Can digital technology be used for addressing digital literacy in the dissemination of Indigenous Knowledge in rural areas?

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Adults in rural contexts, show little productive use of digital platforms in addressing their information and knowledge needs. This is so, in spite of the ubiquitous proliferation of digital technology. The purpose of this study was to address the problem of the disappearance of nutritional knowledge found in indigenous food plants in rural contexts. A qualitative research design incorporating action research was used with a community in Libode Eastern Cape. A collaborative theoretical perspective, drawn from three theories; namely, andragogy, situated learning and eZiko anchored the study. The study showed that though many ICTs are being used in the management of indigenous knowledge (IK), in general very little has been documented about their use in developing digital literacy that leads to community's participation in the management of knowledge on indigenous food plants. The foregrounding of an appropriate framework such as the Participatory Collaboration Framework as an operational process, resulted in the engagement and empowerment of adults to participate in the dissemination of IK. Addressing the digital literacy gap has potential to facilitate non-technical adults' participation in the dissemination of indigenous knowledge.

Keywords: andragogy, digital literacies, eZiko, Indigenous Knowledge, situated learning, participatory collaboration framework, ICTs

1 Introduction

Information and Communication Technologies (ICTs) have been hailed as instrumental in linking previously disadvantaged communities to new tenure of technologies that have potential to uplift and achieve sustained livelihoods (Kameswari, Kishore & Gupta, 2011; Folayan et al., 2016). ICTs have a positive impact on an individual's life in terms of socio-economic status, through leveraging access to education, government services, commercial entities, and culture (Radoll, 2009; Ngassam, Ntawanga & Eloff 2013). The application of ICTs in indigenous knowledge (IK) management has taken centre stage in the past decade (Mkumbo 2017). The lack of generalization and diffusion of indigenous knowledge on electronic media means that IK has "largely remained hidden from the mainstream of education, innovation, industry and commerce" (Lodhi & Mikulecky 2012:54).

IK crucial role in socio-economic development is acknowledged by the World Bank and UN agencies (Sraku-Lartey et al. 2017; Mohamedbhai 2013). Indigenous knowledge, as noted by Devarapalli (2018:131), is also called "'native knowledge', 'local knowledge', or 'traditional knowledge.'" Payle and Lebakeng (2006:43) define indigenous knowledge as "local knowledge which is born out of the environment and as a result of people interacting with their environment." IK is predominantly tacit and embedded in the practices and experiences of its holders (Nkwanyana 2018). As a result, with the demise of older generations and reorientation, human movements, and globalization, this knowledge is at risk of being eroded if no effort is made to preserve it through documentation.

In acknowledgment of the above, several IK digitisation projects have been undertaken (Biyela, Oyelude, & Haumba 2016). Digitisation is a process of codifying information or knowledge so that it is accessed globally, and on a long-term basis (Akinwale 2012). A review of literature shows that the concentration of these projects has been academia and industry driven (Biyela et al. 2016). The practice has been having projects external rather than internally driven and executed, in relation to communities where this knowledge is both generated as well as needed. Projects such as the Digital Innovation South Africa (DISA) (Biyela et al. 2016), Forest Research Institute of Ghana project (Sraku-Lartey et al. 2017), Digital memory toolkit (McNulty & McNulty, 2014), and country specific studies such as Australia (Bidwell, 2016), Namibia (Kapuire & Blake 2011), New Zealand (Zaman, Yeo & Kulathuramaiye 2014), are examples. The success of the projects is more on the technological side and less on the empowerment of the local actors and long-term use of such systems by local people. This is acknowledged by the push for an indigenous knowledge holder tool, which we see to date, as drawing IK custodians

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into design process (Kapuire, Winschiers-Theophilus, Stanley, Maasz, Chamunorwa, Møller & Gonzalez-Cabrero 2017). Communities in which these projects are carried out are seen as contributors of knowledge and the "researched" only, not as users and designers of systems.

This is as a result of lack of digital literacies explained later, and skills among the custodians of IK, exacerbated by the digital divide (Shedlock & Vos 2018). Many local people have socio-economic issues to grapple with, and as such, pay little attention to the value of such projects in uplifting their livelihood and empowering them to participate on other digital platforms. This, notwithstanding those digital platforms have become a culture in society (Jin 2017). The nature of digitization projects does not include the facilitating of skills development due to cost and time or research reporting deadlines. Therefore, little has been done in the empowerment of the IK custodians through skills development to be able to use, access and digitize the IK on their own and to apply these skills on other ICT platforms.

2 Problem and purpose of study

It is argued that although digital technologies now exist to document IK, this task has been pioneered from higher institutions of learning and industry, leaving the custodian of this knowledge unable to access and use this knowledge due to lack of digital skills. The ad hoc programmes in place to document IK and disseminate it are not adequate, as evidenced by the lack of operational national programmes within schools at which most of the young generation are found. The elders or the older generation as well as parents are not part of the school system in our society. Therefore, although they are custodians of the knowledge, they are not in a position to influence its dissemination through schools (Eady & Woodcock 2010).

With the proliferation of digital tools in the hands of adults in rural contexts an opportunity exists to investigate and develop an e-learning framework to enable the uptake of digital skills by semi-literate adults using informal learning environments. This therefore gives rise to the following research question; how can informal e-learning community education be used to foreground IK and develop a participatory framework to facilitate upskilling of adults? The key argument is that, when an inclusive model is used, community education anchored in e-learning accommodative to rural contexts has the potential to contribute to skills development and documentation and dissemination of IK. The purpose of the study was to address the problem of the disappearance of nutritional knowledge found in indigenous food plants in rural contexts.

In order to achieve the purpose of the study the following objectives were pursued:

- Determine the knowledge level of community on IFPs.
- Establish how this knowledge on IFPs is shared by members of the community using ICTs.
- Implement e-learning programmes to facilitate skills uptake, enabling community document and disseminate information about IFPs.
- Facilitate community education to empower community members in sharing knowledge on IFPs.

These objectives were addressed using action research. This allowed the researcher to apply a participatory action-research approach.

The article is organized as follows: introduction, problem and purpose of study, literature review (South African context i.e., access to digital services, digital literacy, acquisition of digital skills by older adults in informal settings, community of practice), methodology, results, discussion of findings, and conclusion.

3 Literature review

3.1 South African context

South Africa is regarded as a microcosm within a macrocosm in terms of socio-economic development (Haupt 2010; Terreblanche 1981). In this regard, we observe that South Africa is ranked as one of the most unequal in the distribution of both wealth and access to services that would uplift the standard of life for large groups of people (Rogerson & Nel 2016; Keeton 2014; Head 2018). Akinsola et al. (2005) note that the education systems in the past were differentiated according to race, and this impacted the skills update and preparedness of those denied education to engage with new developments in technology and its usage. The digital divide is further exacerbated in the eastern Cape area where this study took place, due to aging infrastructure and limited investments in broadband services.

The South African adult population above 50 years is 15.8% while the population of those above 65 is 5.0% (Stats SA 2018). With the changing demographics, political and socio-economic thrust to addressing past and current inequalities, a large number of adults find themselves living longer, participating in social, economic, and civic activities, yet not prepared to use the tools used in driving these new activities. One example of activities that facilitates socio-economic and civic interactions is e-government, which bring services closer to the people. However, e-government also opens up the reality of the disengagement and disempowerment of mostly adults affected by past inequalities (Warren 2007; Townsend et al.

2013). This, therefore, uniquely positions this study to providing a framework to engage and empower adults in this category with digital skills.

3.2 Digital literacy

According to Meyers, Erickson and Small quoted in Jiang (2018), the conceptualizations of digital literacy can be categorized into (1) Digital literacy as skills required in the 'information age', (2) Digital literacy as the development of 'habits of mind', and (3) Digital literacy as social practices in a participatory culture. The third aspect of digital literacy is the view on which the proposed participatory collaborative framework is developed, within the framework of a community of practice augmented by cultural participation in the community. The authors agree with Meyers et al. (2013:358) that "these practices are socially constructed and situated, but not pre-determined", promoting the ideals of situated learning theory, in this case poised in the framework of eZiko (Goduka 2005).

Harrison et al. (2011) and Zahedi and Zahedi (2012) note that over the past decade, digital technologies have become a culture in society. However, the researchers observe a lack of digital literacies to fully harness these technologies, especially within a rural context, which hosts most IK custodians (Pashapa & Rivett 2015). In the context of this study, digital literacy is postulated as a 'set of literacies' according to the ability to use information and communication technologies in daily activities of life as the need arises (Masizana-Katongo & Morakanyane 2009:3). The proposed participatory collaborative framework recognizes the low skills, pressing socio-economic issues, and life demands faced by adults in rural areas, and therefore, uses the problem-based approach, sets the platform and parameters, and the engagement required to address this challenge in rural contexts. Ryberg and Georgsen (2015:19) conceptualize problem-based learning (PBL) as a "stable approach that can act as an enabler for underpinning learning digital literacy because they provide good settings for engaging with digital literacy practices." The PBL setting further provides a platform for adults working on their knowledge resource within a practical embodiment enacted through a community of practice as discussed below.

3.3 Acquisition of digital skills by older adults in informal settings

The proliferation of digital platforms has resulted in the growth in demand for digital skills. Wasserman and Richmond-Abbott (2005) remarks that access to, and possession of technology, like cell phones, does not guarantee participation. The researchers note that the methods used for the acquisition of digital skills by young adults in formal education cannot be used for older adults in informal education settings in rural communities. This is evidenced by United Nations Educational, Scientific and Cultural Organization's (UNESCO) pursuit of other initiatives that seek to determine how digital solutions outside the traditional education landscape can close the global literacy gap (UNESDOC, 2018). Adults learning needs, require procedure which engages them in an activity that addresses both the literacy challenges, and immediate need of access to information. Therefore, as Conradie and Jacobs (2003:33) note, "ICT usage cannot be seen as a stand-alone sustainable activity in the rural environment, but rather as an activity in support of something else" (for example, promoting education, health, or access to government information etc.).

As stated earlier, participatory approaches are deemed important to move beyond providing access to technology resources to activities and practices that would positively impact communities and engage local participants. In this regard, sharing of IK which is done by word of mouth, is brought to the forefront as an activity and practice, and resonates well with the prevailing practice of most adults in rural contexts. Indigenous knowledge is contextual and rooted in indigenous paradigms and uses relationships rather than pedagogical and didactic approaches. In the context of adults, affordability, age-related challenges, lack of experience, lack of interest, and unfamiliarity with device interfaces impact adult acquisition of digital skills (Coleman, Gibson, Hanson, Bobrowicz & McKay 2010).

3.4 Community of practice

Wenger, Trayner and de Laat (2011:9) define a community of practice as a "learning partnership among people who find it useful to learn from each other about a particular domain." The domain is what gives the group an identity, in this case, the domain is indigenous knowledge and digital skills. The community constitutes "the group of people for whom the domain is relevant" and the practice is "the body of knowledge, methods, tools, stories, cases, documents, which members share and develop together" (Wenger,2004:14-15). The ideas fostered in a community of practice offer a methodology that can engage adults in a learning community.

Communities of practice have been used in academic and educational settings; and they offer a more participatory method that can address barriers to adult participation (Wenger, McDermott & Snyder 2002). Communities of practice are important in the effective development of less privileged communities (Lai, Pratt, Anderson & Stigter 2006). This brings to bear new thinking on operations of community of practice in facilitating learning skills while at the same time achieving indigenous knowledge sharing and dissemination. This is driven by the quest to 'learn in order to participate' (Kiryakova,

Angelova, & Yordanova 2018). These environments facilitate adult participants to reflect on their practices in a collaborative and supportive learning, yet less threatening environment (Kirschner & Lai 2007). This study implemented community practice in the context of adults' upskilling in a resource constrained environment while at the same time using community synergy to share knowledge that is within their daily activities.

4 Methodology

As stated earlier, the purpose of the study was to address the problem of the disappearance of nutritional knowledge found in indigenous food plants in rural contexts. The study used qualitative research design incorporating action research within a case study. This facilitated the understanding of the phenomenon being studied within its context (Yin 2014; Maree 2016). A community in Mdlankomo outside Mthatha town in the Eastern Cape was selected due to its proximity to town and the availability of large fauna which provides indigenous plants for food and medication (Maroyi 2017). Fifty adults between the age 18-65 sampled purposively, formed the case whilst the intervention (training programme) was carried out as action research. The questionnaires, individual and group interviews, design experiments, and observations were used for data collection (Cohen, Manion & Morrison 2013). The interviews were conducted face to face at the homes of the participants; and also at the headman's home, which was the base of the project. The interviews took between 30-45 minutes a session; on average five (5) interview sessions were conducted. These were recorded using a recording device on both the smartphones and on the computers. Other interviews were conducted telephonically and via email. This was the case especially for those participants and ICT facilitators who were engaged in other activities outside the community.

A total of 12 focus-group sessions were conducted at the headman's homestead, which was the venue for the study, as reported earlier. Three other focus-group sessions were conducted at various locations with subsets of the participants. For reporting purposes only those focus-group interviews with rich data have been analyzed and reported. Focus-group interviews were desirable in this case because the number of participants is small (Maree 2016); and the members also live in close proximity to one another; and this afforded the researcher the ability to meet them regularly.

The observations were carried out by the researcher becoming the participant-observer working together with participants while observing them learning to digitally document knowledge of the IFPs through cell-phones and desktop computers. The researcher's assumption was that observations provide an opportunity of collecting data on a wide range of behaviour, capturing a great variety of interactions, and emotions, and openly exploring the desired data or facts. Videos were taken and the conversations recorded. The researcher used field notes, and a participant-interaction grid to record 3 forms of interaction i.e., interaction among participants, interaction with the computer, and interactions with the software application.

The design experiments carried out through action research were authentic training sessions which were evaluated and redesigned as the study progressed. Evaluation was done using interviews and focus groups. This involved IK holders participating or interacting on a web repository using cell-phone applications and computer applications that had the potential to document and share their knowledge. The study used a community participatory approach incorporating community members and ICT facilitators drawn from the community.

5 Results

5.1 Tabulation of participant's attributes and responses

Tabulation of the description, categories, and frequencies (expressed as percentage) of data pertaining to the participants is given in Table 1.

Table 1. Participant's attributes and responses

Description	Category	Percentage (%)
Gender	Male	30
	Female	70
Age	18-34	26
	35-49	9
	50-65	32
	Over 65	34
Level of education	Other	26
	Primary	4
	Matric	57
	Post matric	13
Employment	None	81
	Casual/Temporal	17
	employed	2
Awareness of IFPs	Heard about	85
	Practical knowledge	50
Awareness of community programmes promotion IFPs	Aware	30
	Not aware	70
Mode of sharing knowledge	ICT supported	40
	Traditional forms	60
Barriers to ICTs Upskilling	Age and education	40
	Hands challenge (e.g. Arthritis)	30
	Sight challenges	20
	Other	10
Digital facilities owned	Cell phones	100
	Computer	<10
	Radio	70
	TV	80
Preference of dissemination method	TV and radio	60
	Cultural processes, family etc	40
	Digital platforms	10
Willingness to participate	Yes	70
	Not Sure	25
	No	5
Reason for participation	Project	30
	Own upskilling	45
	Learning applications	25
Confidence in learning ICTs	High	60
	Low	40
Reasons for learning ICTs	Exploration	15
	Communication	30
	Internet	15
	Typing skills	25
	Employment prospects	15

5.2 Participant interaction using the interaction grid

The observations pertaining to interactions were recorded in an interaction grid using codes as follows: group discussion [GD] interactions, group computer [GC] interactions, participant individual computer [PC] interactions, participant and application [PA] interactions and inter-participant [PP] interactions.

The participant interaction grid showed that there were more group discussions [GD] and group computer [GC] interactions in the initial stages for facilitator-led and non-facilitator-led sessions as shown in figure 1.1 and figure 1.2. This was as a result of lack of confidence expressed in the participant narratives as well.

The analysis of the facilitator-led sessions, figure 1.1, reflects that 80% of the participants were concentrated in group discussions [GD] and 90% inter-participant discussions [PP]. There was little individual computer [PC] interactions, as only 20% of the observed instances showed this, compared with 60% of group computer [GC] interactions. Access to the computer was a collective practice for the initial stage, as may be seen by a higher percentage (60%) of group computer [GC] interactions. At this stage, participant to computer [PC] interactions is at 20% which is very low. The reason would be that everyone is preoccupied in finding out what the tool actually is and how it will work. Consequently, we see that participant to application [PA] is 0% as no one has engaged with any particular application on computer or cell phone.

The analysis of the subsequent non-facilitator-led session (see figure 2.1 and figure 2.2), shows a reduction in the group discussions [GC] to 20% and an increase in all the other interactions, namely, group-computer [GC] 80%, participant with participant [PP] 90%, participant and computer [PC] 80%, and participant and application [PA] 50%. Each of these has shown an increase of about 20%.

The participants have identified the more knowledgeable others and the groups have gravitated around these people. This has given rise to group computer [GC] interactions, and also participant individual computer [PC] interactions. Most participants are now eager to use a computer, drawing confidence and support from both the group computer [GC] interactions and inter-participant [PP] interactions, as was the case in the results of the previous analysis. It was observed that they easily found help with what they wanted to do during the facilitators' sessions. In figure 2.2 inter-participant [PP] interactions have risen to 90%, individual computer [PC] interactions 80% and participant application has been sustained at 50%.

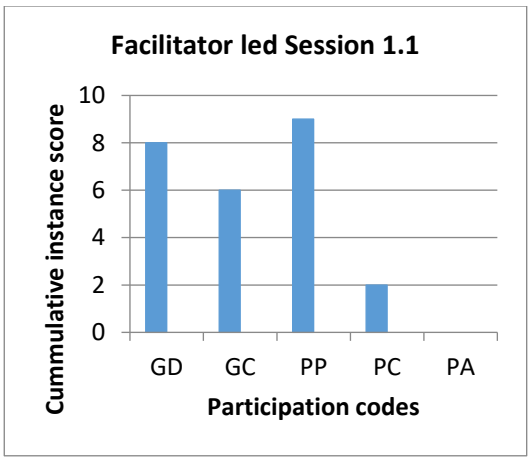

Figure 1.1

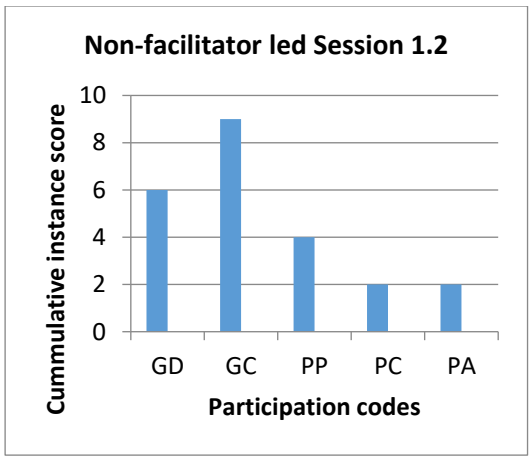

Figure 1.2

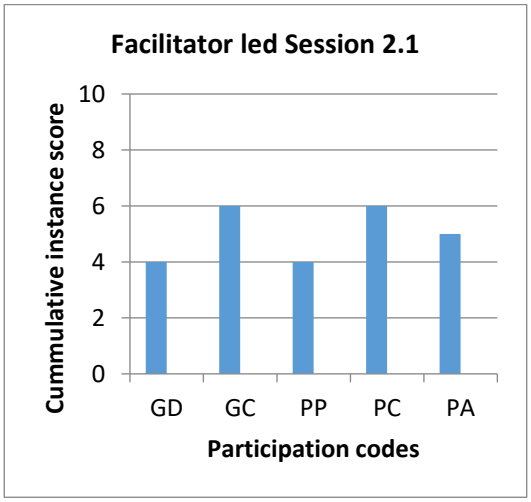

Figure 2.1

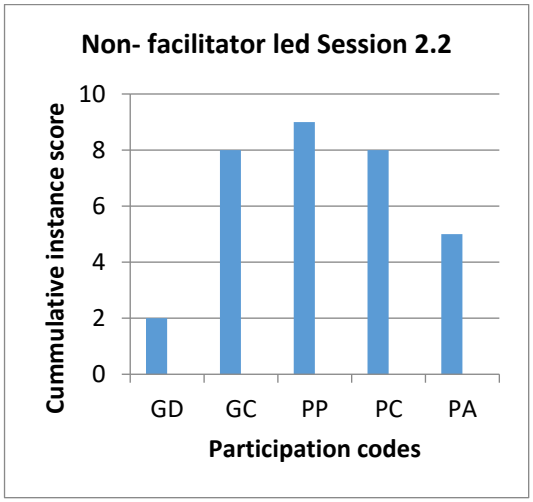

Figure 2.2

6 Discussion of findings

6.1 Knowledge level linked to usage, sharing and validation

The findings reveal that knowledge is present in the community. The results show three knowledge trajectories; usage of knowledge (practical), knowledge sharing (experiential) and modes of validating the knowledge (socio-cultural). This agrees with Owusu-Ansah and Mji (2013) who has noted that this "knowledge, and its method of acquisition, has a practical, collective and social or interpersonal slant" (Owusu-Ansah & Mji 2013). The results indicated 85% awareness of indigenous plants with over 50% being able to list four different plants and their uses. Therefore, we can infer three learning themes of a) Knowledge linked to usage (practical learning), b) Knowledge sharing (experiential learning), and c) Validation of knowledge/completeness (social learning).

Female participation at 70% compared to male participation of 30%, in all the age groups except the 35-49 age brackets, resonates well with the general outlook of female dominance in activities that contribute to livelihoods. (Kehler 2001). Kehler (2001:46) notes that "women carry the brunt of the burden of finding alternatives for lack of service provision or when services are inaccessible due to cost." In African culture, women are custodians of food and dietary requirements of the family. Therefore, it may be explained that they viewed this project as the potential for learning new ways of using IFPs for livelihood.

It emerged that despite modernity heightening western cultures in the area of food and medicines, including the prevalence of social media which promotes western ways, the community social capital in indigenous practice has not

waned. Most of the elderly were knowledgeable about the indigenous food plants which have for generations been used by rural communities to sustain their livelihood. One comment read:

> *"New generations have gone to school to gain wisdom yet at the same time have learnt to despise the natural heritage and traditional ways for sustenance of their lives".*

This is in contrast with UNESCO IITE (2011:4)'s belief that new technologies "may be used to reinforce and accelerate western-based modes of thought, culture and learning strategies".

The practical knowledge and learning aspect was also anchored by another member of the community who was quick to point out a plant growing at the home at which the interview was taking place. The plant was uprooted and an explanation of its uses given:

> *"There are lots of indigenous plants in this area, like this one is …..and it can be cooked as a vegetable. It can be easily grown and also prepared for treatment of minor ailments".*

This is evidence of the availability of the knowledge and use of the plants in the community hence supporting the practical aspect of this knowledge. Zaman et al. (2011:11) note that communities always place themselves in relation to the environment in which they live and therefore knowledge is attached to their localities and context. Another comment read:

> *"I have travelled in other parts of the province and now I am old, and I spend much of my time at home. Yet I have not forgotten the food plants that we have used to sustain our lives both for food and health. I can take you around and show you the different types of these plants. They grow in our community, and we know them".*

6.2 Adult learner's recognition of skills demands of the digital era to share knowledge

There is greater awareness of the existence of modern technologies among the community. There was 100% ownership of cell-phones among the participants. However, owing to poverty, low literacy levels, and other related reasons, the use of cell-phones was very basic and most of the members in the community were not aware of the functionality offered by such. Consequently, lack of digital savviness is evident among the members of this community. Though possession did not translate to use, the community supported the idea of using modern methods to share this knowledge, 70% of the participants indicated that they would want this information to be disseminated using modern technologies such as cell-phones, computers (internet) and television.

The sharing of this knowledge was not done electronically, however, 50% indicated that promoting the use and cultivating of IFPs will require modern methods; alongside traditional methods especially the use of television hence a combination of both modern methods based on ICTs and traditional methods of word of mouth. As the participants became more and more involved in the use of these devices support for using traditional methods to document and disseminate IFP through traditionally used ICTs (for example radio and TV) was approximately 64%, compared with approximately 36% for ICT-based methods.

Owing to the proliferation of ICTs like cell-phones in rural contexts, opportunities now exist where the use and knowledge of cell-phones can be extended to capturing, dissemination and documentation of indigenous knowledge, especially knowledge about indigenous food plants (Johnston, Jali, Kundaeli & Adeniran 2015; Pashapa & Rivett 2015). As Conradie and Jacobs (2003) noted, ICT usage cannot be seen as a standalone activity. It must align with the socio-cultural and socio-economic expectations of the communities in which these ICTs are presented. When this is done, as was the case in the project, uptake of skills results. A comment from one of the participants:

> *"I can now send picture and voice notes of the plants I would want my relative to use for ailments and animal treatments".*

6.3 Implementation of e-learning upskilling programme

Cognizant of the daily information needs of the communities in the rural context, it is observed that adults have pertinent challenges to tackle. It is therefore, a challenge to add an overarching need to upskill themselves. The findings showed that traditional programmes to empower adults in rural contexts fail as a result of overwhelming life demands brought about by the socio-economic issues (Vyas and Dillahunt 2017).

This reluctance emanates from barriers that include lack of knowledge, negative attitudes, and age-related changes such as vision and hearing loss, as well as fine motor difficulties (Gitlow 2014).

We observe that, 62% indicated they were willing to participate in learning ICTs, which would enable them to participate on digital platforms; while 38% were not sure they would learn the new technologies. The analysis of reasons for participating show that 30% indicated that they considered the intervention to be for the project, 45% for own up-skilling, and 25% for application. The researcher deduced from these percentages that, overall, 70% did not just participate for the sake of the project but saw an opportunity of learning new skills and participating on digital platforms to document their knowledge and become employable; or to start a business or become useful in some way, having an added advantage in the job market.

6.4 Facilitating community education to empower community on digital platforms

The findings show that as Conradie and Jacobs (2003) earlier noted, ICT usage cannot be seen as a standalone activity. It must align with the socio-cultural and socio-economic expectations of the communities in which these ICTs are presented. The application of the interaction grid revealed the engagement of the participants with the digital platforms. In using the tools in their comfortable space and sharing of IK, it is observed that adults open up to new perceptions of engaging and using technology. Self-directed-ness and self-determination of adults present an organic collaboration, participation and interaction. When adults recognize skills demand in the digital era, they persevere in their quest to 'learn in order to participate.'

The findings led to the development of the Participatory Collaborative Framework for engaging adults in a community learning space augmented by ICTs, where adult participants can share knowledge about IK whilst at the same time acquiring technology skills herein designated as digital skills. The framework provides an operational process that draws on pedagogical strategies that support adult learning such as andragogy and pedagogical approaches such as problem-based learning.

6.4.1 Participatory Collaboration Framework (PCF)

The proposed participatory collaborative framework has three layers. Layer 1 identifies adults' contextual needs, namely, learning, practice and sharing. Layer 2 is a connector layer with three pillars linking layer 1 and layer 3. The three elements of layer 1, namely, learning, practice and sharing are anchored at the bottom within a supporting base in Layer 3, which, in this case, is the community and within it, a community of practice. These two layers 1 and 3 are inter-connected by three pillars; Pillar 1 Andragogy which encapsulates learning, on which ICTs and literacy are based, Pillar 2 Situated learning which supports practice on which the community of practice thrives, and Pillar 3 eZiko, which support knowledge sharing on which IFPs-IK practices exist. Layer 3 positions a community of practice within a community in which, on one side, there is an injection of ICTs and literacy, and on the other, there is an infusion of IFPs-IK practice. The infusion of ICTs and literacy, on one hand and IFPs-IK on the other are represented by the two arrows, each pointing in the appropriate direction. Whereas andragogy may have tenets of formal learning alongside the informal learning, all the pillars anchor on community education in which learning is carried out in informal spaces. These interconnected elements come together to support the collaborative partnership of andragogy, situated learning, and eZiko; attesting to the holistic, participatory, and interactive nature. The framework is shown in Figure 3.

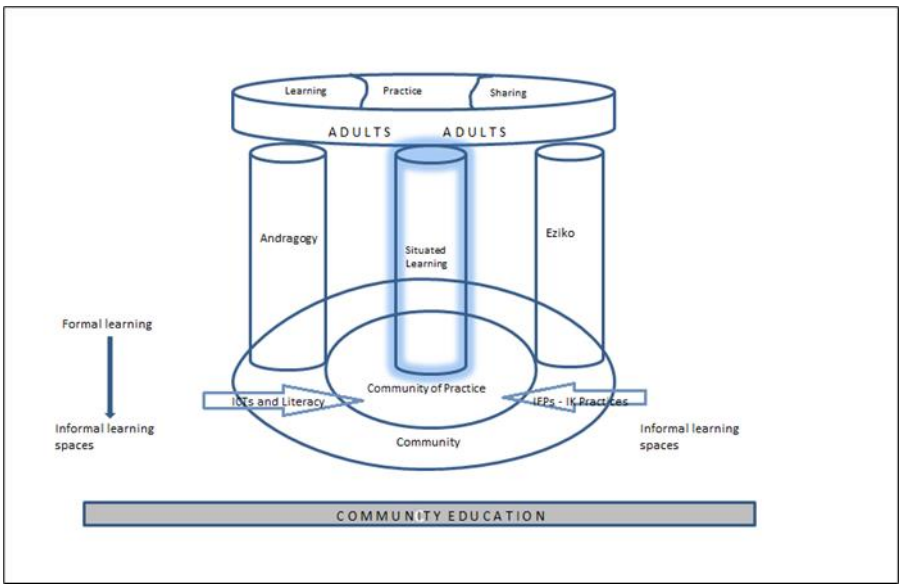

Figure 3: Collaboration learning approach

The unique feature of this framework is its alignment with the marginalized members of the community, and its emphasis on an in-situ undertaking, using a community of practice within the localities, yet open to the outside for support. In addition, it introduces a living system which may be used for other forms of learning new skills or aligning knowledge levels of a community or members with new realities, as life demands arise. This proposed approach ensures that the local actors are not alienated while at the same time increasing the usefulness of the product and services created or produced from the project.

7 Conclusion and recommendations

The socio-economic constraints, limited skills, age-related challenges, and intergenerational gap that have affected the use of digital platforms by adults in rural contexts can be addressed by applying a participatory collaborative framework. The study demonstrated a framework where community strength and resource, which is indigenous knowledge, is foregrounded as a resource shared within a community of practice. While members assist each other in sharing this resource, digital literacies are introduced in a community of practice, augmented with problem-based learning. The Participatory Collaboration Framework provides an operational process that draws on pedagogical strategies that support adult learning such as andragogy and pedagogical approaches such as problem-based learning. The framework allows the incorporation of diverse stakeholders in the developmental programmes which have a thrust on transferring of skills. This is useful in helping the people to participate in social, cultural, and economic activities encompassing both young and old, in developing skills.

The study brought to the fore new thinking regarding community of practice, in which the digital resources and learning how to use these resources are foregrounded in indigenous imperatives driven by the need for self-emancipation. The proposed participatory collaborative framework contributes to providing solutions to pitfalls of developmental projects in rural areas, which are run mostly on a philanthropic basis. A holistic view of issues faced by the rural communities is well addressed by such a participatory collaborative framework. It first acknowledges that most ordinary people will lack basic skills and literacy, and therefore it offers both formal and informal learning. Secondly, in recognizing the way in which adults learn, the approach includes andragogy. Thirdly, in recognition of the way people share information about indigenous perspectives, eZiko is used to allow for practice of the knowledge and application, collaboration and support, and interest-situated learning is included. Furthermore, in this context, having a platform for interaction, collaboration and sharing are potential attributes of empowerment whose results can be extended to other competencies. It is recommended that more work be done in rolling out programmes to empower adults to participate fully on digital platforms which has become a culture in our society.

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