Chapter 12
Digital Inclusion Interventions for Digital Skills Education: Evaluating the Outcomes in Semi-Urban Communities in South Africa

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Introduction

Grappling with the challenges inherent in being the most economically unequal country in the world, the South African government has underlined that 'all South Africans must benefit from the ability of the information and communications technology (ICT) sector to facilitate social development and improve the quality of life for individuals and communities' (Research ICT Africa 2020, p. 11). The magnitude of this vision is reflected in some of the socio-economic and technological realities of the country. South Africa is typically characterised as a middle-income country with a dual economy. Close to 57% of the 60.1 million population live below the country's poverty line, while the unemployment rate is at a staggering 34.4%—measured at the height of the global pandemic (World Bank 2021).

Despite the dominant view and aspiration to capitalise on the affordances of the transformative technologies of the Fourth Industrial Revolution (4IR) as building blocks of a progressive and prosperous society, unsettling inequalities prevail within the national ICT landscape. The most recent Network Readiness Index positions South Africa at number 70 of 130 participating countries (Dutta and Lanvin 2021). Highly advanced technology infrastructure is typically concentrated around the bigger cities and metropolitan areas, with limited access to it in rural and/or remote areas of the country (Statistics South Africa [StatsSA] 2022). The digital divide is a

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stark reality in South Africa. Only 53% of the population had access to the Internet in 2017 (Gillwald et al. 2018),[1] with most gaining access through a mobile device (StatsSA 2022).

Various interventions have been implemented to address the country's persistent and widening digital divide. Of note are community organisations that have integrated digital inclusion offerings as part of their services. These organisations have been established through independent efforts, as well as configurations of collaboration between government, education, business and civil society and geared towards reaching the most vulnerable, under-resourced and digitally excluded communities.

Although not restricted to an economic focus, a primary objective of these organisations has been capacitating citizens to become more employable, entrepreneurial, expanding their skills and educational qualifications to improve their quality of life (Misuraca et al. 2014). These types of intermediaries[2] are identified in South Africa's national ICT policy and 4IR agenda as drivers of ICT awareness, access and digital skills development, particularly in under-resourced communities (URC) (Department of Communications and Digital Technologies [DCDT] 2020).

The skilling and training interventions of these organisations typically include digital skills training and alternative (formal and informal) learning options for people unable to afford traditional education institutions (Booi et al. 2019). They are often the sole gateway to these technologies and learning opportunities for many in these communities (Alao et al. 2017; Uys and Pather 2016). Focus is also on efforts to realise both feasible and effective approaches and methods to accelerate skills delivery for the South African context—specifically in reaching the most vulnerable and digitally excluded in society.

Despite the critical role of these organisations, there is limited evidence of the outcomes and influence of these (intermediaries') digital skills interventions in the lives of the intended beneficiaries (Avgerou 2010; Uys and Pather 2016, 2020). Traditionally, evaluation processes have been limited largely to outputs capturing the number of people who attended and/or completed training. While important, such output evidence is essentially an indication of 'volume rather than effectiveness' (Just Economics 2017). Surely this is insufficient to determine salient outcomes and effects over the longer term, as the foremost objective of digital skills interventions is the achievement of a meaningful influence on the lives of beneficiaries.

A necessary step is gaining evidence-based insight into the salient factors that contribute towards beneficial outcomes of digital skills interventions. In the absence of such informed understanding, we risk continuing to implement an unreflective or blanket approach to digital skills delivery, without sufficient contextualisation and consideration of the short-term and long-term benefits at the individual and community level.

[1] Limited information is available regarding Internet access at the individual level. National surveys typically focus on Internet access at the household level.

[2] In this chapter, the terms 'intermediary' and organisation are used interchangeably in reference to community organisations that are involved in digital inclusion interventions.

This chapter presents the findings of a quantitative survey study that sought to contribute to the practice of assessing the outcomes of digital skills training interventions. It provides insight into meaningful benefits derived from digital (mobile) literacy courses; salient factors contributing to such outcomes; and the application of methodological approaches and processes to evaluate the outcome of digital skills interventions in URC.

The remainder of this chapter: (a) provides a brief background and context to the subject of digital divides and evaluation of digital inclusion interventions; (b) discusses the building blocks of monitoring and evaluation (underpinning the research methodology); (c) explains the research methodology; (d) describes key research findings and (e) contextualises these findings in an integrated discussion and conclusion.

Literature Review

The Digital Divide: From Access to Outcomes

The digital divide, traditionally perceived as an issue of access, has been reframed to include focus on digital literacy (skills and competencies), usage and outcomes (Van Deursen and Van Dijk 2019; Helsper 2021). Three overarching digital divide levels are identified in the literature. The first-level divide is centred on the challenge of access. This goes beyond physical access to encompass quality, affordability, ubiquity and autonomy (freedom) aspects of ICT use (Van Deursen and Van Dijk 2019; Helsper 2021). The second-level divide relates to digital literacy and skills. This encompasses essential competencies that present-day citizens need to participate in a digital economy (Radovanović et al. 2020) and includes aspects of learning, problem-solving, critical thinking, creativity and self-regulation (Njenga 2018). In the current digital climate, digital literacy plays a crucial empowering and enabling role. On a practical level, what constitutes digital literacy is continuously evolving to adapt to changing requirements necessitated by rapid technological changes (Radovanović et al. 2020).

The third-level divide relates to improved livelihoods, benefits and outcomes, with current discourse asserting that inequalities (divides) in digital opportunities (access, skills and usage) contribute to inequalities in outcomes (Van Deursen and Van Dijk 2019; Helsper 2021). In essence, in a digital society, more advantaged citizens are systematically more likely to benefit, while those more disadvantaged are systematically less likely. Shifting focus from the first-level divide to include the second- and third-level divides enables us to understand the nuances of outcomes and how the affordances of ICT can become a reality.

It has become increasingly more important to determine and understand the outcome and impact of digital inclusion interventions (May and Barrantes 2015; Uys and Pather 2020). Common outcome themes include economic, social, cultural and

personal well-being benefits (Helsper 2021). Several frameworks, models and theories exist that can generally be used to evaluate ICT for development interventions (Heeks and Molla 2009). For example, Sen's (1999) Capability Approach and Kleine's (2010) Choice Framework have dominated ICT for development literature. Focusing specifically on the evaluation of community digital skills training inventions, monitoring and evaluation (M&E) processes can also facilitate a holistic evaluation of the training intervention (International Telecommunication Union [ITU] et al. 2020)—which includes investigation of outcomes as well as the pathways through which beneficial outcomes are realised (Just Economics 2017).

Prominent examples of M&E frameworks used to evaluate outcomes and/or impact of digital inclusion interventions include the 'MIREIA e-Inclusion Intermediaries Impact Assessment Framework (MIREIA eI2-IAF)', designed with specific regard to interventions focusing on the use of ICT to enhance the employability of groups at risk of exclusion (Misuraca et al. 2014); and the United Kingdom's 'Digital Inclusion Evaluation Toolkit' (Just Economics 2017), designed to understand and share the results of the effectiveness and ability of digital inclusion interventions to meet local needs relating to significant economic, social and health benefits.

Monitoring and Evaluation: Theoretical Basis

Monitoring and evaluation assist in (i) defining and understanding intervention objectives; (ii) conceptualising the relationships between objectives; (iii) defining the underpinning activities required to achieve the stated objectives and (iv) describing the anticipated outcomes (World Health Organisation [WHO] 2016). The process is supported by an underlying framework which commonly includes the Theory of Change (ToC)—a comprehensive description of how and why the intervention is expected to achieve the intended objectives (Department of Planning Monitoring Evaluation [DPME] 2021)—and results chain and logical models which can be used to visually illustrate causal links of the ToC.

Key conceptual building blocks of the framework include *inputs*—context and resources required to undertake the intervention; *activities*—actions taken to deliver the intervention; *outputs*—direct results of activities; *outcomes*—expected (and unexpected) changes that are anticipated to occur because of the activities of the intervention; and *impact*—related to the long-term broad effects of the intervention for the target participants, the economy and society. Figure 12.1 presents these building blocks as reflected in a results chain.

Measurement indicators need to be adjusted to and aligned with the nature and scope of the digital skills intervention. They guide the identification of relevant contextual attributes (inputs and activities) and measure output, outcomes and impact (Just Economics 2017).

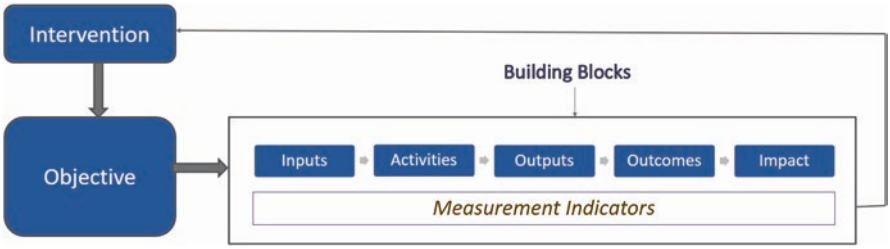

Fig. 12.1 Results chain model

Methodology of the Empirical Study

The following section presents the nature of the digital training intervention and the research approach.

Describing the Digital Training Intervention

Given the significant percentage of the population who rely predominantly on their mobile devices to harness the affordances of ICT for life and work, a Mobile Literacy course was developed to provide support to these citizens.[3] The course was structured to focus on digital (mobile) literacy competencies as defined in the Digital Skills Framework One (DSFOne), a digital skills competency framework tailored to the South African context (Claassen 2021).[4] The Mobile Literacy programme was developed to enable participants to master the digital literacy competencies, namely handling of information, communication and collaboration, safety and security, problem-solving and transacting. The 6–8 h course is designed for face-to-face or blended learning approaches and consists of a student guide, video clips to demonstrate learning activities (in three local languages) and presenter notes. After course refinement through pilot implementations and the upskilling of trainers, the course was implemented in 2020 through four community-based organisations in different peri-urban and rural environments in the Western Cape province of South Africa.

The clearly defined starting timeline, complexity of the training context (due to the Coronavirus disease [COVID-19]) and, therefore, the heightened urgency to ensure a beneficial outcome positioned the mobile skills intervention as an ideal scenario for assessing the outcome of skills interventions in URC.

[3] The course was developed by the CoLab for e-Inclusion and Social Innovation based at the University of the Western Cape and funded by the Department of Communications and Digital Technologies, through the National Electronic Media Institute of South Africa.

[4] See https://www.wcapecolab.org/dsf1

Developing a Results Chain

A results chain consisting of *input*, *activities*, *output*, *outcome* and *impact* building blocks and indicators specifically aligned to the objectives of the Mobile Literacy training intervention was developed to assess the outcomes of the intervention. Core principles of ToC and results chains aimed at evaluating digital inclusion interventions were used as a guide in the design of the Mobile Literacy training intervention results chain, which is outlined in Fig. 12.2.

For this study, *input* refers to the context and resources of the intermediary, the identification and recruitment of appropriate participants, the course content, and the skills levels of facilitators. Given the findings of a previous study in terms of the role of intermediaries in facilitating digital inclusion (Katunga 2019), it was deemed necessary to expand the input dimension to also include contextual information on intermediaries and their environments. *Activities* focus on the training delivery and support activities, while the number of attendants, successful completion and/or performance level typically relate to the *output* dimension. The *outcome* dimension refers to the short-term and mid- to longer-term outcomes or benefits of the programme as experienced by beneficiaries. Although the *impact* dimension forms part of the results chain, this study did not include impact as part of the Mobile Literacy evaluation process. The focus was on outcome benefits.

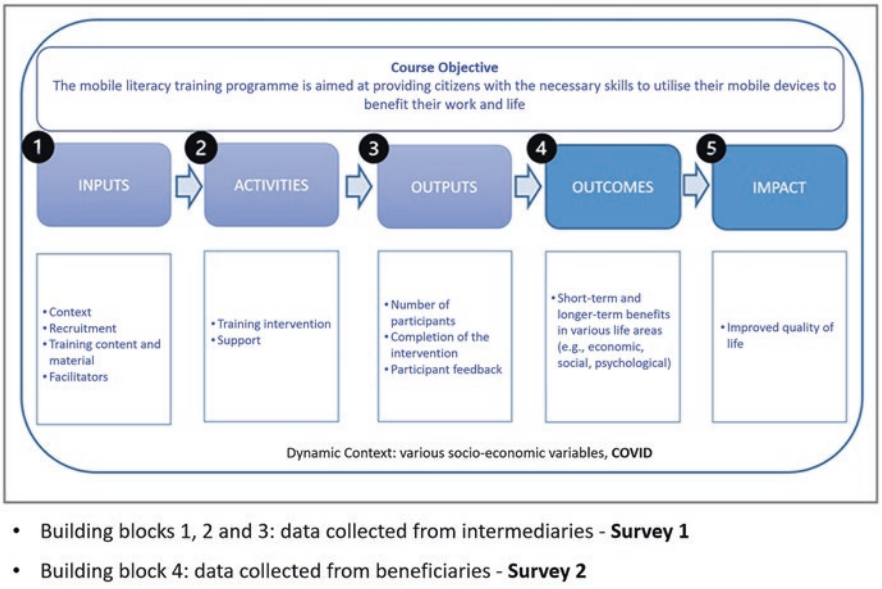

Fig. 12.2 Mobile Literacy training intervention results chain

Survey Instrument Development

To obtain the necessary information outlined in the results chain, a quantitative research approach was followed, applying survey methodology (Creswell and Creswell 2018). As the Mobile Literacy results chain (Fig. 12.2) includes the perspectives on two different units of analysis (training provider and beneficiaries), two separate surveys were constructed and implemented between November 2021 and February 2022 to engage with the respective groups.

Survey 1: Focus on intermediaries

The quick-scan methodology (Van Audenhove et al. 2016) was applied to obtain contextual information about the four training providers, focusing on the first three blocks of the results chain (input, activities, outputs). This methodology typically utilises a collection of structured questions (open and closed) to obtain an impression of areas and/or organisations where variance is suspected. The survey focused on gaining information on the available infrastructure where training interventions were conducted, the nature and scope of services, target audiences, training pedagogy and throughput.

Survey 2: Focus on beneficiaries

A survey consisting of open-ended and closed-ended questions was constructed to capture beneficiaries' experiences of the Mobile Literacy course and perceived benefits or outcomes of the course (building block 4 of the results chain). As such, the survey was not designed to test abilities gained or measure competence against a competency profile (or framework), but rather individual perceptions of meaningful benefits derived as a result of the training intervention.

Data Gathering Process

The quick-scan questionnaire (survey 1) was sent to intermediaries via e-mail for completion at their own convenience.

Using the information provided by intermediaries as their achieved output (number of beneficiaries trained) a database of 4040 beneficiaries was compiled. Some participants had to be omitted due to either being under the age of 18 (i.e., minors) or incomplete contact information, resulting in a total number of 3650 participants.

Given the reality of COVID-19, an online approach had to be adopted for the distribution of the beneficiaries' survey (survey 2). The link along with the necessary information and research consent form was sent to the e-mail addresses of the 3650 Mobile Literacy training beneficiaries and 3548 were delivered successfully.

A very low response rate was achieved, and the data-gathering process had to be adjusted to increase responses (Nulty 2008). Reminders, inclusive of the survey link were subsequently sent to the mobile devices of beneficiaries via short message

service (SMS) text messages. In addition, incentives of 1 GB data were offered to the first 100 participants to submit their completed surveys.

As the data collection process via e-mail and SMS did not yield the desired results, the traditional fieldwork approach was adopted as a last resort. Representatives of the intermediaries were recruited as fieldworkers and trained to assist in the administration of the survey. They contributed towards the data collection process by sharing the survey information (original communication and survey link) through their normal communication and marketing channels, motivating beneficiaries to participate in the study. They supported beneficiaries with the completion of questionnaires by inviting them to their premises, providing them access to the Internet and devices and, in some cases, by printing hard copies for completion. Hard copies were scanned and the data captured.

Response Rate and Demographic Profile of Participants

Of the 3650 listed beneficiaries, 557 responded to the questionnaire. This number reduced to 510 after data cleaning. With a population size of 3650, a confidence level of 95% and a margin of error of 5%, the required sample size would be 348. In this case, the sample size was 510, which means the confidence level increased to about 98.5%. If the confidence level is kept at 95%, then the margin of error reduces to about 4%. Thus, with a sample size of 510 for the population of 3650, one does not always know that the correct answer has been found. However, we do know that there is a 98.5% chance that responses are within a 5% margin of error of the correct answer.

Of the total number of respondents who completed the evaluation ($N = 510$[5]), the majority (88%) were between the ages of 18 and 35, with 12% being 36 years and older. Sixty-eight percent (68%) of the respondents were female and 32% were male. Regarding race, of the 505 respondents to the survey, 28% were Black African, while 72% were coloured (of mixed race).

In terms of education, (of 509) 24% had a post-school qualification, 56% had completed high school, while the rest had either primary school education or no formal education. Focusing on employment, 498 responses were received, 11% of which were employed full time, 40% part time, 4% were self-employed and 31% were unemployed. The remaining respondents were either students, retired or did unpaid housework. Thus, about 55% of respondents reported some form of employment.

[5] It must be noted that the results are presented as a percentage of values received per variable (i.e. per question). Missing values were omitted, hence the inconsistency in the sample size per question.

Reporting of the Findings

The following section presents the findings of: (i) the quick-scan study focused on intermediaries (summarised in Table 12.1); and (ii) the survey focused on beneficiaries of the Mobile Literacy training intervention.

Table 12.1 Intermediary profiles as obtained from the quick-scan study

	Intermediary 1	Intermediary 2	Intermediary 3	Intermediary 4
Described as	Training institution Innovation hub	Training institution Multi-purpose community centre	Training institution	Training institution Multi-purpose community centre Innovation hub
Location type	Peri-urban	Urban	Peri-urban	Peri-urban
Footprint – where services are provided	Central premise Off-site venues	Central premise	Central premise Off-site venues	Central premise Off-site venues
Number of Mobile Literacy trainees	1247 [34% of training beneficiaries]	430 [12% of training beneficiaries]	1509 [41% of training beneficiaries]	464 [13% of training beneficiaries]
Venue ownership	Hires venues Access to free venues	Owns venues Access to free venues	Hires venues	Owns venues Hires venues Access to free venues
Available ICT infrastructure (Internet access, computers, mobile devices)	Internet access Own and hire computers	Internet access Own computers and mobile devices	Internet access Own and make use of other freely available computers and mobile devices	Uses Internet access of hired venues Makes use of other freely available computers and mobile devices
Services provided	Public access to computers and the Internet Training services (digital and other) Job seeking and CV writing support Small business support Participate in community development initiatives	Public access to computers and the Internet Training services (digital and other) Job seeking and CV writing support Small business support Participate in community development initiatives	Public access to computers and the Internet Training services (digital and other) Job seeking and CV writing support Small business support Participate in community development initiatives Facilitate community engagement	Training services (digital) Small business support Participate in community development initiatives Facilitate community engagement

(continued)

Table 12.1 (continued)

	Intermediary 1	Intermediary 2	Intermediary 3	Intermediary 4
Staff complement	Six to 10 people	Six to 10 people	More than 20 people	More than 20 people
Target groups	Low-skilled Low-income Unemployed youth Women Small businesses Students	Low-skilled Low-income Unemployed youth The elderly People with disabilities Women Small businesses	Unemployed youth People with disabilities Women Small businesses Students	Low-skilled Low-income Unemployed youth The elderly People with disabilities Women Small businesses Students
Cost of training	Most of the training courses require a fee; a few courses are free	Most of the training courses are free; a few courses require a fee	All training courses are free	All training courses are free
Training approach	Face-to-face Online Blended (face-to-face and online)	Face-to-face Online Blended (face-to-face and online)	Blended (face-to-face and online)	Face-to-face Blended (face-to-face and online)

Findings Related to Intermediaries

It is evident from the information obtained from the quick-scan study that the four intermediaries had several characteristics in common: they all operated from a fixed physical location, had access to the Internet, and either owned, hired or had access to computers and mobile devices. At a basic level, all the intermediaries regarded themselves as training institutions (although not necessarily confined to training), with citizens from vulnerable groupings or under-resourced contexts as the dominant target group. They offered a range of services, with training interventions, support for small businesses and community development initiatives as shared interests.

When the information on the intermediary profile is related to the input dimension of the evaluation framework, it is clear that the intermediaries had all the necessary physical and ICT-related infrastructure (venues, Internet access, devices) and resources (trainers, course content) at their disposal to deliver the Mobile Literacy skills intervention. Intermediaries had access to the course content (offered in three languages), were trained in course delivery and had several years of experience with digital skills intervention. Furthermore, as indicated in the profile above (Table 12.1), the Mobile Literacy skills development interventions were targeted predominantly at citizens who found themselves in precarious conditions (under-resourced environments), students, and the youth. Consequently, it seems fair to deduce that the participating intermediaries had the necessary input indicators at their disposal to

perform the required activities that resulted in an output of 4040 citizens who successfully completed the Mobile Literacy course. This number refers to the typical volume count.

Findings Related to Beneficiaries of the Mobile Literacy Course

The following discussion reports on survey findings related to: (i) the digital inclusion profile of beneficiaries in terms of access to ICT; and (ii) the outcomes of the course as perceived by beneficiaries.

Digital Inclusion Profile of Beneficiaries

Of the 426 responses on smartphone ownership, 86% owned a smartphone, while 11% had access to one through either a friend or family member. Three per cent stated that they did not own or have access to a smartphone at home, school or their place of work. Regarding laptop computers, 407 responses were received, 31% of whom owned a laptop, 35% did not own a laptop but had access to one through either a friend or family member, and 34% did not own or have access to a laptop device at home, school or place of work. A total of 449 responses were received regarding Internet access, of which 92% had access through a mobile device. Of this group, 40% did so by buying mobile data, 26% had access to Wi-Fi at home, and the rest either made use of free Wi-Fi hotspots in public buildings like libraries and churches, or they used the Wi-Fi provided at work. Interestingly, 11% also made use of free Internet websites and applications like Facebook Lite.

Perceived Training Outcomes

It is clear that the majority of the research participants (87% of 445) were of the opinion that they benefited from attending the course. The value gained from the course is evident, given that 71% of (406) respondents had already recommended the course to someone else at the time of the survey, while 28% had not recommended the course but stated that they would. Supported by the open-ended responses regarding how and/or what respondents gained from the training, the benefits were divided into three overarching themes: (i) psychological, (ii) economic and (iii) social benefits.

Psychological Benefits
In the context of this study, psychological benefits encompass changes in behaviour regarding the use of mobile devices, gaining feelings of self-awareness, empowerment, motivation and confidence and changes in mindset and attitude regarding the value of technology. Of the 409 people who responded to this question, 84% either

agreed or strongly agreed that they were using a mobile device for more work and personal purposes because of the training (8% disagreed and the rest were not sure). Furthermore, from 410 responses, 94% either agreed or strongly agreed that the training had made them more interested in exploring the Internet and other digital devices.

An objective of the course is to provide respondents with information about key concepts of mobile digital literacy and to open their minds to the 'bigger picture'. Answers to the open-ended questions show that respondents gained an understanding of technology in general, i.e. the 4IR and its influence on how people communicate, learn and work, and consequently its influence on the changing world of work. '*The experiences I gained from the course is* [sic] *good, because I have more knowledge about technology in and around the world. I have implemented those skills in my studies because I do study computer literacy'* (respondent 312).

Gaining knowledge and the ability to use a mobile device for more purposes gave some respondents a boost of confidence, even to apply for jobs. Eighty-eight per cent (88%) of 409 respondents either agreed or strongly agreed that the training helped them to become more confident in using mobile devices. Only 6% either disagreed or strongly disagreed, with the rest not being sure. Furthermore, knowing about the security risks associated with activities such as online banking, responding to unknown e-mails and sharing personal information and images influenced some respondents to change the way they use mobile devices to protect themselves.

Economic Benefits

Economic benefits in this regard relate to respondents gaining knowledge and the ability to use mobile devices to access employment opportunities, manage resumés, save money, facilitate business transactions and conduct financial transactions. Out of 400 responses, 67% stated that because of the training, they were using a mobile device to search and apply for job vacancies. The training also played a role in 62% of (398) respondents stating that they were using a mobile device for financial activities, for instance by using mobile banking applications.

Of 408 respondents, 89% stated that they had become more productive because of integrating mobile applications into activities they would have had to do manually. For example, they used their device to scan documents and e-mail them to people instead of going to a phone shop or Internet café and paying to have that done: *'Now I use scan on my device, no payment money to scan my documents and it works perfectly'* (respondent 314). In addition to being more productive, some respondents saved time and money: *'I benefited bcoz i don't have to travel that much if I want to get some forms like Z83 from the police station and any other documents, I can easily download from my smartphone'* (respondent 48).

Social Benefits

Social benefits entailed participants gaining feelings of inclusion, social capital, a desire to explore and learn more about technology and how it can be useful. From 395 responses, it was found that 62% had started using a mobile device for entertainment purposes (including playing games and watching videos) and that the training had played a role in this. Furthermore, 86% of (406) respondents stated that they had started using a mobile device to help carry out even mundane daily tasks

and activities, which became easier or were completed much faster. For instance, they used Google Maps for directions: '*Being a full-time student and not always having the time to walk around with a laptop, doing my assignments on my mobile device makes my life so much easier after the training that was provided*' (respondent 7).

From 410 responses, 94% either agreed or strongly agreed that the training had made them more interested in exploring the Internet and other digital devices. This included new ways of interacting and communicating with people. For instance, 64% of 401 respondents had started using applications like social media, instant messaging (WhatsApp) and e-mail to communicate because of the training. Out of 398 responses, 62% had started joining different social media groups to interact with new people outside of their family and friends. A total of 62% of 398 respondents had also joined community WhatsApp groups to participate in discussions about community issues and events.

Respondents expressed increased feelings of inclusion, as they could participate in discussions about technology: '*I can also participate in discussions about the 4th industrial revolution … it's very interesting for me*' (respondent 49). Other respondents felt more included in their children's school life because they were able to help with research, i.e. searching the Internet for information for their children's homework.

Discussion and Conclusion

COVID-19 necessitated the acceleration of digital skills development to facilitate citizens access to critical services and information for the purposes of societal inclusion. Given shrinking training budgets and restricted face-to-face interactions (due to the reallocation of funding to health-related projects, the national lockdown and social distancing measures), the Mobile Literacy course offered a viable option to facilitate the acquisition of basic but essential digital skills by citizens.

This study sought to gain insight into the outcomes of such digital skills delivery, in terms of meaningful benefits derived as perceived and reported by beneficiaries. Despite initial criticism, as there is a general assumption that such skills can be self-taught, it is encouraging that, despite the short duration of the Mobile Literacy course (6–8 h), the post-training evaluation points to clear perceived benefits related to psychological, economic and social dimensions. Some of the key outcomes are highlighted in Table 12.2.

The pathway to these benefits was evident with a clear sequential relationship between intervention *inputs*, *activities* and achieved *outcomes*. The fact that intermediaries (i) were well established in the communities and trusted, (ii) had access to up-to-date content, venues and ICT infrastructure and (iii) were skilled and capacitated to provide the training and to support participants were essential in attaining positive outcomes. These interrelated factors align with core measurement indicators of existing digital inclusion intervention evaluation frameworks (e.g. MIREIA e-Inclusion Intermediaries Impact Assessment Framework).

Table 12.2 Overview of outcomes for beneficiaries

Psychological	Economic	Social
Increased confidence to use mobile technology, Motivation to gain more advanced digital skills, Improved cybersecurity and safety awareness	Improved access to employment opportunities, Financial savings, Increased use of mobile technologies in professional activities, More efficient use of mobile technologies in financial activities	Extended use of mobile technologies in communication and social life, Use of mobile technologies for practical activities (e.g. assisting children with homework)

The prevailing assumption suggests that equalities in digital opportunities lead to equality in realised benefits. Although intermediaries provided access to technologies (level 1 of the digital divide) and facilitated skills development (level 2), it was evident that the degree and scope of benefits (level 3) were not equal among the beneficiaries—as was the case in digital literacy interventions in other low-income areas (Radovanović et al. 2020). This is in line with Helsper's (2021) model of socio-digital inequalities, which illustrates that addressing access, skills and use is not enough. We need to consider nuances at the individual level in terms of inequalities in social, economic, cultural and personal well-being, which consequently influence the equality of benefits. While this is undoubtedly complex, it is necessary to bear in mind if we are to determine why there is a spectrum of benefits.

Baseline assessments (focusing on the nature of first and second-level divides) should thus form part of the digital skills intervention assessment processes, included in the *inputs* dimension, that are done before the intervention activities. Only the individual can shed light on their gradations of exclusion, along with their associated challenges and opportunities and this must be considered in the activities of the intervention towards achieving the outcomes. Helsper (2021) emphasises that outcomes are not homogeneous, but subtle and inherent in a beneficiary's environment and context.

In terms of the administration of the Mobile Literacy post-training evaluation, key learning and observations were made. Obtaining the participation of training beneficiaries in view of ascertaining the perceived outcomes or benefits of the intervention posed significant challenges. Although necessitated by COVID-19, relying on online assessments was clearly not successful. Expanding the online survey (via e-mail) to sending SMS text messaging to beneficiaries' mobile numbers, yielded only a slight increase in survey responses. It transpired that research participation was hampered by the beneficiaries' lack of Internet access and/or high data costs, which made participation an expensive and even unaffordable exercise.[6] Accessing

[6] WhatsApp messaging was also explored for survey purposes. However, it requires the registration of a WhatsApp business service, which at that point in time was not within the policy framework of the university due to recent changes in legislation and regulation.

training beneficiaries via the communication network of intermediaries proved to be a more successful approach. Intermediaries supported research participants by providing access to the Internet and devices and, in some instances, acted as survey administrators, assisting beneficiaries in completing the questionnaire.

Following from the notion that inequalities in digital opportunities (first and second-level digital divide) lead to inequalities in terms of outcomes (or benefits) (Radovanović et al. 2020; Helsper 2021), it may be argued that this is equally true for the ability of training beneficiaries to participate in post-training evaluation. The profiles of beneficiaries in terms of access to ICT reveal that many rely on the infrastructure and support of intermediaries. The administration of an assessment process (data-gathering approach) in environments where the first- and second-level digital divide is still a reality (Scheerder et al. 2017) needs to take cognisance of the unequal digital circumstances of the beneficiaries. This should at a minimum include support in terms of providing Internet and device access at accessible venues, contributing to either data costs or travel expenses to venues and even the zero-rating of surveys. It is worth noting the critical supportive role of intermediaries which emerged from these findings, evident in both (i) the social support—the instrumental, informational and emotional aid received from support networks, assisting an individual's use of digital technologies (Asmar et al. 2020)—they provide in effectively executing digital inclusion interventions; and (ii) the support they provide in enabling evaluations of such interventions.

Findings related to the perceived outcomes of the Mobile Literacy training intervention are encouraging and point to tangible and intangible outcomes. Although a representative sample was achieved, an inherent bias in the sample should be noted. There is a likelihood that beneficiaries who had a positive experience of the training were more inclined to respond to the assessment than those who had a negative experience. Following the argument of Nulty (2008), this inherent bias can typically be addressed by applying multiple methods to assess perceived outcomes or benefits. Evaluation assessments should therefore ideally develop and apply multiple methods (measurement instruments and modes) to explore the different perspectives for a more informed understanding of the nuances in perceived outcomes.

Finally, the data collection process should ideally be constructed to consist of multiple approaches (i.e. online assessment, SMS, face-to-face) to ensure a higher response rate while careful consideration should be given to the sampling method.

Evaluation assessments are costly and time-consuming exercises. The proposed adjustments for the application of multiple assessment instruments and data-gathering approaches may have cost and time implications. However, to help facilitate and encourage the application of digital skills intervention assessments on a more regular basis and for a better understanding of the nuances related to the persistent digital divide, innovative approaches applicable specifically in the context of URC need to be developed and tested.

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