

## Data for Development: Shifting Research Methodologies for COVID-19

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**Abstract:** Successful and appropriate informal digital learning can help individuals and communities build sustainable and meaningful livelihoods, strengthen social cohesion and resilience, preserve and enhance cultural traditions and engage constructively and robustly with the wider world. Building digital learning that embodies participative and collaborative development and community ownership and control rests on the work of educators who understand these individuals and communities and their cultures, which may be very distant and different from global norms and the mainstream of their countries. These educators may, however, be reliant on research tools and techniques that are inappropriate or inadequate in these different settings and situations. This paper sets out a brief critique of these established tools and techniques as the prelude to reviewing a range of more innovative and eclectic ones drawn from a variety of disciplines. This is timely because COVID-19 has increased the barriers that separate educators from would-be learners whilst also increasing the education that these people and communities need.

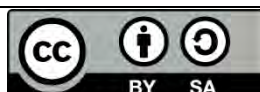
**Keywords:** marginalised communities, research methods, development, COVID, digital research.

### Introduction

This paper addresses the methodological challenge on developing research tools and techniques better aligned to individuals, communities and cultures different and divergent from established mainstream Global Northern contexts in order to develop, deliver and determine better digital learning.

The purposes of this paper are to set the development of co-designed autonomous and sustainable community digital learning spaces on secure methodological foundations that enhance the understanding of authentic community needs, situations, aspirations, experiences and expectations, and to encourage researchers to broaden their methodological approaches by adopting a 'what-works' attitude. The paper recognises that these outcomes rest on bringing together a substantial body of methods literature from across social sciences and beyond in order to adapt and evaluate it for a cross-section of the disadvantaged and development contexts that might benefit from such spaces.

This paper confronts the assumption amongst digital learning researchers, developers and activists that, 'it worked for *us*, so it'll work for *them*', whilst then avoiding the assumption, 'just because it worked for some of *them*, doesn't mean it'll work for all of *them*'. Also, however, a comparable slogan that we would embrace in relation to research governance and research project management would be, 'nothing about *us* without out *us*', to which we return in closing.



The paper looks at how to improve research with, amongst, or alongside communities disadvantaged by:

- language (e.g., fragile mother tongues; non-literate or pre-literate; Anglophone digital technologies, non-national language communities),
- power (e.g., post-colonial or neo-colonial positions, 'capacity building' perpetuating existing hegemonies; the stigmatised, homeless, rural, marginal or nomadic; gender, generational),
- education (by restrictive or centralised national primary education systems, school dropouts and non-attenders, highly didactic pedagogies),
- infrastructure (poor roads, unreliable bandwidth, access, limited coverage, insecure buildings, limited mains)
- security (crisis and emergency, conflict, migration and displacement)
- capacity (e.g., poor data gathering or analysis practices, poor monitoring and evaluation, basic or limited local policymaking).

But specifically addresses the methodological significance for research of:

- the COVID-19 pandemic and its aftermath (face masks, social distancing, lockdown, reduced public transport, self-isolation, hospitalisation, quarantine)

These all represent barriers and this paper offers suggestions for practical research tools and methods derived from diverse disciplines that might, especially in the current circumstances, help overcome these barriers in order to help educators understand the needs and aspirations of communities but now in the context of delivering and supporting learning that addresses a changed community healthcare and community health education context. Clearly, an exploratory paper cannot address these problems but seeks to add more substance to understanding them as contextualizing factors and to indicate ways forward.

These issues are important for communities viewed by external agencies as 'hard-to-reach', because, firstly, they are hard to reach to understand their needs, secondly, they are hard to reach in order to meet those needs, and, thirdly, both of these are compounded and changed by the current COVID-19 pandemic.

### **Initial Research Question**

How can digital learning development for distant and diverse communities, especially those very different from their national or global mainstream, be informed by the synthesis and evaluation of the methods literature from disciplines such as development studies specifically with a focus on indigeneity and decolonisation; ICTD and mobiles-for-development; those disciplines that embrace disadvantage and inclusion; informal, lifelong and community learning; human-computer interaction and requirements engineering; the *mobilities turn* in sociology; psychology and anthropology? A subsidiary and implied research question is, in the context of these communities, how can research ethics and research project governance be adapted and integrated with improved, sensitive and appropriate research methods and tools? We argue that appropriate tools and techniques may be found across a range of disciplines and communities. First, we illustrate how some of the barriers

identified above can limit what we, as educators, think we understand about other people and their cultures. We use 'cultures' in a fairly inclusive sense, perhaps just, 'how we do things around here'. Even so, the term has been put on a more calibrated and comparative basis and should be used in a more systematic critique of established methods (using the cultural dimensions approaches pioneered by Hofstede (2003) for example), those we might call the '*usual suspects*'.

## **Rounding Up the Usual Suspects**

All too often social research including education and digital learning is based on deploying a handful of established formats, namely large-scale surveys, semi-structured interviews, focus group discussions and questionnaires. These are often deployed without recognition of, or adaptation to, circumstances vastly different from the stable secure Global Northern research settings of their origin and without much sophisticated or rigorous analysis.

We could systematically tabulate the methods above (large-scale surveys, semi-structured interviews, focus group discussions and questionnaires) against the indicative barriers above (language, power, education, infrastructure, security and capacity) in order to set out the case that the barriers mean the methods do not always work. That is, however, self-evident; they will not *always* work. Some examples might nevertheless help.

If infrastructure is the challenge then there already accounts of the adaptation of digital technology including SMS, email, IM, web-based formats and social media (and hybrids that exploit other media, for example, using posters or radio to broadcast where to send SMS responses to survey questions or online surveys to refine topics for face-to-face focus groups). These have supported interviews, focus groups, questionnaire and surveys, not necessarily in the standard, established or canonical forms but there are several factors to remember. Firstly, we can use the research literature to show how our adaptations are derived logically and necessarily from existing validated formats, secondly, we can be candid and explicit about any limitations, thirdly, within our documented limitations, imperfect responses might be better than none at all and, lastly, as researchers we should grasp the chances to publish our methodological innovations, ones that other researchers might subsequently deploy. There may be some uncertainty about definitions, so, for example, is sending open email questions one-at-a-time, an email interview or a questionnaire? They may be synchronous or loosely or tightly asynchronous. Whatever works. And in times of lockdown, reduced public transport, distancing, school closure, masking and the other side effects of COVID-19, whatever works is doubly worthwhile. We could conduct a similar analysis for the other barriers we identify, conscious that many may overlap.

In the case of language, the specifics might be participants with unofficial or unrecognised languages, dialects or argot, pre-literate cultures or ones without an orthography, with low literacy (or without the visual and manual capabilities to engage with text) and so pictorial or graphical techniques might be helpful. We mention some later.

In the case of power, meaning, for example, differentials in power or gender, it might be possible to recruit and train local proxies or intermediaries, and recognise what might constitute 'harm' — and risk — in the context of ethics procedures for specific cultures and demographics.

One specific problem is the perceived prestige of Western, European, American, quantitative, sophisticated or technological methods amongst officials in contexts where these may not be appropriate in connecting directly with those marginal communities battling COVID-19. This is an insidious and deep-rooted problem and needs the rhetoric and methods of ‘capacity building’ to be dramatically reconsidered in ways that support officials in understanding and appreciating the values and mores of their own societies.

In the case of capacity, meaning the ability and confidence to develop and deploy appropriate research techniques (and develop the skills and relationships to then work with policy-makers (Traxler, 2016)), this, too, is a challenge for capacity building but, again, not a straightforward one.

In the case of security, meaning situations of military action, civil unrest, natural disaster, forced migration and other physical, social or psychological threats, there is now growing and recognised expertise and resource in bodies such as Red Cross/Crescent, UNHCR and UNRWA that could support researchers in understanding contexts and adapting tools, especially as such organisations are already engaged with COVID-19 responses.

Of course from a methodological perspective, researchers need to reflect on the nature of the knowledge they are trying to elicit – and during COVID-19 this will have changed dramatically – sometimes on some elementary quality assurance procedures derived from the methods of market research and sometimes on the cultural distance between the researcher and the researched.

ACRE, drawn from software requirement engineering, provides a principled and systematic framework and critique for understanding how eliciting different types of knowledge from research participants requires different elicitation techniques; it draws attention to for example *not-worth-mentioning* and *taken-for-granted*, to the differences between participants’ *front-of-stage*, *back-stage* and *under-stage* responses. ACRE also draws attention to the role of culture, within the limitations of the work’s original domain, and these should be recontextualised into the different communities and cultures represented in this paper. More generally, social science literature draws attention to performativity and self-report, to the need for triangulation and corroboration and to piloting and peer-review, and urgent fieldwork undertaken under the pressures of COVID-19 cannot ignore these quality issues.

The literature and methods of market research whilst not always highly theorised are tested in the struggle for commercial advantage with consumers and competitors (Hague, Hague & Morgan, 2004; McQuarrie, 2015; Jalil, 2013). They provide heuristics and guidelines worth investigating for researchers. Lupton (2020) has pulled together a very useful document on fieldwork methods during COVID-19, mentioning amongst other ideas, how wearable cameras (*cf.* Pink, 2015; Fors, Berg & Pink, 2016), online discussion platforms (Chen & Neo, 2019), digital mapping (Martin & Schuurman, 2020; Muenchow, Schäfer & Krüger, 2019), live streaming apps, and much else may be worth experimenting with to support research at a distance or with the increasingly isolated and marginalised during the pandemic.

There is also basic guidance on surveys (Passmore, Dobbie, Parchman & Tysinger, 2002), questionnaires (Brace, 2018), interviews (Bradburn, Sudman & Wansink, 2004) and focus groups (Edmunds, 1999; Kamberelis & Dimitriadis, 2013). These would help COVID researchers in the field

gain a basic competence with mainstream methods and also to critique the large volume of survey data emerging.

A third dimension is that of cultural difference and distance and how these must be factored into research design, into data gathering and analysis, obviously when working with the marginal or disadvantaged cultures being discussed here but in the light of the constraints and pressures of COVID-19. We are talking about the cultural distance and difference between the societies where methods are developed and the societies where they are to be deployed. This is the subject of cultural dimensions and the work of Hofstede (2003) is the archetype for calibrated dimensions for societies around the world – there are alternatives, refinements and critiques. We should, however, treat any nation-level calibrations with caution since many marginal communities are quite different from the national norms.

Each indigenous – or otherwise marginalised – community is embedded within unique social and cultural circumstances, which can be characterised for example by “environmental differences, historic differences, community/cultural/traditional differences, cultural practices, linguistics, and world views” (Traxler et al, 2020, p. 9). This presents a direct challenge to the transplantation and implementation of one-size-fits-all strategies from elsewhere, either political or research-oriented. The circumstances of refugees or those in similar crisis situations in particular are highly diverse and the interventions, and any research on these peoples and solutions, should be equally diverse.

We also argue here for a recognition that specific circumstances and contexts create unique issues, for example of digital access and equity (see, e.g., Humphry, 2014), and any imposed policy framework or practical solution needs to be responsive to the diversity and uniqueness of local contexts (Park, Freeman & Middleton, 2019), specifically involving the community these seek to support. “The issue of context is most important for learners or communities with characteristics that differ most from national, established or mainstream norms” (Traxler et al, 2020, p. 22).

So, with these shortcomings in mind, we turn to the following examples of alternatives drawn from diverse disciplines that may complement adaptations to more conventional techniques.

## **Online Research**

This is well established and our purpose here is merely to consider online equivalents to the established techniques, the ‘usual suspects’. These are the survey, interview, focus group and questionnaire but the media might be web, email, SMS or social media. Permutations of all these have been tried and documented. An obvious benefit is eliminating the need for transcription as participants enter the data themselves and it is saved by the application. Another is that many of these websites provide rudimentary (and sometimes powerful) analyses of the responses, which can be used wholesale or, at the least, exported for further analysis. These methods do, however, depend on participants having a specific digital literacy and having access to the Internet. In many respects online research is a category of research focused on, mainly, conventional methods deployed across some digital medium but reconsidered from the perspective of the barriers it might surmount. SMS might seem rudimentary but it scales incredibly effectively, and bulk messaging is disproportionately cheap (or often free to projects as a donation from an MNO, Mobile Network Operator). The MNO’s ‘value added services’ providers can provide functionality to run big short surveys retrieving both qualitative and quantitative data that can be easily exported for computer-based analysis. And, as we

explain shortly, rudimentary is both better than nothing, and easier to do during COVID-straitened times.

## **The Mobilities Turn**

Mobilities (as described, for example, in Urry, 2012) encompasses both the large-scale movements of people, objects, capital, and information across the world, as well as more local processes of daily transportation, movement through public space, and the travel of material things within everyday life. Developments in transportation and communications infrastructures, along with new social and cultural practices of mobility have elicited new research initiatives for understanding the connections between these diverse mobilities. The mobilities turn draws on “work from anthropology, cultural studies, geography, migration studies, science and technology studies, tourism and transport studies, and sociology and enables the ‘social world’ to be theorised as a wide array of economic, social and political practices, infrastructures and ideologies that all involve, entail or curtail various kinds of movement of people, or ideas, or information or objects. This turn brings to the fore theories, methods and exemplars of research that so far have been mostly out of sight” (Sheller & Urry, 2016). ‘Mobilities’ is about establishing a ‘movement-driven’ social science in which movement, potential movement and blocked movement, as well as voluntary/temporary immobility’s, practices of dwelling and ‘nomadic’ place-making are all conceptualised as constitutive of economic, social and political relations” (Sheller, 2014). This world view characterised by mobility is not fundamentally challenged by the restrictions imposed as a consequence of COVID-19; mobility is merely reconfigured and the tetherings transformed, so corporeal mobility has become virtual mobility at one level whilst more observably public transport has given way to private transport and people moving through spaces in different ways.

The mobilities literature already documents how various nomadic, rural and marginalised communities and individuals produce and consume knowledge and make meaning, and it documents the techniques and methods to explore these activities (Büscher & Urry, 2009; Hein, Evans & Jones, 2008). An underlying methodological message to researchers might be, ‘stay in-world’. If communities live by walking or driving, then conduct research walking or driving. In the current context, however, the research methods of the mobilities turn could help understand the transmission of COVID-19 by various different communities as they travel, commute, migrate and work. To date these have included diaspora (Blunt, 2007), counter diaspora (King & Christou, 2011), cycling (Spinney, 2009), walking (Myers, 2011), railway travel (Löfgren, 2008), cargo (Birtchnell & Urry, 2015), migrants (Faist, 2013), urban homeless (Smith & Hall, 2016), migrant academics (Morley et al, 2018), farmers (Morris, 2004), tropical villagers (Price & Price, 2017) and lifestyles (Cohen, Duncan & Thulemark, 2015). These, and other papers and projects, offer methodological insights.

To be more specific, tourist mobilities were a key vector in the spread of the pandemic (see, for example, Iaquinto, 2020). With the huge societal and individual impositions and lockdowns enforced by governments around the world, big data sets have helped researchers understand the impacts humans have had on their environments (an example here is Ritchie, 2020). A question for us would be how we could replicate such useful data from communities at the margins. One answer that may be specifically useful in the straitened times and impositions of COVID-19 is that of Birtchnell, Savitzky & Urry (2015): tracking a series of individual elements of cargo (for which we could insert any other item under study, such as people) and extrapolating outwards via an analysis of the systems

and environments within which they operate and a theorisation of how these play out in the wider spheres of politics and economics. Where access to data is scarce – and even more scarce at the moment – perhaps this is a way research and policymaking could continue to operate.

Gatsha (2010), for example, noted how a mixed methodology was most appropriate for collecting valid data from remote distance learners in Botswana, in order that each would complement and overcome weaknesses in any of the others. Mukharya (2020) describes some of the difficulties in collecting data during COVID-19, detailing with evident regret the need to cut back on the numbers of fieldworkers employed, even in a 'lean model' of cost optimisation, and the concomitant need to rely on methods that are self-confessedly less effective at connecting with the most hardest to reach in India: adolescents, pregnant women and rural villagers. Although in-depth telephone conversations and online methods are inappropriate in areas without the finances or infrastructure to support these, and where social conventions make it harder to reach anyone except the male heads of households, she notes that the use of big data, feedback surveys and simple opinion polls will continue to enable "governments and corporate bodies to... gain key data insights from those at the bottom of the pyramid for partners across the world".

## **PCT**

Personal Construct Theory suggests that people develop personal constructs, essentially their own theories, about how the world works, frameworks for structuring their experiences however mundane. People use these constructs to make sense of their observations and experiences and give order to them. The world we live in may be the same for all of us but the way we experience it will always differ (Kelly, 1970; Horley, 2012). These personal constructs have potential commonalities within cultures and potential differences between cultures (Greyling & Waitai, 2016).

The significance of the underlying axiom is that the PCT community has developed research tools and techniques that try as much as possible to elicit ideas and information based on the individual's understanding of their world rather than questions that are derived from the questioner's conception of it, or indeed from the questioner's culture, based around the tacit norms and expectations of the questioner's culture itself. These tools and techniques, sometimes called 'constrained', have been widely used in market research, product design and web-site development (and other professional and academic disciplines) because they are easy and robust to administer and analyse, with no sophisticated capacity prerequisites or significant technical or infrastructural overheads. They can be used across language barriers and literacy barriers. The classic example is the rep grid (Schweinsberg, Darcy & Wearing, 2018.) (used for ecotourism) but for our work we intend to explore card-sorts, laddering (Rugg & McGeorge, 2005; Miles & Rowe, 2004) and Q-methodology (Hunter, 2014); early relevant work has already been done (Butler, 2004; Bicksler et al, 2012).

Our first recommendations would however be card-sorts and laddering, perhaps as preludes to identifying topics for interviewing or surveying or perhaps exploring the understanding or values that might explain survey or questionnaire responses. These would be valuable in uncovering the latent or tacit attitudes to face masks or hand washing in COVID-19. Card-sorts are a simple, often pictorial, technique that involves individual participants repeatedly sorting a handful of cards and the subsequent analysis reveals underlying mental constructs; laddering, a simple iterative question-and-

answer technique, then homes in on the participants' individual value system; these could then be compared across a community for similarity (Rugg & McGeorge, 2005).

## **Soft Systems Methods**

We feel that the rich pictures of Soft Systems methods have considerable potential for adaptation. As Checkland and Poulter (2010) noted, "Soft systems methodology (SSM) is an approach for tackling problematical, messy situations of all kinds. It is an action-oriented process of inquiry into problematic situations in which users learn their way from finding out about the situation, to taking action to improve it." (p. 191)

They are visual, non-technical and informal. "The starting point for Soft Systems is the rich picture. A group is provided with a blank sheet of 'flip chart' paper and a set of coloured felt-tip pens, ideally of different colour. What goes into the picture, the form of diagrams, the linkages and colours are entirely up to the group. In effect it provides a tangible (albeit two-dimensional in physical terms) space for the group to discuss, negotiate, share, and hopefully to arrive at a consensus" (Bell & Morse, 2013, p. 331). This has, we feel, exciting potential in research work across cultures because, "the rich picture used in the Soft System Methodology, offers a way of global communication that far exceeds the limitations of text and speech. Simple graphics can be rapidly communicated, processed and transmitted within a large and culturally diverse constituency" (Berg & Pooley, 2013, p. 361). Practical 'how-to' guidance is available (Walker, Steinfort & Maqsood, 2014), derived from use in the field. These simple pictorial techniques may help community members represent the interests, factions and transactions in their communities and have been value in surfacing different perspectives on contentious issues. They might, for example, help expose frictions between women and men in a community, or between subsistence farmers, cash crop farmers and eco-tourism activists especially in their differing attitudes to lockdown, school closure and reduced public transport during COVID-19.

A similar technique, albeit not derived from SSM, used mainly so far with children in the Global North is the "Write, draw, show, and tell" (WDST) method (see, e.g., Noonan et al, 2016), which allows participants to engage with researchers and each other and the paper in a variety of ways, including drawing, writing or telling stories orally, or any combination thereof, which may lead to greater engagement and veracity, and perhaps deeper understanding for the research team. We see clear potential for this to be moved online during the pandemic, especially supported by video-calling technologies such as Webex, Zoom or MS Teams, in order to keep researchers and participants socially distant and safe.

Likewise, Mannay, Lomax and Fink (2015) drew together several perspectives on using visual images with remote cultures as, with several caveats, they are seen as having the potential to "evoke emphatic understanding of the ways in which other people experience their worlds" (2015, p. 1). Drawing on different studies using sandboxing, collaging and film making in participatory research, they discuss some of the advantages to data collection employing these methods whilst acknowledging the power relations inherent in the processes of design, production and dissemination. Whilst these might seem less feasible during a time when people are even more isolated than usual, perhaps there is scope for research into these methodologies as online tools. Lupton's (2020) list of appropriate tools for research in a time of COVID-19 has these ideas and more, as we noted earlier.



## **Delphi**

One technique that is extensively used in accessing opinions and views of domain experts (rather than data from research participants) is the Delphi technique (Brady, 2015; Fish & Busby, 2005; Hasson, Keeney & McKenna, 2003; Okoli & Pawlowski, 2004; Rowe, Wright & Bolger, 1991; Skulmoski, Hartman & Krahn, 2007). As the literature shows, there is considerable experience of online versions and it might be suitable to adaptation for diverse cultures and communities, around some local 'expertise', especially as complementary to adaptations of other techniques. Delphi can also be combined with card sorts (Paul, 2008). Delphi sessions would be valuable for building the census amongst experts for local or national decision-making during COVID-19.

## **HCI4D**

This branch of Human-Computer Interaction (Preece, et al, 1994) specifically addresses the problems and challenges of using digital technology amongst communities and individuals outside the digitally sophisticated Global North. This discipline has not focused much on education. HCI has focused on formal e-learning (Dix, Roselli & Sutinen, 2008) and conventional "mobile learning" (Kumar & Mohite, 2018) and principally in the Global North. HCI4D has developed a range of tools and techniques and devoted some attention to the formats for participative development and co-design. These would be useful for developing apps, perhaps games-based mobile apps, for changing behaviour, for example social distancing at a community level during COVID-19, and implicitly developing a more critical stance on external apps.

One specific topic in HCI4D is 'indigenous knowledge' — although its significance is wider than the name suggests and could be read as 'informal community knowledge'. This is important because there is a distinct literature about research methods for eliciting it and any health education around COVID-19 must align with it, must have practices and explanations that make sense within the framework of a community's indigenous knowledge.

There is already work that supports our concerns.

The digital divide (see, e.g., Beale et al, 2009) has been much discussed in the literature. What is of immediate concern to us when discussing context is that the ubiquity of mobile technologies and widespread connectivity can actually increase gaps in inequality (Rasmussen & Ihlen, 2017; Billon, Crespo, & Lera-López, 2017) rather than the reverse. Fuchs and Horak (2008) made the case that simple transplanting of technology into marginalised contexts does not magically improve conditions nor encourage sustainable responses. Constant advances in technological evolution mean that the disadvantaged remain at least one step behind, so technological infrastructure transferred from elsewhere in one form itself not only reproduces inequality (DiMaggio et al, 2004) but imposes new forms of it on people — not just in terms of personally-owned hardware, as Unwin (2020) notes, but geographically, too, as urban environments tend to have better connections than rural ones, and the wealthy will always get and use both hardware and network access first and more easily.

Chetty & Grinter (2007a), describe further methodological challenges of working amongst these communities, highlighting some of the key differences between HCI in the developed world on the one hand, and in the Globalised South on the other. They believe that "recognising and working with these differences is essential for building useable and useful systems" in these regions (2007, p. 2332). As Chelsky & Kelly (2020) note, excluded communities — which in some areas and societies includes

women — almost by definition have less access to technology. This skews data and biases outcomes, and this may be exacerbated during COVID-19.

Whilst discussing women, there is distressing evidence that violence against women and girls (VAWG) increases during times such as Ebola and now COVID-19, with factors such as confinement, health and financial stress, and isolation all increasing the risks. UN Women and the WHO (2020,) note that data collection is still vital for understanding the risks and the results of VAWG, and for supporting evidence-based policy responses but that it needs to follow some specific rules since digital privacy and confidentiality will be much harder to maintain in close quarters during quarantine or self-isolation with perpetrators of VAWG. They conclude that data collection should not take place if there are perceived to be any risks, and that the safety of female participants has to be paramount in all data collection, digital or otherwise (UN Women, 2020; see also Namy & Dartnall, 2020).

Merritt & Bardzell (2011) further challenge technology designers and researchers to “face assumptions, cultural communication, and the potential repercussions in cross-cultural design” (p. 1675), as decolonising the language used will enable them to create “responsible, successful designs and create awareness of inadvertent Western language culture embedded in HCI4D design” (p. 1675) Wyche et al (2012) discuss the design of systems and technologies that are specifically aimed at people on the margins, and in emerging and developing economies, noting that, whilst good and proper, this is both insufficient in itself for overcoming problems such as illiteracy and poverty leading, and leading researchers “away from the various ways technology innovation is already happening in developing countries and from understanding how marginalised users appropriate technologies to solve local problems” (p. 28). Chelsky and Kelly state that, for research during COVID-19, whilst technology-enabled tools are excellent at asset verification, they are less useful in other domains, concurring that messages “need to be culturally and linguistically appropriate” (Chelsky & Kelly, 2020).

We have already noted the ubiquity and facility of mobile digital technology, and there is work underway to support illiterate and low-literate users in accessing these technologies (Belay, McCrickard & Besufekad, 2016). On a study monitoring the Ebola crisis, which we see as extremely valid for the COVID-19 pandemic, Etang & Himelein (2016) showed that the “proliferation of mobile phones enables the collection of high-quality data on an almost real-time basis” (p. 15). They concluded that mobile phone interviews are “valuable tools for crisis monitoring” and suggest that “the proactive creation of sampling frames of respondent characteristics and re-contact information would allow for a rapid response to unforeseen crises” (p. 15) such as the present COVID-19 situation.

Soares & Giesteira (2015) write of the need for the systematisation of guidelines as “intrinsic for the development of usable and intuitive solutions for developing countries and the aggregation of guidelines help researchers to design solutions faster and in a more efficient manner” (p. 1125). They note that, importantly, “the work derives from partnerships with institutions located in developing countries” and “equally as important as the documentation of guidelines is the generation of new ones, because culture is constantly changing and the guidelines must adapt to these changes” (p. 1125).

Irani (2010) goes further, showing that HCI methods are not culturally universal. She states that “design methods and models of human-computer interaction have been grounded in concepts like interface, efficiency, and psychology – concepts foreign to many of those they engage with. Persuasion, evidence, and intervention vary widely globally” (p. 2939). Researchers need to ensure that they create “innovative solutions...to monitor environmental, social and conflict-related risks” (Chelsky & Kelly, 2020) whilst researching during COVID-19, and to remain culturally and linguistically sensitive. We return to this point later.

Moreover, and pertinent to the point we are making here, the changes that COVID-19 has wrought and the methodological approaches we should consider adopting, and all of these observations, are borne out of practical researches in the field: in rural South Africa where the nearest HCI experts were 100 miles away (Chetty & Grinter, 2007b); in fieldwork with design practitioners in Delhi, India (Irani, 2010); and Belay, McCrickard & Besufekad (2016) pulled together disparate field researchers to discuss working with low-literate participants.

Wyche et al (2012) discuss a number of key innovations developed with and by users from these emerging communities, such as the development of a mobile phone application for microfinance institutions in rural India (Parikh et al, 2006) and an evaluation of an interactive voice application that helps Indian farmers find relevant agriculture information (Patel et al, 2010). Another key such development is that of *MPesa*, the mobile-based money transfer system developed in Kenya and empowering changes in, for example, Bureti Sub County (Gikunda, Abura & Njeru, 2014); women in the fishing industry on Lake Victoria (White, 2012); east Africa breweries distributors in Nairobi (Thuo, 2014); and micro entrepreneurs in Laikipia East Sub County (Mwangi et al, 2015). Working with locals – in every context – and including the most marginalised in that work may prove to be the most powerful methodology of all for generating truly accurate pictures of the situations under study, be that Ethiopian adolescents under COVID-19 (Jones et al, 2020) or a much wider study of young lives (Tilford, 2020). As the world continues to combat COVID-19 and its impacts, it is people like this – on the ground and able to work in their authentic situations – who can not only provide insight but may generate solutions.

So, to conclude, there is potentially much of potential value to digital learning design, research and use in these diverse, marginalised and sometimes overlooked communities. It is also the case that the research may not be perfect – but it might be good enough. Rana et al (2020), discussing flood resilience in Nepal during COVID-19, make the point that, in an ideal world, they would have liked to do things differently but “this is not an ideal world, we cannot meet in person and the urgent need for this information for governments and communities to take action, the time constraints for community members, and technological barriers meant we had to adapt and make the most of the solutions available to us” (online). Whilst remaining ethically sound, data collection may have to be done however it can be for policymakers to get early access to the facts they need.

#### **ICT4D and m4d**

This community embraces researchers, developers and activists and embraces hard digital technology, information systems sciences, development studies, and human geography (Unwin & Unwin, 2009;

Kleine & Unwin, 2009; Heeks, 2017). Mobiles-for-development, m4d, is a younger sibling (Donner, 2010).

Like many of the other disciplines here, it hardly embraces learning, seeing it as stuff that must be stored in digital repositories and travel through digital pipes. It is ostensibly culture-neutral in spite of so-called 'localisation' and does in reality favour specific, rather obvious, languages, countries, cultures, pedagogies and values (Traxler, 2017). Nor does it embrace education, except in responding to donors', agencies' and ministries' calls for digital support with 'system strengthening', meaning technologies to enable more robust and efficient administration of existing school systems. It has understandably attracted critical attention (Pieterse, 2010).

Of particular relevance and importance is the call for an ICT4D 2.0 (Heeks, 2008), replacing what might be called the ICT4D 1.0 of top-down, centre-out development, by analogy with the hierarchic Web 1.0, with a focus on empowerment, collaboration and participation, on the flat peer-to-peer producer/consumers of Web 2.0, of working not *for* the poor but *with, alongside* and *amongst* the poor (Heeks' word and although he is referring to the poor of the Global South we can appropriate it to embrace those of the North, too, the refugees, the homeless for example). These communities and this specific idea of ICT4D 2.0 add another richness to our quest for tools, techniques and the values that might underpin them.

Part of a case we are making for renewed interdisciplinarity is the relative ignorance of some research communities of the most imaginative and exciting research methods in others. This certainly seems true when we look at how education in general and digital learning in particular are understood within those research communities looking at digital technologies in international development. An examination of the outputs and proceedings of the ICT4D and m4d conferences bear this out and in Africa those of the IST-Africa series make a similar point in an African context. This may in part be a reflection on the priorities of the agencies and funders. These seem to focus on initial formal education systems, and on concerns to make these systems function more effectively and efficiently; they focus on scale, sustainability and cost-effectiveness, avoiding the risk of innovating within largely conservative and under-trained post-colonial education management teams and Ministries.

## **Digital Learning**

If we look at the focus and concerns of the digital learning research community, for example ALT\_C, the annual conference of the UK Association for Learning Technology<sup>i</sup>, ISTE, the comparable body in the USA (see a recent blog<sup>ii</sup>) and the STELLAR *Alpine Rendezvous* [7] community at the cutting edge of research in TEL (Technology Enhanced Learning) across Western Europe, we can also see clear trends, topics and positions. Notwithstanding the obvious national and regional focus and responsibility, and the diversity across these examples, it would still be fair but understandable to discern a pre-occupation with Western formal education, its institutions, its professionals and its ethos, with technological sophistication and with an implicit consensus in how the Western mainstream sees learning, training, schooling and studying. Even their own minority communities and languages, for example digital learning for Native Americans, Welsh-language speakers, Sami or the Roma, seldom feature. These are different from their 'host' national cultures and likely to suffer different or greater threats from COVID-19. Our aspiration is that the research tools and techniques identified here can be adapted and adopted to explore the learning needs of marginalised people and communities in order

to develop and deliver learning appropriate to their experiences and expectations of their culture. The potential pedagogies themselves come mostly with a Western European cultural baggage and this in turn must be addressed before these pedagogies can be exploited, in the current context, to address the change learning needs and affordances during and after COVID-19. (Traxler, 2019)

## **Decolonisation**

We recognise that there is already a strong and articulate movement for the decolonisation of research (Prior, 2007; Desai & Potter, 2006; Simonds & Christopher, 2013; Sumner, 2006) offering both positions and methods (Lambert, 2014), whilst critiquing current practices and institutions (Heleta, 2016). These come from different disciplines, not usually from digital learning – some come from ICT4D (Bidwell & Winschiers-Theophilus, 2015) and from pedagogy (Langdon, 2013). We must not only identify, evaluate, apply and refine these but also analyse their wider relevance across the disadvantaged communities affected by COVID-19. Recent work has addressed ‘decolonising the interview research’ in life-story interviews (following Vannini & Gladue, 2008).

A key lesson from West Africa is that responders’ unfamiliarity with a local culture can undermine pandemic response. “Foreigners working for the UN, the Red Cross and other international organizations were not necessarily the most effective communicators on Ebola” (UN, 2020). As Chelsky & Kelly (2020) note, this is because “when people’s lives are threatened, they want to hear from those closest to them – those who speak their language”. They further assert, quite rightly, that in order to help people and projects to adjust to the new COVID-19 realities, “both tech-enabled and human data collection and evaluation efforts need to be culturally and linguistically sensitive” (Chelsky & Kelly, 2020).

## **Research Ethics Reconsidered**

Research tools and techniques cannot be separated from the research ethics that govern how they are deployed but ethics are an intrinsic characteristic of culture; put simply, whilst researchers might strive to ‘do no harm’, the nature of ‘harm’ varies widely across cultures (Traxler, 2012; Traxler, 2013). A more critical stance might also ask, ‘Whose interests are being served?’ There are already discussions around research ethics (Coram, 2011) – and recent work on decolonising research ethics (Kruger, Ndebele, & Horn, 2014) – and on research project governance (Bozalek, 2011; Binns, 2006) that we see as integral parts of a coherent and principled foundation to decolonised research. So, for example Brun & Lund (2010) critically explore “the language of ‘participation’ and ‘empowerment’ to create an impression of including all stakeholders in their work.”(p. 813)

There is an increasingly strident call for local voices to be heard in policy decisions – for governments to do ‘with them’ and not ‘to them’. This can be seen in the literature on, amongst many others, marginalised communities in India (Malhotra et al, 2017); indigenous peoples in Australia (Robinson et al, 2016); refugees in Syria (von Bayeur, 2018); and on rural Kenya (Njagi, 2015). All of these recognise that locality and culture are crucial (Traxler et al, 2020), and we reiterate this need for local contextual dynamics to be considered in any decision-making processes. The learning needed to fight COVID-19 must be rooted in local epistemologies and knowledge systems but also owned, managed and controlled in a meaningful sense by the learners involved. This, it could be argued, is a moral imperative but is actually more sustainable and effective.

## Conclusions

Many of these ideas are both generic and speculative. They are generic in that they are not specific to a culture or community. Our core axiom that 'one size does *not* fit all' means that each idea must be adapted to each new culture and community. This is of course a methodological paradox since the tools and techniques are intended to increase and improve the understanding of people and communities but the development of such tools and techniques needs exactly that understanding. They are however speculative, certainly not definitive, and represent the starting point for necessarily iterative and incremental development. The missing ingredient that powers the resolution of this paradox must be the people involved and the processes between them that build trust, patience and understanding. Some of the barriers are merely physical or objective whilst others allow for intermediaries, increments and iterations and so the process will evolve. COVID-19 is helping to unlock the resources and motivation in this process. We hope that researchers will be emboldened and empowered to experiment with some of the methods discussed here, and that they will take to heart the key messages that even imperfect research is better than no research, and that continuing to research at the margins will help these communities and policymakers to make informed decisions.

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<sup>i</sup> [https://www.alt.ac.uk/events/past\\_events](https://www.alt.ac.uk/events/past_events)

<sup>ii</sup> <https://blog.edgenuity.com/iste-2018-conference/>