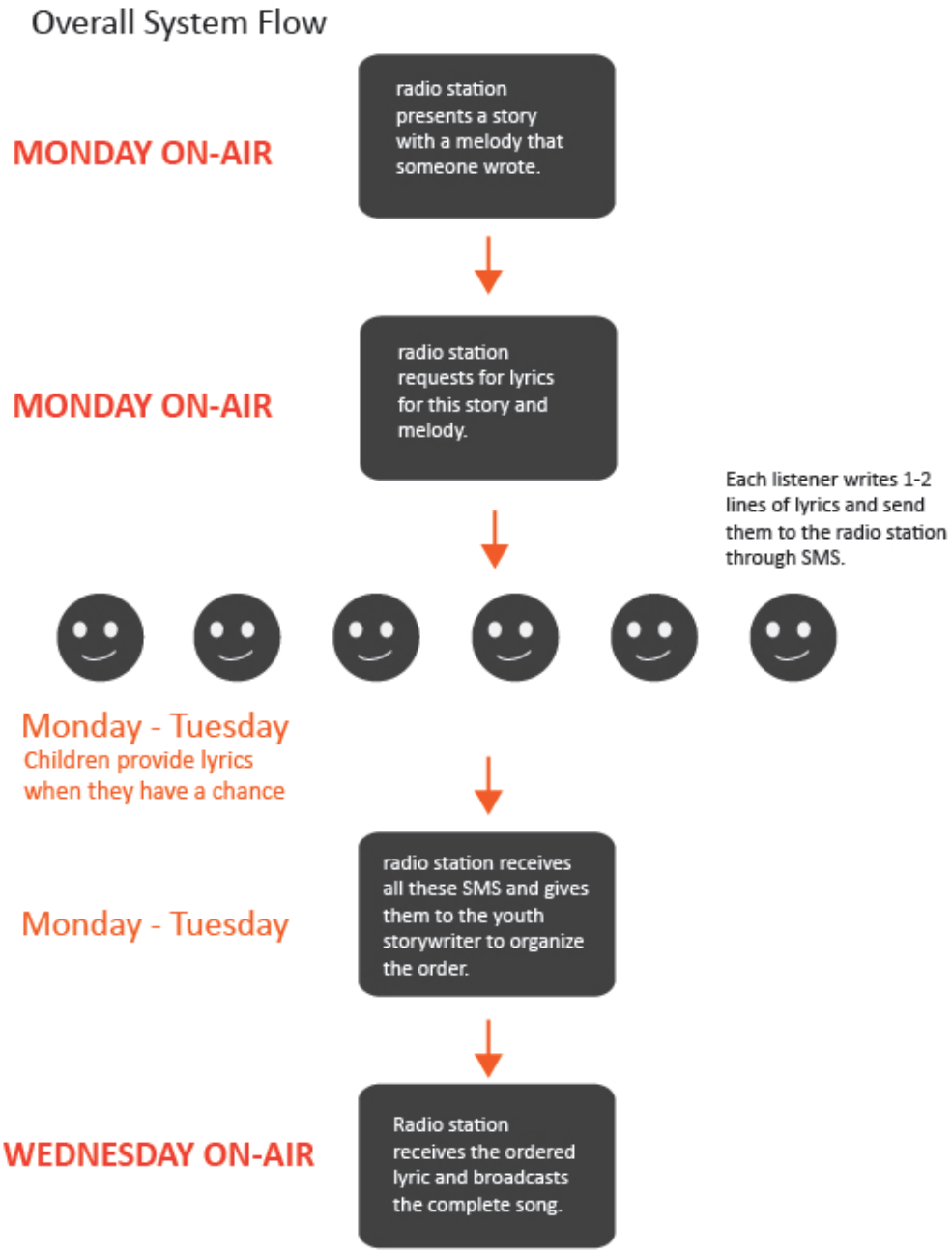

Figure 3: General interaction flow

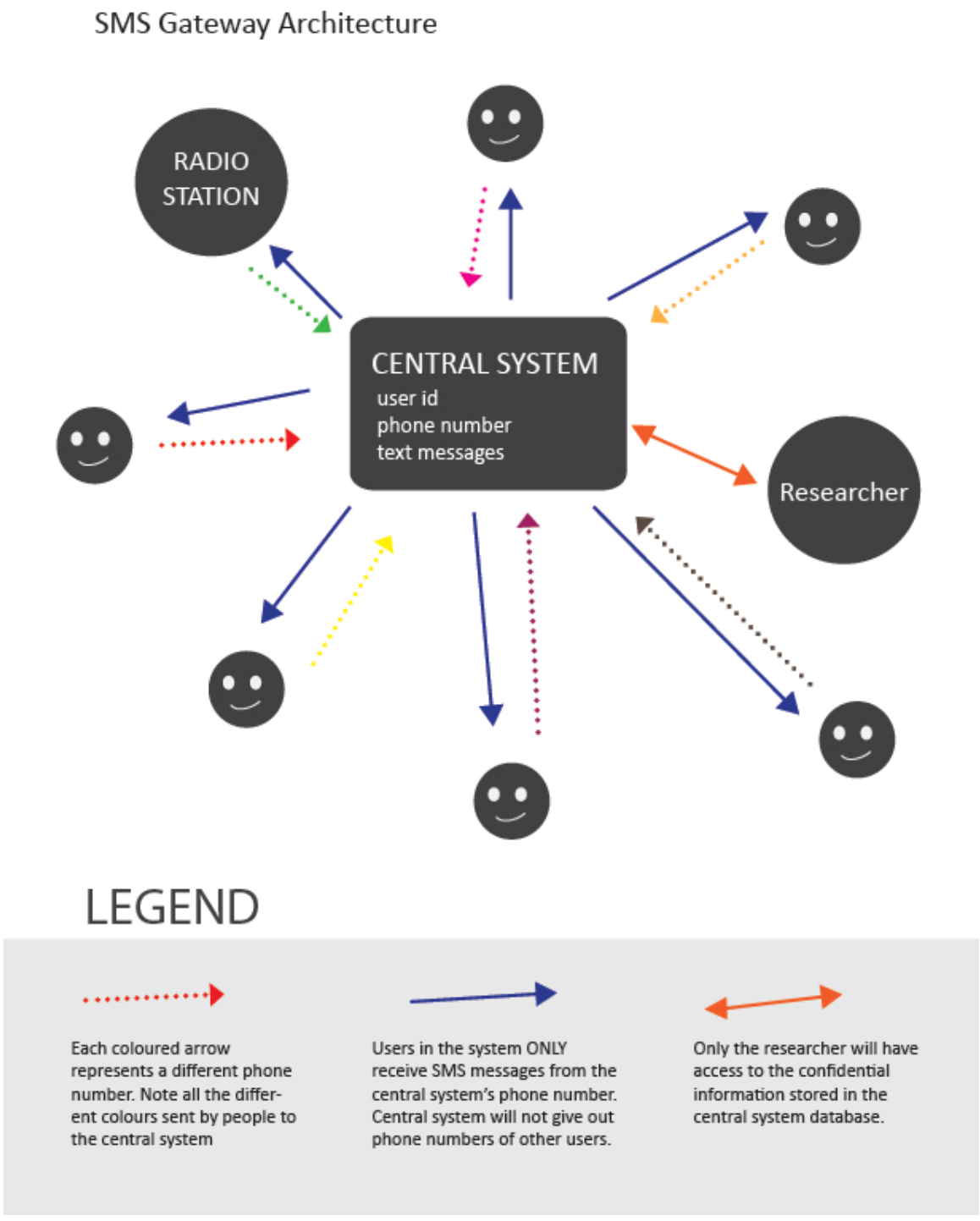

Figure 4: SMS Gateway Architecture

6.3. Hypothesized value

Through the collaborative process of creating song lyrics with available local technology (CRS and SMS), the Gītakāra project aims to encourage exchange of multiple perspectives for those who may not have access to formal creative outlets. Thus they gain an opportunity to collaborate creatively with many other people even when physical presence is not feasible. Additionally, the project hopes to provide a sense of ownership for those who contributed to the local song creation. When the project is broadcast or shared with those who participated, people may hear their lyrical lines and the ways that others replied to their lines, and recognize their contribution to the completed song. Moreover, this is a shared experience for every contributor; they are all exposed to multiple interpretations of the same story, and hence to multiple subjectivities. For this project, I hoped to adopt simple local technology that is present in the community, so that many youth can collaborate to create something over which they can all have ownership.

7. Roadblock: Section 66A of the Indian IT Act

When I arrived at the installation and service rollout phase of the project, during which I intended to test Gītakāra at Chamba's Henvalvani Radio Station, I encountered a legal and political issue that affected the support of the Indian organization (the support organization) that was assisting me in implementing the system. The entire process was paused due to concerns about provisions of the Indian IT Act, Section 66A. This law contains broad clauses used to justify various arrests regarding "inappropriate" electronic messages that caused "annoyance" or "inconvenience." Such cases include: the arrest of Ms. Dhada who posted a Facebook message criticizing Mumbai's shutdown after

politician Bal Thackeray's death, along with her friend who merely "liked" the post; a cartoonist who posted an anti-corruption drawing; and a professor who emailed a friend a cartoon that involved politician Mamata Banerjee (BBC News Inida, 2012).

Section 66A of the IT Act states:

> Any person who sends, by means of a computer resource or a communication device, —
>
> a) Any information that is grossly offensive or has menacing character;
> b) Any information which he knows to be false, but for the purpose of causing annoyance, inconvenience, danger, obstruction, insult, injury, criminal intimidation, enmity, hatred, or ill will, persistently by making use of such computer resource or a communication device,
> c) Any electronic mail or electronic mail message for the purpose of causing annoyance or inconvenience or to deceive or to mislead the addressee or recipient about the origin of such messages
>
> shall be punishable with imprisonment for a term which may extend to three years and with fine.
>
> Explanation: For the purposes of this section, terms "electronic mail" and "electronic mail message" means a message or information created or transmitted or received on a computer, computer system, computer resource or communication device including attachments in text, images, audio, video and any other electronic record, which may be transmitted with the message. (The Information Technology (Amendment) Act, 2008).

The law covers a broad range of messages and has been considered to violate Article 19(1)(a) of the Indian constitution, which guarantees all citizens of India the right to freedom of speech (Prakash, 2012). After a public outcry around the arrest of Ms. Dhada and her friend, many requested the law be scrapped (BBC, 2012). Following this, a slight adjustment to the law's interpretation guidelines now requires an arrest based on Section 66A to have "the approval of an office of or above the rank of deputy commissioner of police, or inspector general in cities" (Banerji, 2013). Regardless of this change, many activists have difficulty accepting the law; Pranesh Prakesh (2012), the

director of the Centre for Internet and Society in Bangalore claims that language such as "annoyance" and "inconvenience" makes the scope of the law excessively broad.

One of many activist groups opposing the law, Hum Janenge, is the first national forum for Rights to Information (RTI) users (Rao, 2012, p.5). The group brought together activists and concerned citizens to develop a space for discussion groups, blogs and websites and potential protests (p.5), and raise concerns and complaints against Section 66A (Janenge, 2012).

Over several months of communication and coordination between the support organization personnel, the community radio station, and myself, this issue of section 66A was not raised. It was not until a week before Chamba user tests were to get underway that a staff member at the support organization raised this issue and indicated that they would no longer be able to operate the SMS gateway, and a third party would need to take responsibility for the operation of the system and thus be liable for any infractions of the IT Act. The support organization also suggested that the ideal situation would be to have a SMS gateway partner who also provides SIM as well as mobile handsets and would take full legal responsibility for the content if any issue arose, and would need to sign a "MOU agreement for the transparency and would need added clauses to address those concerns" (Support organization, personal communication, February 8, 2013).

In my opinion and the opinions of others stated here, the broad scope of Section 66A impedes the nature of the Internet and social media platforms, as a free information ground should be provided for citizens to voice their opinions. As much as the support

organization wished to help with the project by suggesting alternative SMS gateway platforms, Gītakāra participants' creative freedom of expression was at risk. Another alternative suggested by the support organization was intensive pre-moderation of all messages. This situation recalls activist group Hum Janenge's website; while the group advocates for free speech, all posts on the site's message board are pre-moderated by the group (Rao, 2012, p.10). This furthermore recalls Toyama's observation (2011) that the use of technology can help amplify existing forces; technology's positive and negative impact reflects the "underlying human and institutional intent and capacity, which can themselves be positive or negative."

While Gītakāra is a fairly simple system, I did foresee the scenario involving the presence of harmful or mischievous language. Due to this, I implemented a flag function that enabled users who receive inappropriate content to voice their objection. Moreover, when a message is flagged, the researcher and the radio host are both intended to receive a notification and then to investigate the matter and assess whether the message contains of any of the following:

1. Racism, sexism, homophobia, or other forms of hate speech
2. Anything that advocates breaking the law
3. Threats against anyone with physical or psychological violence
4. Posting the same (or a similar) message over and over again; this is annoying to others
5. Purposeful deception or other messages with the intention to harm other participants physically or psychologically

If the message consists of any such content, the message would be removed from the system. This way, the system addresses inappropriate content concern while also working to maintain transparency, openness and freedom of expression. The reason why a flagging function was chosen over pre-moderation is based on critical questions regarding the right to impede freedom of expression and the criteria which might encompasses that right. To allow for the free flow of creativity and freedom of expression, the role of the moderator should be minimal.

Due to unfortunate and unforeseen circumstances, the current political climate in India made it extremely difficult for a system such as Gītakāra, which endeavours to provide access to a diverse array of creative interpretations, to be implemented. This reality can impede individuals to express freely and hence the process of supporting people's definition of their own development values becomes even more difficult. To have an appropriate and supportive activist organization is perhaps essential for a transparent information ground in this context. I do not wish to obstruct free flow of message expression, yet am now aware of the implications of Section 66A. Therefore, an alternative way to achieve this must be investigated further alongside a more detailed investigation into the Indian context of free speech, activism and legal issues.

8. Study Methodology

Due to the legal and political issues described above, instead of testing in India, I was compelled to conduct user tests of Gītakāra in Toronto. There, I informally recruited two classes of participants -- Youth Participants and Adult Participants. These

participants took part in either Group Sessions or Distributed Sessions, depending on logistics. In the case of Group Sessions, all participants in that session were exclusively either Youth or Adult participants. Furthermore, participants in a Group Session mainly knew each other in advance. In order to obtain design feedback, questionnaires were prepared to collect data to assess participants' opinions of the system, to understand the system's strengths and weaknesses, and to reflect on whether the system answers the research question and expectations. These questions are based on the project's research sub-questions, but framed in a user-oriented manner that can be evaluated with a questionnaire answered by Canadian participants.

1. Does the system encourage local creativity and distance collaboration?
2. Do users feel they perceive multiple perspectives?
3. Does the system allow youth feel ownership of their contribution?
4. Is the system functional and usable?
5. Do users perceive a shared mental ground with other users?

User experiments were conducted as follows:

1. Each Group Session involved an approximately one-hour session at the community group's typical meeting space or a location selected by their parents/guardians. Group Session Participants then listened to a story played back by the researcher, and collaboratively composed song lyrics using their mobile phones to text Gītakāra. After a song was composed, a volunteer performed the song for the group or individually, in a private room, at the participant's discretion. The researcher recorded the song's audio. After 2-4 songs had been composed and

performed (depending on time), participants completed a short questionnaire about their experience. Following the session, participants received an email with instructions on how to download the audio recordings. (Link to music: https://www.dropbox.com/s/gmezmo8yr66c0yn/youth1.mp3)

2. Distributed Session Participants performed the same tasks, but were not located in a room together. Hence the session took up to an entire day, involving several periodic text messages being sent by Distributed Session Participants during the course of their regular day. Due to this, song performances were individually recorded by the researcher or recorded by participants themselves and uploaded to a secure web server, and then shared with the researcher, depending on participant preference. (Link to music: https://www.dropbox.com/s/bohexyrpatse839/HereComestheKnife.mp3)

Each group type benefits the research in its own manner. The group sessions allow the researcher to observe user's immediate reactions and feedback; whether the system is usable and functional. Furthermore, the researcher can observe the general mood of users; whether they have any frustrations while using the system or whether they have fun and enjoy collaborating with others in creating the composition. The distributed session was beneficial to really understand how the system works when users are not in the same physical space; whether more incentives to participate are needed and to develop a sense of how long the interaction would take.

8.1. User Session Participation

Two adult groups participated in the user tests: OCAD Digital Futures classmates and professors as well as members of an adult choir. The Digital Futures classmates and professors were the first group to test the system. These professors and classmates participated in a distributed session while conducting their daily activities. The distributed sessions needed to be prompted frequently to encourage response and to inform participants about what happens next. The researcher presented them with a podcast of the song, and participants were encouraged to respond to the lyrical story in that song. As this was the initial prototype test, this was the only case where the researcher provided a story and a melody for the group.

The choir participants were Taiwanese students and alumni from a Toronto-based post-secondary institution. This group was recruited so the researcher could make note of any cultural differences in the use of the system and to test the system in a language other than English that uses non-Latin characters. This way, Gītakāra can be tested by those who do not use English as their primary language; a mode of usage especially important in India, a country where dialects vary from region to region. A participant shared a story found on Facebook. The story was written in Chinese, and the researcher read the story aloud, like a radio broadcaster would. When the researcher announced that participants could reply either in Chinese or English, 75% of them replied in Mandarin, while the rest wrote in English. Those who received an English text message to respond to during the second round of lyric contribution similarly replied in English, and likewise for those who received a Chinese message. Some users in this group expressed that they felt pressure

producing quality messages when they receive a poetic line from another. Generally, they laughed at the coherency of the final composition.

Additionally, two youth groups participated in the user tests. These groups consisted of youth aged 14 to 17. The first group was a group of fourteen year-old teenage friends. They met at a local coffee shop to play around with the Gītakāra application. These youth generally listened to rap music. They did not think about a complete story, but a past experience of one of the participants. This participant quickly described the story in one line. It was very short and succinct, but everyone reacted to it quite promptly. Users in this group expressed that it was fun to share ideas with their friends through text messages while guessing who wrote the message.

The second group was recruited from a not-for-profit organization that provides after school programs for youth to come and explore community issues. The organization also provides resources such as music, dance, photography and new media workshops for youth to explore and create. The non-profit youth group participants were all fourteen year-old girls who practiced dance moves before the test session. During the user test, a participant decided to share her dream as a story. All participants giggled throughout the narration of the dream and they decided to use an R&B melody, just like the songs that they danced to. These participants were very willing to sing their completed song immediately after finishing composing it. This reveals one apparent difference between the two groups: youth groups appear to be less likely to feel embarrassed about singing and/or performing alone after the completion of the song. In both youth groups, the youth

sang and recorded the song; however in adult groups, the willingness to sing the song was extremely low. When invited to perform, adult participants politely declined.

8.2. Data Collection and Analysis

Because Gītakāra's database recorded all the text messages that participants sent to the system, anonymous user activity was thus stored in a database. The data recorded was intended to help me to obtain insights into the engagement of the participants in collaboratively creating compositions. The result of this data analysis was also intended to provide me with an impression of the overall interactions and the final compositions that youth compiled.

The main analysis was undertaken by analyzing user feedback from questionnaires. The questionnaires were intended to assist me in understanding whether the use the concept of constructivist learning has successfully integrated with the local use of technology and if the Gītakāra allows the users to creatively express themselves and potentially define their own means of development.

This methodology is obviously limited in terms of how well it can address the local creative practices of rural Indian youth in Chamba, and whether or not it effectively utilizes local technology, but was intended to at the very least provide evidence that the Gītakāra system works to help promote an awareness of multiple perspectives and a feeling of ownership over communally created artistic endeavours.

9. Discussion

As described above, Gītakāra user tests were conducted in Toronto, and cannot dependably reflect how rural Indian youth will use the system. Nevertheless, they have helped to evaluate the functionality and usability of the system and address the overall research question and the revised sub-questions defined in section 8. These tests consisted of two group sessions with youth participants, one group session with adults, and one distributed session with adults. In total, there were 21 participants. Every participant answered the same questionnaires, designed to answer the revised sub-questions.

This section analyses the questionnaire results (Please see Appendix C for the questionnaire, Appendix D for questionnaire results), in combination with informal observations and discussion during the user test sessions. Specifically, it describes how participants evaluated the system's usability and their perceived ownership of their contributions. Next, it discusses participants' feedback as it relates to three aspects of constructivist learning: contextual learning, multiple perspective and intersubjectivity. Additionally, this section describes how the users' tests helped address the research question: how does Gītakāra encourage creative collaboration through SMS text message and do participants feel ownership over the created composition? The section concludes with a discussion of general findings from the tests, unique characteristics of the group and distributed sessions, and finally an overview of the study's limitations and areas for future work.

9.1. Analysis of Survey Results

9.1.1. Difficulty and usability

Overall, participants did not express difficulties in using the send and reply functions of the system. Most understood how to send a text messages and how to reply to a text message. However, some participants expressed that while they understood how to use Gītakāra*,* they had difficulty or felt pressure while writing lyrics. These participants also expressed a lower than average interest in using the system in the future if it were available, perhaps unsurprisingly suggesting that people who do not enjoy creative writing would have little desire to utilize the system.

The largest usability issue appears to be related to the task where the user arranges all contributed lyrics into a new order, which becomes the final song (see Appendix B for a description on how this was implemented). While not every participant had the chance to order the lyrics, some of those who did had difficulty in understanding how to complete the task and required assistance from the researcher. This problem was particularly prominent in sessions involving a larger number of participants, and thus more lyrics to arrange.

9.1.2. Ownership: Do you feel your contributions were important to the overall song?

Participant self-assessed value of their contributions – their sense of ownership – ranged from neutral to important. Participants in adult groups generally felt that their contributions were not as important to the overall composition when compared to youth participants, who more highly valued their own contributions.

9.1.3. Multiple Perspectives: Do you feel aware of other's point of view of the story when using Gītakāra?

Participants generally felt aware of other participants' perspectives. Users received one other participant's contributed lyric and in the end, they saw and heard everyone's contributions. On average, participants expressed that they were somewhat aware of other participants' points of view of the story when using Gītakāra. Interestingly, one participant expressed that she did not perceive other's perspectives at all. This participant's data was not included in the average as it skewed the mean. However, the participant expressed that she believes that more back-and-forth replies with other participants would help her to feel more creative.

9.1.4. Mental Ground: Did you feel connected with other people's point of view of the story when using Gītakāra?

Most participants expressed that they felt somewhat connected with other people's point of view of the story. This shows that there does not seem to be a strong mental association between participants when using Gītakāra, and hence, the idea of intersubjectivity -- participating in negotiating meaning and exchanging dialogue -- may not be as strong as the researcher anticipated. Nevertheless, several participants expressed that Gītakāra is a platform that allows them to operate outside of their usual way of thinking as they are exposed to other people's opinions on the subject matter.

9.1.5. Local creativity and (distance) collaboration: how inspiring was it to respond to someone's lyric?

Participants in the adult group expressed it was somewhat inspiring for them to respond to other participants' lyrics while participants in the youth group expressed a higher degree of inspiration. However, a large majority of participants articulated that they felt Gītakāra helps to create a space where they are not restricted and they could be creative. Several explained that since people cannot directly associate the lines of lyric with anyone specifically, they feel like it is a safe space to express themselves.

9.1.6. Preferred Platform Difference

Participants were asked about the ideal platform for the collaborative composition process implemented by Gītakāra. Interestingly, there was a notable difference between the responses of adult and youth participants. Adult participants (both in distributed and group sessions) generally expressed that they would prefer to use Gītakāra on either SMS and/or social media websites. However, youth participants were more likely to prefer using Gītakāra in a face-to-face setting, with few of them preferring social media websites. This observation could benefit from further investigation in a future research study, as the research does not attempt to answer questions about with whom participants collaborate.

9.1.7. Other General Findings

One consistent finding is that most people would feel very happy to share their stories through Gītakāra. As not everyone had the chance to provide the initial story (only one participant in every session, with the exception of the distributed session, whose

participants wrote lyrics based on a podcast), several participants stated that they would also like to share their stories and have their song written for the stories; however most participants state that if the system is available, they probably would only use it sometimes, not very often. One youth group indicated they would use it regularly. All groups felt like they had an enjoyable experience.

9.2. Findings specific to session type

There are several distinct differences between the two user test session types: group sessions and distributed sessions.

9.2.1. Group Sessions

The group sessions generally took about an hour to complete. As these took place in a more controlled environment and participants had all gathered in a single location for the express purpose of participating, the interaction between participants occurred quickly and efficiently. Generally, most participants enjoyed the process. One of the distinct features within the group setting is that participants felt somewhat pressured in creating quality replies. This was especially the case when participants received a very poetic lyric to reply to, which made some feel as though their response might not reach the poetic standard and that their contribution may devalue the overall composition and the story. Hence some participants expressed that it was more difficult for them to write a response than an initial lyric. This contrasts with the distributed session, in which several participants expressed that they enjoyed replying to another more than writing their initial lyric.

Throughout all the group sessions where participants met physically with each other, many participants, especially in the youth groups, wanted to share their text messages with each other (as opposed to withholding their identity for anonymous collaboration). Moreover, when presented with the choice to either order the lyrical contributions on their own or order with peers, each group chose to order with peers.

9.2.2. Distributed Session

The distributed session was conducted via email and text message. The Internet was used to simulate the broadcast of a community radio station; hence the story and the delivery of the final song were delivered via email. The distributed test ran for approximately 8 hours, during which participants had brief windows of interaction. The longer duration of the session was due to several participants' delayed responses, which in turn delayed other participants' opportunities to interact. Several participants in this session suggested that the lag between listening to the story, sending in their initial lyrics and receiving others' text responses was tedious and worked to inhibit collaboration. Participants also claimed to have grown disinterested in the text messages and felt more detached as the time frame dragged on.

Several participants expressed confusion during the distributed session. Much of the confusion amounted to logistical concerns, such as the proper phone number to send messages to. Clearer instructions would be helpful for any future distributed participants. Distributed participants might benefit from more encouragement and incentives for them to respond; the delays between receiving complete sets of initial lyrics and replies is the main reason for the long duration of the session, and appears to be a cause of user

frustration and disinterest. A participant suggested that the system might benefit from more back-and-forth messaging between participants. This was proposed to encourage engagement, and result in a more coherent and fully formed story.

9.3. Study Limitations

As mentioned above, the fact that user tests for a technology intended for use by rural Indian youth were conducted in Toronto, with local youth and adults, is a significant limitation. Furthermore, group sessions during which co-located participants contributed simultaneously do not reflect the intended usage scenario. This is a significant departure from the original intention of testing the system using public broadcasts to an indefinite number of people in the vicinity of the Chamba community radio station. Indeed, the group sessions were not distributed, participants were generally known to one another, and involved a maximum of eight participants. These small, closed and controlled group sessions allowed for more intimate discussion and understanding of the basic feelings of participants, which would not be the case in a large-scale distributed test. Such large-scale tests, potentially involving hundreds of users, would perhaps have yielded different interaction dynamics or scale issues than those found in the local tests.

Moreover, the story and song on which the participation was based were distributed either through email or during face-to-face interaction, which does not accurately reflect the intended channel of distribution, the community radio broadcast. Additionally, participants' language skills are significantly different than those of the originally intended participants in Chamba.

Most importantly, the user study results cannot be generalized to users in Chamba even though Gītakāra was designed based on the familiarity with and understanding of technology that Chamba youth have. This is because youth in Toronto have different understandings and different practices when it comes to technology. For example, many Canadian participants utilized the latest smart phones with constant, high-speed Internet connectivity and are constantly connected to one another via social media. Their digital skills and the type of digital literacy they utilize is likely significantly different than those of youth in Chamba. It cannot be assumed that the Toronto participants would define their own development in a manner similar to Chamba youth. Hence, the feedback from Toronto participants who experienced the prototype -- while useful in a broad sense – cannot reliably substitute for feedback for the intended users.

Although utilizing Toronto participants formed an alternative user scenario than was originally intended, it produced a valid means of addressing the revised research sub-questions, and yielded some interesting research findings concerning the application's usability and the social aspects of the application, in both group and distributed scenarios, with both adult and youth audiences.

9.4. Reflection and Future Work

Gītakāra, every bit designed for Indian youth, by necessity was forced to be implemented and evaluated in Canada. However, in its current form, the system did not satisfy the desire of some of the Toronto participants who expected a more high-tech, seamless experience that required minimal interaction. For example, many participants expected the technology to either automatically generate music based on the contributed

lyrics, and did not recognize the value of singing themselves. However, this may be because of the limited audience exposed to the system. Nevertheless, Toronto participants are accustomed to instant and snappy interactivity and seem to be underwhelmed by the low technology nature of Gītakāra. Thus, while many participants expressed enjoyment during the user test, some were interested in adding "more" technology on top of the application. Nevertheless, as an open source project, Gītakāra could be adapted by interested Canadians to utilize different local technologies for different contexts.

Even though the evaluation of the project shifted framework, this thesis addresses the original intent of the project as expressed in the research questions in its description of the design concept. The concept demonstrates how each sub-question was addressed and incorporated into the design. However, the Toronto user study findings may help inform future work on the Gītakāra design concept before it is tested in India.

Based on this study's findings, Gītakāra could be improved in a number of ways including implementing support for more open-ended, back-and-forth dialogue; more potential types of interaction; and greater system flexibility.

As the questionnaire results indicated, participants did not feel as connected to others nor did they recognize multiple perspectives to the degree anticipated, both important aspects of the proposed intersubjectivity I hoped that the application might produce. One way to address these issues may be to allow for more back-and-forth response interaction between participants during the process, to promote more inclusive collaborations.

If some participants are not engaged in the collaborative process, interaction between participants is delayed, which may hinder motivation. One potential solution would be to provide participants with a strict a timeframe within which to reply; if participants do not reply the text within that time frame, the text message would then be sent to another active participant of that session. In this way, the interaction time will not drag on for the entire day, and engagement will be fulfilled, and rewarded sooner.

The system suffers from several flexibility issues; Gītakāra is quite restrictive in its structure. An administrator is required to advance the session to different interactive stages: story (call to action); reply (response to the call to action); and song (the product of the call and response) etc. (see Appendix A for details). Once a stage is active, it is impossible to go back to the previous stage without modifying the system's internal database. Once a certain stage is reached, no additional participants can be included in the session, which could cause continuity issues if the administrator prematurely advances the stage, and flexibility issues, if other's wished to join at that stage. Another restrictive issue is that each participant can only send one message per stage. If the participant accidentally sends a message, he/she cannot revert back and send another message. The system will simply tell the participant: "you have already participated in this session, please join next time." The system should improve its flexibility to account for user errors by investigating alternative ways of ordering the text messages to allow for more flow and flexibility in dialogues. On an interesting note, one participant suggested that the use of voice mail could be integrated in the future; this could enable illiterate people to participate using voice instead of text.

Overall, most study participants felt that Gītakāra was a fairly useful creative outlet, even though more flexibility and interactivity are needed to improve access to multiple perspectives and to increase one's sense of ownership. Most importantly, once these changes are implemented, Gītakāra should be thoroughly tested in rural India, the environment for which it was designed.

10. Conclusion

As this thesis has acknowledged, the recognition of multiple perspectives is an important component of a re-imagined definition of "development." Throughout this project's execution, I constantly contemplated my right to design a system based on my experiences with rural Indian youth and my understanding of their needs. To address this concern, I adopted Escobar and Shiva's re-definition of "development" and utilized an appropriate technology framework as the conceptual foundation of Gītakāra's design process. This inspired me to integrate local technology and local people's technical capabilities and practices into the project, designing a platform that allows people to creatively compose and collaborate with each other, as the study results demonstrate. Interacting through Gītakāra in a manner informed by theories of constructivist learning, contextual learning, multiple interpretations, and intersubjectivities, people can utilize the system as a social space where they may exchange dialogues and narratives through creative expression.

Ideally, the Gītakāra application provides a platform for people to speak freely and interchange ideas with one other in order to develop an understanding of each other's perspectives. Its technical design, reflecting the context of rural Indian technology

practices, allows for distance collaboration without a person needing access to the Internet. In this thesis, I attempted to leave the Gītakāra system open enough for participants to contribute their own content. Following this manner, the system design responds to my initial question about whether or not learning needs to be fixed in a certain format, which arose during my first encounter with the school kids in Cambodia and again in my later experiences in rural India; system participants play the role of knowledge creators throughout the entire process. As much a hindrance as it was, the Indian IT Act roadblock gave me a sudden realization, making me question the validity of this project's proposed freeness and transparency. Being aware that open communication may not be applicable everywhere, I was forced to acknowledge the recommendation that the youth participant's exchanges should be monitored, In this case I had to ask, how could this reality align with Gītakāra's intention as an enabling force for distance collaboration, where people can freely express their thoughts and emotions? Imaginations should roam free, without hindrance, The fear to speak due to societal laws and norms is a submission to the withdrawal of freedom of speech. This submission may result in a reluctance to accept new perspectives, thus jeopardizing creativity and freedom.

I do not intend to denounce the political climate of the rural Indian context for which the project was designed, however I do wish to purse the Gītakāra project with a revised approach that may circumvent the Indian IT limitation, and help provide a space for free and open collaboration, activities which have been chilled by legal restrictions. Gītakāra would need local activist support to function as a platform for those who wish to

imagine, share, create and collaborate. In this way, the Gītakāra project might operate as a tool for participants to become the subjects of their own development.

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13. Appendix

13.1. Appendix A: Gītakāra Process Details

1. Start Show

Radio host starts the show (presses a start button to initiate the entire system).

2. Story (call to action)

Youth can call in or send a text message by entering a command sequence (@story [content]) to share a story with the radio station at any time. In either case, radio hosts will look through received stories and select one to be used in the session. Each story will also have a chosen song associated with it in collaboration with the story provider. Once the story is selected, the radio host will broadcast the story and melody.

3. Lyric (response to the call to action)

Afterwards, the radio host will request for listeners' response in lyrical format through SMS messages. Listeners can write a line of text according to their interpretation of the story that they think it will fit into the song. These messages are sent to the radio station and are considered part of the lyrics for the selected story and song.

4. Reply (response to the Lyric)

After a certain amount of time, users who provided a lyric will receive a message from another anonymous user, who also sent a lyric. The user is asked to write another lyric as a response to the received message. Each user will send out a minimum of one SMS message (the original lyric) and maximum two SMS messages (original response plus the subsequent replied line) that will be included in the final song.

5. Order Lyrics into a song (the product of the call and response and reply)

The radio station receives all these messages directly. Each message will have another message associated with it as a parent-child relationship. If it is the original response, it will have a subsequent reply following it and vice versa. Only the radio station host will have access to all these messages. He/she can then send all these message to the writer of the story. The storywriter can look at all the lines and organize the order of the lines. The storywriter orders the lines by texting the command sequence for ordering followed by an ordered sequence of message ids (ex. @order 3, 5, 7, 8, 9, etc) back to the station. The storywriter may omit any lines that he/she deems irrelevant. The storywriter also can choose who he/she wants to sing the song; be it his/her friend, a local musician, the storywriter himself/herself, or the storywriter can leave it open to the public or radio host to decide.

6. End Show

Once the radio station receives the complete order, the system displays the ordered lyric as a complete song to the radio host. The radio host can read over the lyrics. If the storywriter decided to leave the singer to anyone, the radio station can send the ordered lyrics to all participants in the session. The radio station can then send out a message to all the participants when the show is ready to go on air, informing the participants the time of the broadcast and that anyone can participate in singing if interested. The performance is left open for the community to handle and respond. The system simply provides a framework allowing a song to be composed; however the

system is flexible enough that the performing stage fixed to any specific outcome. Once the song is performed, the radio station can wrap up and end this session.

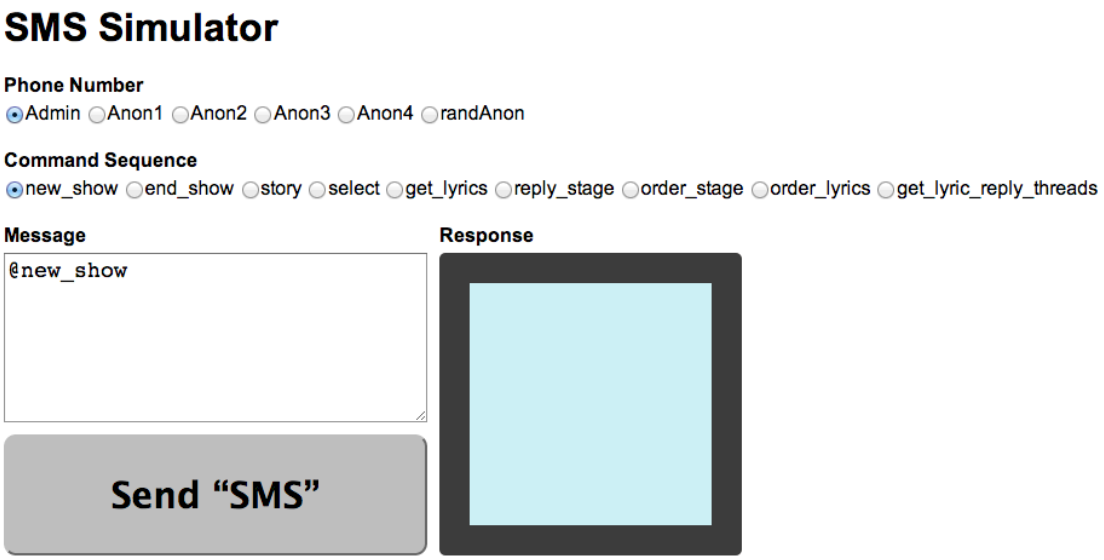


Figure 5: SMS Simulator

13.1.1. Special Functions

Flag:

There is a flag function in that allows a user, if he/she notices messages that may be fraudulent or endanger the safety of others, he/she can 'flag' the post to alert the research about this by texting "@flag". The researcher can then take remove the flagged line and furthermore, if the flagged message is deemed to be serious, the radio station host can ban the user from participating in the session. This function is to help take action toward mitigating and preventing potential dangers.

13.1.2. Dashboard

The community radio station will have access to a web-based dashboard to manage the incoming story, lyrics and the complete song. The dashboard has other administrative functions such as sending out mass message to all the participants, informing them about the broadcast time of the song of that session or sending out the ordered lyrics whenever necessary. The radio host may also edit an area on the page to manage a script for the broadcast. On the dashboard, there is a progress bar, indicating which interactive stage the session is currently in, if any.

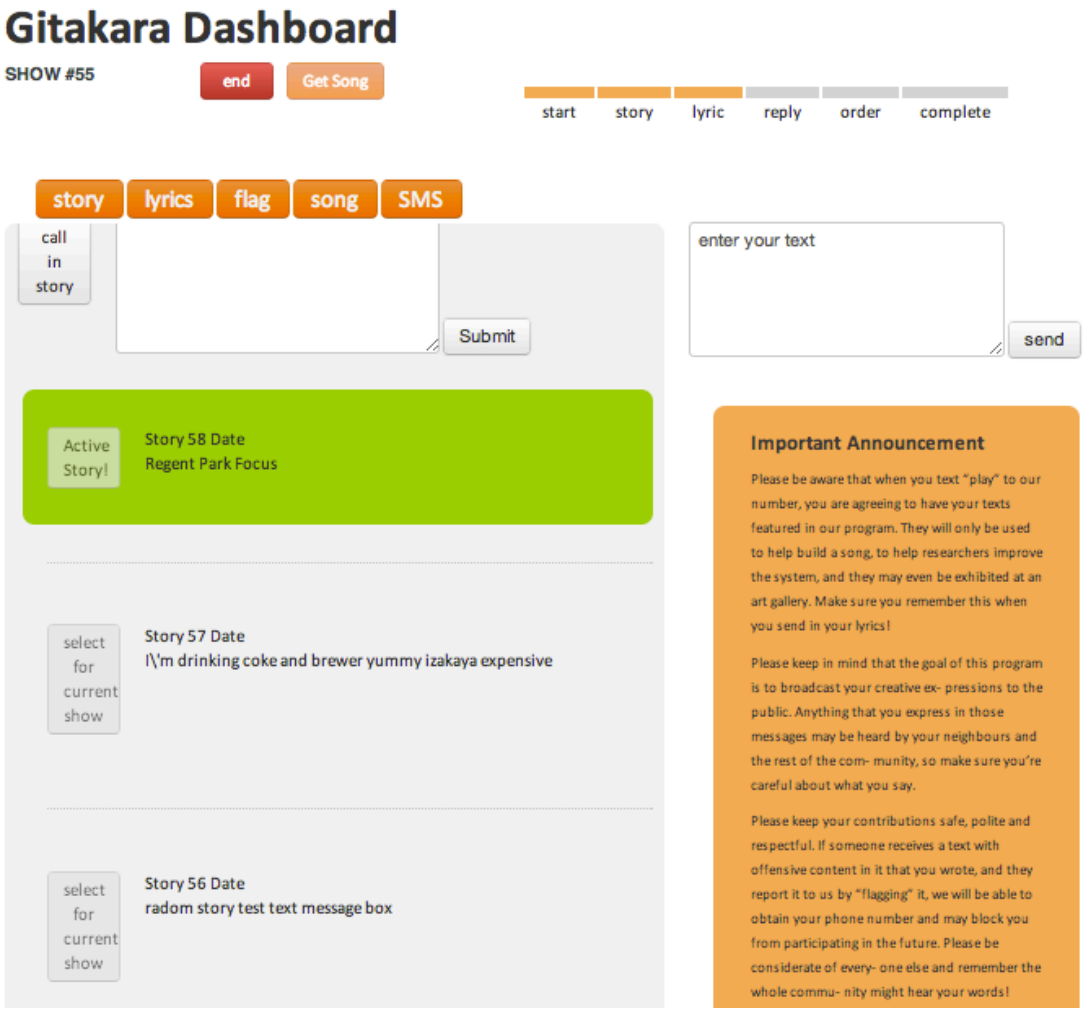


Figure 6: Gītakāra Dashboard

13.1.3. Application Technology

Gītakāra is comprised of several technologies: mobile phones, an SMS gateway (in early prototyping – Telerivet), a PHP/MySQL web application, and a user-facing web interface built using HTML and JavaScript.

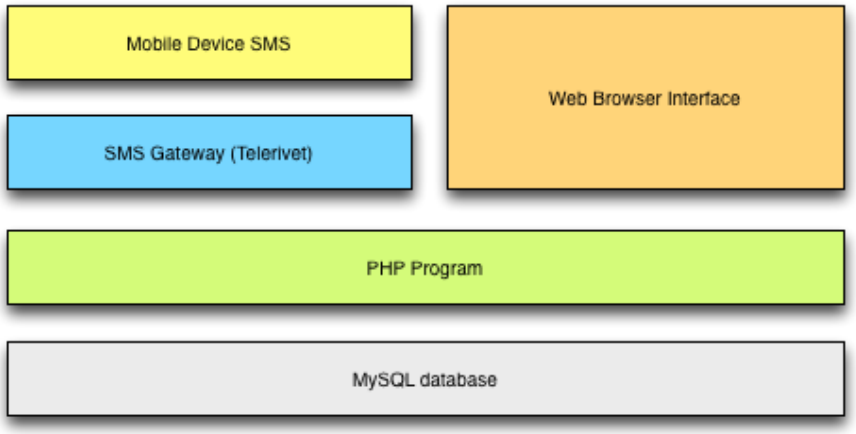


Figure 7: Application Architecture

Using their mobile phones, participants can send and receive SMS messages to the system's phone number. The SMS gateway then passes the text message information to the web application, which processes it and stores it in the MySQL database. Based on the phone number of the sender, the message is associated with a user account in the system. Each message has a unique identification number. The application can then re-route an anonymized version of the message text to other participants in the songwriting process.

13.1.4. Command Sequences

The system is governed by a single phone number. As such, the system requires a method for processing SMS messages and determining whether the message is a story submission, a flagging action, or some administrative function. Without such a method, the system would treat every received message identically, which would not support the envisioned functionality.

In order to support the necessary functionality, the idea of command sequences (which have been used in other SMS systems such as GupShup[2]), is proposed. Any specialized type of user interaction that can be carried out through SMS requires its own command sequence. Below, each interaction and its command sequence is outlined.

Interaction	Command Sequence
Submit story	@story
Flag message	@flag
Order Lyric	@order

Table 1: Command Sequence

The PHP system interprets the command sequence, and performs functions relevant to that particular interaction (storing a message in the database, dispatching the message to relevant recipients, etc.). This ensures that the system functions as intended, and that the required functionality can be achieved. Note that general interactions such as lyric submissions and replies do not require a command sequence, as the system's programming can infer whether a message is a lyric or a reply based on the system's current state.

Thank you to Andrew Hilts for server-side architecture and SMS Gateway integration.

[2] For more information on this application and its operation see "GupShup on SMS": http://gupshup.me/help.

13.2. Appendix B: Composed Lyrics

First story: Baboushka's revenge Kuraev, I. (2013, Jan 22). Babushka's Revenge. *Moth True Stories Told Live.* Podcast retrieved from http://themoth.org/posts/stories/babushkas-revenge
A guy describes his childhood memory with his grandma who helped me take revenge to those who bullied him.
Associated tune: Here Comes the Sun – Beatles
Harrison, G. (1969). Here Comes the Sun [Recorded by Geoff Emerick and Phil McDonald]. *Abbey Road* [mp3]. London, England: EMI.

Here comes the knife
Here comes my mom
and I say
It's alright

Little granny I feel the fort is crumbling
My mother is a hero

Here comes the knife
Here comes my mom
and I say
It's alright

Run and slash, slash and laugh, laugh and hide
If al the boys had grannies like mine,

It would have been
World War Three
and I say
It's alright

Knife knife knife
Here it comes

Mom mom mom
Here she comes!

Let the fort fall, let it crumble
Laughing all the way
Only to me, a hero is something to be!

Here comes the knife
Here comes my mom
and I say
It's alright

Second Story: a man reminiscent on the last special date with his mom. He tells everyone that you should let the loved ones know you care for them before it's too late.
Associated song: The Pain of Breathing – Fish Leong
Yao, R.L. (2007). The Pain of Breathing *j'Adore* [mp3]. Taipei, Taiwan: B'in Music Co. Ltd.

The carnation withers but blossoms in eternity
And blossoms will full of the heart, forever
Unconditional love, the most beautiful thing in the world
love never ends

多珍惜與愛的人的時間, 因為與愛的人的每分每秒都是寶貴的。

愛恨沒長 要很珍惜珍惜愛自己的人 保護和所愛的人相處的時間
人生苦短，要很努力很努力保護自己所愛的人，珍惜和所愛的人相處的時光。
愛不會因為離開而消失

愛可以收藏在心裡很久很久…
就是現在，牽起他的手吧

想念你、好愛你
說出那，悄悄的愛，就在隨時隨刻
我也愛你
隨手可得的感情是最不長珍惜的

愛恨沒長 要很珍惜珍惜愛自己的人 保護和所愛的人相處的時間
人生苦短，要很努力很努力保護自己所愛的人，珍惜和所愛的人相處的時光。
愛情、親情、友情...

愛恨沒長 要很珍惜珍惜愛自己的人 保護和所愛的人相處的時間
人生苦短，要很努力很努力保護自己所愛的人，珍惜和所愛的人相處的時光。
愛要即時表達

愛要即時表達

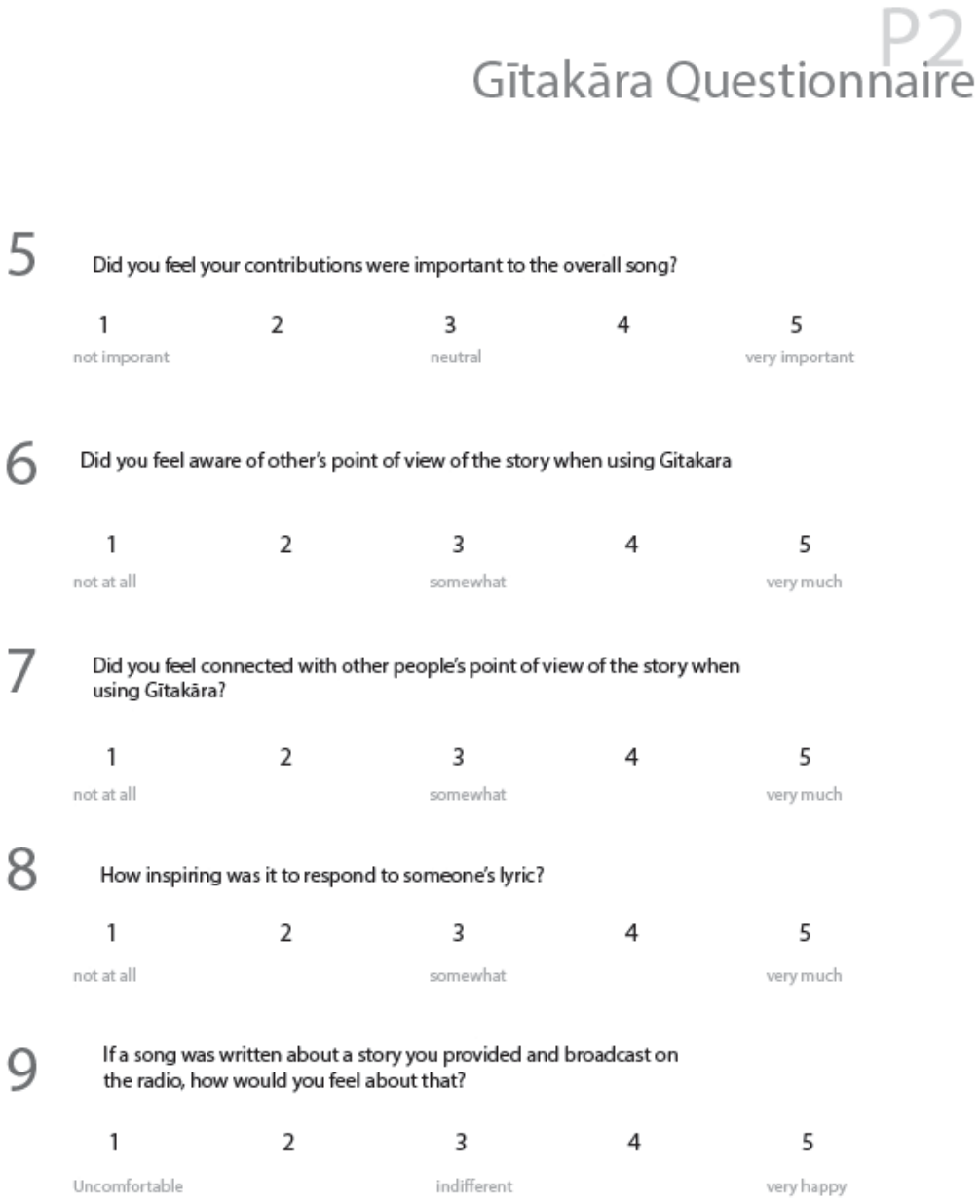
Story Three: a boy describes his experience falling out of the car because he is curious in what happens if he opens the door while the car is in motion.
Associated song: none

Kaylep being Kaylep on a normal day
Cruising slow acting like a g in my Escalade
And then I fell on my head and I cried
Like a little baby that I am
I felt free as always I couldn't help singing USA
Ridin free, no seat belts can constrain me What happened next was crazy I was flying sideways Rollin slow on my driveway

Story Four: a girl describes her dream. She dreamt that her friend drowned and died, and she is the only one who can see her friend. However she doesn't know that her friend is dead, so while she talks to her friend, everyone thinks she is crazy.
Associated song: Bye Bye – Mariah Carey
Carey, M., Eriksen, M.S., and Hermansen, E. (2008). Bye Bye *Bye Bye* [Youtube]. Jamaica: Island.

This is for m people who just lost somebody
It's so hard to lose somebody
I want my best friend I need somebody
Came looking for a friend but she was lost not found
They think that I'm crazy am I really crazy
YES YOU ARE!!!
That's just so sad
I know that I'll never forget anybody.
Poor Eysla got locked up, cuz her friend died then showed up
So sad now she must be crazy

13.3. Appendix C: Questionnaire



P2

Gītakāra Questionnaire

5 Did you feel your contributions were important to the overall song?

1	2	3	4	5
not imporant		neutral		very important

6 Did you feel aware of other's point of view of the story when using Gitakara

1	2	3	4	5
not at all		somewhat		very much

7 Did you feel connected with other people's point of view of the story when using Gītakāra?

1	2	3	4	5
not at all		somewhat		very much

8 How inspiring was it to respond to someone's lyric?

1	2	3	4	5
not at all		somewhat		very much

9 If a song was written about a story you provided and broadcast on the radio, how would you feel about that?

1	2	3	4	5
Uncomfortable		indifferent		very happy

P3

Gītakāra Questionnaire

For the following questions, please describe your thoughts in a few sentences.

10 Was Gitakara a space where you could be creative?
Please explain your reason(s).

11 Did you have any difficulties in using Gitakara, if so what were they?

12 Do you have any additional comments, suggestions and concerns regarding your experience to Gitakara?

Thank you very much for your participation! =)

13.4. Appendix D: Aggregate Questionnaire Results

	Adult 1 Group	Adult 2 Distributed	Youth Group
Q1. How enjoyable was your experience with Gītakāra	4.1	3.8	4.4
Q2. If Gītakāra were available, how likely would you use it?	3	2	4
Q3. The most preferred platform of Gītakāra	5 (social media)	4 (SMS)	2 (face-to-face group)
Q4. The least preferred platform of Gītakāra	1 (face to face individual)	1, 2, 3 (face-to-face group & individual, phone call)	3 (phone call)
Q5. Did you feel your contributions were important to the overall song?	3.5	3.8	4.3
Q6. Did you feel aware of other's point of view of the story when using Gītakāra ?	3.9	3.3	4.3
Q7. Did you feel connected with other people's point of view of the story when using Gitkara?	3.6	3	4.3
Q8. How inspiring was it to respond to someone's lyric?	3.8	3.4	4.4
Q9. If a song was written about a story you provided and broadcast on the radio, how would you feel about that?	4.4	4	4.3

Table 2: Aggregate questionnaire results

This table indicates the average value of each question for the three group types: the higher the number, the more positive the reaction, with exception of question three and four. Question three and four takes the mode, the number that appears the most frequent. The table is a quantifiable way of understanding general participant feedback.

13.5. Appendix E: Research Ethics Board Approval

Research Ethics Board

February 5, 2013

Dear Cathy Pin-Chun Chen,

RE: OCADU84, "Accessible and Playful Sharing in the Rural"

The OCAD University Research Ethics Board has reviewed your resubmission and thanks you for such a comprehensive, articulate and thoughtful application. The protocol dated February 5, 2013 and the consent forms dated February 5, 2013 are approved for use for the next 12 months. If the study is expected to continue beyond the expiry date (February 4, 2014) you are responsible for ensuring the study receives re-approval. Your final approval number is **2013-07.**

Before proceeding with your project, compliance with other required University approvals/certifications, institutional requirements, or governmental authorizations may be required. It is your responsibility to ensure that the ethical guidelines and approvals of those facilities or institutions are obtained and filed with the OCAD U REB prior to the initiation of any research.

If, during the course of the research, there are any serious adverse events, changes in the approved protocol or consent form or any new information that must be considered with respect to the study, these should be brought to the immediate attention of the Board.

The REB must also be notified of the completion or termination of this study and a final report provided. The template is attached.

Best wishes for the successful completion of your project.

Yours sincerely,

Tony Kerr, Chair, OCAD U Research Ethics Board

OCAD U Research Ethics Board: rm 7520c, 205 Richmond Street W, Toronto, ON M5V 1V3
416.977.6000 x474

13.6. Appendix F: Accompanying Materials

The following accompanying material is available upon request from the Ontario College of Art & Design Library: audio CD of participant song recordings. Anyone requesting the material may view it in the OCAD Library or pay to have it copied for personal use.