Assessing ICT Access Disparities Between the Institutional and Home Front: A Case of University Students in South Africa's Eastern Cape

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Abstract. Information and Communication Technologies (ICTs) have been used to promote equality and inclusivity, foster human development, enhance opportunity and fight poverty in developing countries. In spite of this effort, inequality to ICT access persists in developing countries like post-apartheid South Africa. This paper contributes to the ICT4D discourse by investigating ICT access disparities between various actors within a country. The theoretical foundation adopts elements of Engeström's [1] activity theory as a conceptual lens for examining the access disparities experienced by users at home and within a formal institutional activity system, such as a university. Fifteen in-depth interviews were conducted with university students at two campuses of a previously disadvantaged university in the Eastern Cape province of South Africa. The study shows that the reason for different access, limited access on the home front and unlimited access on the institutional front, was due to access cost, lack of devices, inadequate skills and lack of awareness of the value of internet access. We conclude that these factors worsen poverty by limiting access to opportunities for the majority of the population that lacks institutional access.

Keywords: ICT access disparities · Activity theory · South africa
Social exclusion

1 Introduction

Several Information Systems scholars have presented Information and Communication Technologies (ICTs) as effective tools to improve inequality [2–4]. ICTs can be used to fight poverty, foster development and reducing inequalities to economic access in the information age [5]. While acknowledging the usefulness of other social, economic and technical imperatives, the importance of sustainable and affordable ICT access has been urged in literature as a critical driver of inclusivity in the information age [6].

Some key applications of ICT include agriculture, remittance economy, education and healthcare [7, 8]. The usefulness of ICTs in supporting these essential sectors of the economy has compelled information systems scholars to promote universal access.

The strategic nature of ICT enabled applications suggests that unequal access to ICTs will inevitably worsen social exclusion as well as economic inequalities between communities in the proximate future. Social exclusion refers to the whole or partial exclusion of individuals and population segments from the opportunities available to the society they live in [9]. To mitigate against social exclusion, several measures have been employed to ensure sustainable and affordable access by disadvantaged communities. These measures include the use of free basics [10] community networks [6]; telecentres [11] and infrastructure sharing [12].

Studies on the digital divide have often focused on the availability and unavailability of Internet access between and within countries [13]. This is in spite of the growing number of IS scholars that call for a shift beyond the elementary idea of binary access or lack thereof [14, 15]. Socio-technical scholars of IS advocate for an understanding of both the technical and the social imperatives that affect the usage of ICTs. They view the usage of IS and ICTs as dependent on social phenomena that influence the users' ability to access and effectively use ICTs as articulated by Bednar and Welch [16]. This is supported by the United Nations [17] that also posits that the realization of ICT capabilities depends on the interface between technological and human factors.

Against this background, this study endeavours to analyze the inclusivity of ICT access within a country by comparing the home and institutional platforms. The home platform, hereafter operationalized as the home activity system, is used as a proxy for ordinary citizens' access. Likewise, the university activity system represents the ideal quality of access that institutions achieve with the same ICT penetration. These two activity systems were chosen to expose the difference in access to use ICT as a tool for development and opportunity enhancing access to information. In developing countries, like South Africa, where enclaves of affluence exist alongside expanses of extreme poverty, the reasons why one segment of the population fail to exploit the available opportunities that ICT provides are often not well understood. South Africa was chosen for the historical and political profile that are believed to have shaped people's social relations into structural exclusion that affects these previously marginalized groups [18].

Third generation activity theory (also called, cultural-historical activity theory) was adopted as a theoretical lens for this study. The theory can conceptualize the interaction between a subject and an object using a tool for achieving a particular outcome. Activity theory conceptualizes this interaction in a way that considers social, cultural and historical contexts of the unit of analysis. Unlike the earlier generations that only analyze the subject-tool-object interaction, the third generation also enables such an investigation in the contexts of two activity systems as discussed in Sect. 2. It enables contextualism by investigating the Rules, Community and Division of labour that shape the use of Tools (i.e. ICTs) by Human subjects (students) in their endeavour to pursue ICT enabled opportunities.

The study uses 15 in-depth interviews conducted at a previously disadvantaged university in South Africa's Eastern Cape province. University students were chosen as the research population because of their access to the internet in both the home and institutional activity systems. The objective of this study is achieved by answering the following research question: What are the factors that influence the disparities in ICT access between the home and the institutional front if any?

2 Literature Review

The challenge of inclusive ICT access has been situated at the centre of The Information and Communication for Development (ICT4D) policymaking debate. This is because of the importance of ICT capabilities such as more efficient in economic and social processes, improving the effectiveness of cooperation between various stakeholders, and increasing the amount of information available to people, businesses and governments [17]. UNESCO [19] also draws parallels between digital inclusion and poverty reduction. They propose that ICT can provide a voice to marginalized communities through interventions in a context-specific manner that respects local socio-political and socio-economic processes, meaning making, autonomy and expression.

Zavaleta et al. [20] posit that social isolation or deprivation of social connectedness is a core impediment to the achievement of well-being. Social exclusion studies have also focused on the potential of ICTs to foster inclusive services to disadvantaged groups. This includes inclusive health care access [21, 22] and inclusive education by disadvantaged groups like the disabled [23], among other subjects. The body of literature on inclusive education provides insights that advocates of ICT access can use. The merits of inclusivity access as an approach to developing digital skills and access to opportunities to previously disadvantaged communities in developing countries cannot be overestimated. For instance, many communities that are still affected by social exclusion challenges several years after the democratic dispensation in South Africa cannot escape their plight without inclusive interventions. They suffer under-investment in rural areas, inadequate access to markets and unfair market conditions, inadequate access to advanced technologies, weak infrastructure, high production and transport costs, gender asymmetry in access to assets and services, conflicts, HIV/AIDS, natural disasters, deforestation, environmental degradation and loss of biodiversity, and dependency on foreign aid [7]. This challenges both a result and a cause of previous and ongoing poverty traps as articulated by Sachs [24].

Literature shows that marginalized groups lag behind in the adoption and acceptance of new technologies. We argue that this applies to marginalized groups on the home activity system in comparison with the unlimited access on the institutional front. For instance, Roupa et al. [25] found that elderly citizens make less extensive use of services and opportunities offered by mobile phone technologies. They were mainly using mobile phones for making phone calls yet the few of them that used advanced technologies reported high satisfaction with the way that these technologies improved their lives. This shows that access to technologies is not synonymous with effective usage that supports the benefits of ICT enabled opportunities.

There has been some effort to promote universal access to ICTs [26]. Some of these efforts have focused on technologically oriented solutions while others have been socially embedded [27, 28]. The technological approach has been criticized for assuming that availing technologies to under privileged people would result in the adoption of ICT to improve livelihoods [29, 30]. On the other hands, the social embeddedness approach sought to align technologies to the social imperatives that determine livelihood choices in a community. Given the underutilization of interventions that employed adequate technologies like telecentres [31], this study suggests that

an appreciation of the socio-economic and socio-political context is necessary for understanding the ICT adoption by a community.

Consequently, this study is situated on at the intersection of activity theory's application in ICT4D [32, 33], education [34, 35], and IS research [36]. Vygotsky's [37] Activity Theory (AT) is an analytical technique for identifying tensions and contradictions that exist among issues and problems that can arise in an activity. There are three generations of AT namely the first, second and third generations. The first generation AT simply consists of a subject and object that are mediated by tools [34]. The second generation AT situates the interaction of a subject and object in a contextual setting of a community that is governed by rules and division of labour which affect the undertaking of the activity [1].

Finally, the third generation AT expands on the seconds by including connected activities (Fig. 1). The dual-activity system depicts the outcome of the interaction of two activities when activities come into contact with each other to produce an outcome [1]. This study, therefore, adopts the third generation AT to compare the difference between two digital exposure activity systems. These are the school system and the home system. The university student is the subject, and the usage of ICTs is the object. See Fig. 2 for a representation of the application of AT in this study.

The Research Context: This study was conducted at an institution of higher learning in the Eastern Cape of South Africa. South Africa is a sub-Saharan African country. South Africa has a Gini-coefficient of 0.66 to 0.7 which makes it one of the countries with the most inequality in the world [38]. The institution under study is a previously disadvantaged university, and most of the students are from impoverished rural areas in the Eastern Cape. The Eastern Cape has been reported to have the second lowest Internet access at 37% in South Africa. At least 11.3% of the population access the Internet through educational institutions and Internet cafes, while in 2014 the majority of the population (80%) accessed the Internet through mobile devices [39]. While the institution has three campuses, this study was conducted at the two biggest campuses. Most of the students that are enrolled at these two campuses are below the age of 23, unlike the third campus where the student profile tends to lean towards more mature, working adults which was not the population chosen for this study.

3   Methods and Approach

This study adopts an interpretive paradigm for conducting case studies as articulated by Klein and Myers [40]. Of the seven principles for interpretive case studies, principle of Dialogical Reasoning which requires 'sensitivity to possible contradictions between the theoretical preconceptions guiding the research design and actual findings.' We also adopted the principles of Contextualization which calls for 'critical reflection of the social and historical background of the research setting.'[1]. While activity theory is often
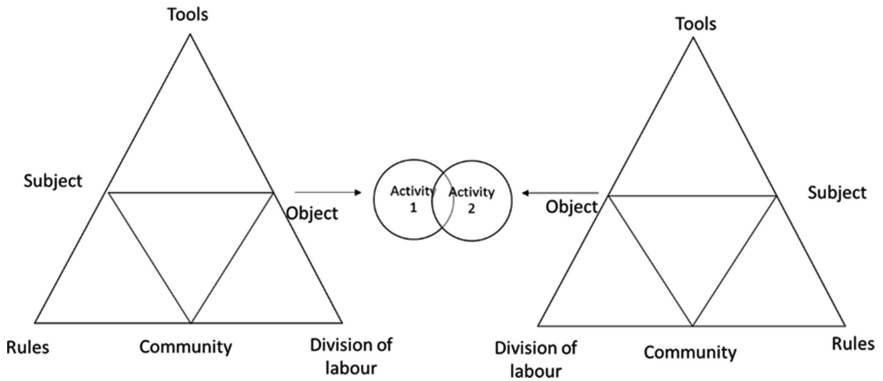
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[1] [40] p. 72.

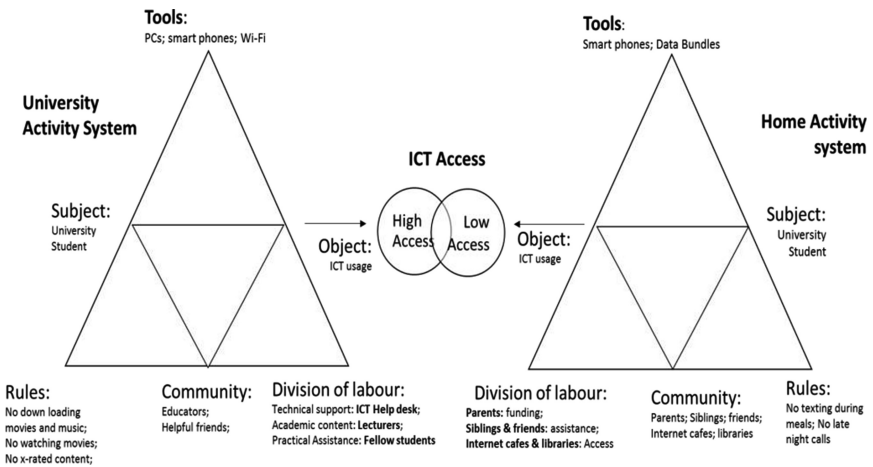**Fig. 1.** Third generation activity theory [34]

Fig. 2. Interaction between the university and home activity system

considered to be a paradigm, we adopted these principles of interpretivism because they complement activity theory's quest for both contradictions and contextualization.

In-depth interviews were conducted with students from two campuses of a university in South Africa's Eastern Cape Province. The combined student population from these two campuses are approximately 15 000. The study participants were selected making use of a convenient sampling allowing for gender and year of study. The interview process reached the saturation point after 15 interviews were conducted.

The interview guide was designed after a literature review was conducted to ascertain the reasons why ICT access are limited in developing countries. This allowed the researchers to have a deeper understanding of the reasons behind the differences in Internet access between the two activity systems. The researchers also attempted to conduct both exploratory and confirmatory research on the themes identified from literature as well as the theoretical framework.

A pilot study was conducted with three students that were not part of the study to validate the interview guide's user-friendliness. A few problems were identified through the user feedback, and these were documented and used to refine the final version of the guide. The ethical approval to conduct the study was obtained from the University's Research and Ethics Committee.

The qualitative evidence was analyzed using selective coding [41] from the grounded theory methodology for analysis as articulated by Matavire and Brown [42]. After the first two interviews, preliminary coding of the data was conducted. The coding process was repeated after each interview to assess the emergence of new codes.

4   Research Findings

This section presents a summary of the results of the in-depth interviews. Selected quotes from the in-depth interviews are categorized by the components of Engeström's [43] third-generation activity theory.

The university student are the subject of the home and university activity systems. The study shows that the millennials learn their digital skills at university. They however lack information literacy training and e-commerce exposure. At the home front they are late adopters who lack digital etiquette training and e-commerce exposure although they are warned to exercise modesty with social media.

Rules: The results show that home rules do not affect online activity. As one participant advised, 'No, there are no rules, and that is because they have no much knowledge about the internet and the only thing that they would say is that I am old enough to know not to do something that would be offensive to other people or too private. Also that you cannot stay on the phone while you have something you should be doing or you can't be on the phone while eating, so the rules are such things only' These extrinsic rules are in contrast with intrinsic rules in the university system, e.g. not using cellphones during class time, that regulate access to content.

Community: The same disparities were found in the community's role players, which also differ in ICT capacity and scale of influence. Unlike the university, which had an ICT help desk, lecturers and peers the home had inadequate funding from parents and little technical help from internet cafes. Participant Mi2 'Specifically using the internet I was never taught at home, using Microsoft I was taught that at a community centre but unfortunately they didn't have internet, they were just teaching basic Microsoft Word and Excel. Accessing internet there was no one to teach, you would go to the internet café and get someone to assist you by connection, how you do it is your struggle, no one teaches you'.

Division of Labour: There is also a sharp contrast between the divisions of labour, which was found to be less diverse and less effective in the home activity system. For instance, very few participants had any influence from friends, neighbours and libraries when they are at home. Participant Si10 was exceptional 'I had a neighbour who was studying engineering at Ibika. He was advanced in technology, so I used to follow him. He owned a computer and a smart phone, and I was always with him. However, I was

young then, and all I knew about technology was watching movies on his laptop. He was the person who motivated me to get an interest in the computer world.' Other participants only reported lack of actors who should otherwise play role that support ICT access. This is due to lack of capacity on the part of these actors involved in the home activity system.

Tools: These ICT tools on the university system are more in variety and effectiveness that those at home. A key difference is lack of WIFI which restricts access to the home system as participant Ai1 puts it, 'At home [access] is a struggle with expensive data as you know… I can't even use my laptop because to connect it to internet is very expensive at home, so I use my phone'.

Based on the interview results presented in Tables 1, 2, 3, 4, 5 and Fig. 2 shows how the components of third generation activity theory reveal the differences in ICT access, capacity and scope between the home and the university systems. See Fig. 2. For the graphical representation of the activity systems.

Table 1. Interview results of the experience of subjects at University and home

	University	Home (Rural & City)
Subject	• I am from a very small town called Flagstaff, I grew up in rural areas, and I came here when I was 19 years, and there was a course for computer in my first year, and that was the first time I learned to use a computer. Ai1 • "I was 19 years in 2012, and I learned for the first time in university. There was an orientation day, and we were supposed to write a test during registration first year, I wrote the test and failed, but then it was just a test to check if I can use the internet and computer, and then I leaned by myself." Ti4 • "I haven't been formally trained, but just from my general knowledge I can identify valuable information just by looking at the source of the information and the content of the information," Si8 • "No I have never been taught on how to buy online or how to treat others, I have bought something online, and I wouldn't really say I have been taught. On how to protect myself or my own privacy because I think for me it comes with what you want to be exposed to on the internet and I just limit the information I put on the internet especially about myself, so I would say for me it has always been a self-taught skill." Si5	• "…No, I got my first smartphone this year and at home, I had my first phone when I was doing grade-10 called V360 for calls and text-messages." Ai1 • "There is a huge gap and need for training. If I can give you an example of my Dj career, some other things that DJs write are too offensive…because those guys are illiterate' They just know how to play music and they can't really deal with criticisms from social media and other people. It's like you are running a business and so some people will always complain that they don't like this and that…and these guys would take it negatively but me I would always take it differently because I have got those skills." Mi3 • I have never used internet to buy anything, you know when you not used to these digital things and you hear people saying there are scams in buying things online, and then you become scared even when you want to buy, • Yes, she did teach me and even at school, we were taught that we must not just use the internet anyhow because one day you going to get a job and they will check your character on the internet and even Facebook. Then it will be difficult for you if they find something negative to be hired for certain job position or even at all because of what you once posted on the internet
	• Learned internet at university • No e-commerce exposure • No information literacy training	• Late smart phone adopter • No digital etiquette training • No e-commerce exposure • Warned to be modest on social media

Table 2. The rules that control the conduct of subjects the home and university activity system

	University	Home (Rural & City)
Rules	• …they restricted us to not download movies or listening to music online. Well it's good for the institution, but for us, it's not because sometimes when studying we need to take a break and listen to music or watch something to refresh Ki14 •..there are rules which one has to agree to when logging in to the university networks and these rules govern what you can do here. The rules state that you can't do things like visit porn sites, downloading movies and other stuff. Pi15 • We are allowed to use our devices in class as long they don't disturb lectures, Mi3 • …we are only allowed to do things that are regarded as part of school work and doing things like watching movies online is forbidden. SI9 • I think the Wi-Fi needs to be improved; the software needs to be updated to the current versions. Also, they should allow us to use some services like torrents. We should be allowed to enter the labs with our own laptops as currently, they won't allow us because they don't want people stealing the laptops in the labs	• No there are no rules, and that is because they have no much knowledge about the internet and the only thing that they would say is that I am old enough to know not to do something that would be offensive to other people or too private. Also that you can stay on the phone while you have something you should be doing or you can't be on the phone while eating, so the rules are such things only • Yes, I think there are rules [home] because you can't really do those things, you have to ask permission to use the internet for academic purposes only, and maybe you can use them when they are not around do your other stuff but you can't access the internet for anything other than academic. Mi3 • It depends because we are not allowed to be on our phone while dining as a family or during the sleeping time but our parents don't really have much control on that, so there are no rules I can say. Ti3 • ….not rules but WhatsApp is always an issue with parents when you always on it but then when they refuse me WhatsApp I can always go out and be with my friends and do my WhatsApp, as long as I have done all my duties and back in the house at the right time. Ai1
	• Access to bad sites is blocked • Not allowed to download drama series • allowed to use own devices	• No parental rules about internet use • No excessive use mobile and use during diner

Table 3. The influence of the home and university community on students' digital access

	University	Home (Rural & City)
Community	• No, I don't have friends who know better than me in using the internet…. Yes, they [Lecturers] do give me enough information I need because most of the things I know is because of them • I leaned here a lot from my friends; I didn't learn anything from ICT and lecturers because even though there is a computer lab in my department, we were told to do books when we want to access it. Ai1 • Yes, I had two friends one doing a B. Comm General and the other Economics we used to do CLT practical together, and since I was struggling with computers a lot, they helped me a lot. Ki14 • ….. but I have friends who still post their nude pictures online or share derogatory statement online which are things that may cost them in the future because I heard employers look at your online activities. I think they need to be taught more about avoiding things like that. Pi15 • Yes, I remember very well the lecturer was by Dr N. She spoke an about cyber bullying and that we should respect others. She also spoke about restricting the amount of information you give out online and on social media to avoid cyber bullies	• Specifically using the internet, I was never taught at home, using Microsoft I was taught that at a community centre but unfortunately they didn't have internet, they were just teaching basic Microsoft word and excel. Accessing internet there was no one to teach, you would go to the internet café and get someone to assist you by connection, how you do it is your struggle, no one teaches you. Mi2 • In rural areas one thing is that people who have already acquired skills that they would be able to teach those who don't have move out of the village to better city and we are left alone to hustle the skills on our own, when they come back we have already got the skills on our own and some of them become very interested to assist there and there in improving what we already have. Mi2 • In the rural areas side there really nothing much you can learn there, there's not much support they can give you like in my rural community most people are illiterate, and even my own parents are not educated, so they don't really know much about those things to be able to offer any support. Mi3 • In my township community some of my friends have access to these things, and I can go to their homes and be able to access the internet as much as I want unlike at my home where it is limited and restricted by rules, and I can also get skills and knowledge from them by asking of what I don't know, and they tell me because they are much informed." Mi3
	• Educators; • Friends/fellow students	• Parents; Siblings; friends; • Internet cafes; libraries

Table 4. The effect of division of labour on students' digital access

	University	Home (Rural & City)
Division of labour	• They [ICT support] give me support like ICT when I have a problem with my laptop I do go to them, and they fix it for me so that I can be able to use it and also access the internet. Ni6 • [ICT support] they do not assist us with the learning, but they help with setting up our login profiles, our emails and printing our student cards. Si9 • Lecturers also do support as they give us support on how to access information especially about certain projects that they give us." • "The tutors move around helping the struggling students but often we are taught as a group and some people can't understand things quickly and the class may even end and they still do not understand what we were learning" Si9	• "[Siblings] my sister who is 5 years older than me taught me most of the things about technology, how to use a phone and most of the things I know now I learned from her." Si8 • "[Friend] I can't say I learned something (from friends) because the community I come from is a bit behind, in fact, I had to be the one teaching them when I went home" Si15 • "[Neighbours] I had a neighbour who was studying engineering at Ibika. He was advanced in technology so I used to follow him. He owned a computer and a smart phone and I was always with him. However, I was young then and all I knew about technology was watching movies on his laptop. He was the person who motivated me to get an interest in the computer world." Si10 • "[Parents] at my home there is no one to help me with the money to buy bundles because no one has it." Oi6
	• Technical support from ICT Help desk; • Academic content from Lecturers; • Practical Assistance from Fellow students	• Parents provide funding; • Siblings & friends assist; • Internet cafes & libraries provide Access

Table 5. How digital tools are being used by students at home and university activity systems

	University	Home (Rural & City)
Tools	• ".. here at school I have free Wi-Fi all the time. … So on a daily basis, I would say I get about 9–10 h of internet access." Si8 • "…. almost 90% of my classmates have laptops, and 99,5% have smartphones." Ai1	• 'At home [access] is a struggle with expensive data as you know… I can't even use my laptop because to connect it to internet is very expensive at home, so I use my phone' Ai1 • "Flexibility is serious caution and the fact that you can't compare desktop with the phone then you can't really be flexible on the phone as you would do on a desktop." Mi2 • "we have limited resources when it comes to technology in the Eastern Cape, and the teachers seem not to take

(*continued*)

Table 5. (*continued*)

University	Home (Rural & City)
	technology serious, and they do not dedicate time to teach students how to use computers. There is also a lack of internet connectivity. I started to hear about Wi-Fi when I got to university."Ki14
• Computers; • Smart phones; • Free Wi-Fi	• Smart phones; • Data Bundles;

5 Discussion

This paper has attempted to promote inclusive ICT assess by investigating the disparities between access at the home and institutional levels and discussing how to address them. It used university students operationalized as subjects for assessing the two activity systems as articulated by Engeström's [1] third generation activity theory. The university (operationalized as activity system (1) was presented as a proxy of institutions that provides access to its patrons. It was selected because educational institutions provide about 11.3% of Internet access in the Eastern Cape. The home activity system (operationalized as activity system (2) represents students' rural and city homes where they reside during the holidays and after they complete their studies. The internet access in the home activity system was found to be mainly through mobile data bundles. Mobile access amounts to 80% of internet access in the Eastern Cape of South Africa [39]. This does not suggest that the entire 80% of mobile access in the province is used on the home activity system, the researchers observed that a majority of institutional internet users in the Eastern Cape also use mobile access.

Our findings show that Internet access is limited on the home front yet it is unlimited at the institutional activity system. The informants claim that their internet access drops from 100% at university to about 30% when they go home. Participant Si8 advised, '.. here at school I have free Wi-Fi all the time. … So on a daily basis, I would say I get about 9–10 h of internet access.' This disparity is expected to also occur between the home and other institutional fronts like the workplace. This is mainly because of the access costs, which discourage many domestic users from subscribing to conventional broadband access. As participant Ai1 advised, 'At home [access] is a struggle with expensive data as you know… I can't even use my laptop because to connect it to internet is very expensive at home, so I use my phone.' The home activity system also lacks ICT devices that are necessary for connecting to the internet. ICT devices are operationalized in this study as tools that mediate between subject and object to produce the outcome of ICT enable opportunities. Very few rural and high-density suburb inhabitants have personal computers and smartphones.

While this may be due to lack of awareness of the need for Internet access, we found that it is also due to lack of financial resources. There is a need to address the socio-economic inequalities and socio-political issues that cause these disparities. Both lack awareness, and low income are linked to the socio-historical contours of the social exclusionary policies of the apartheid Era as articulated by Kruger et al. [44].

The study found some regulatory and ethical rules that govern the usage of ICTs at university yet on the home activity system these rules were rather insignificant. This is arguably because of the need to address the misconduct that accompanies high usage at the university while the insignificant online activity at home hardly warrants the intervention of parents and guardians. As interviewee Ki14 put it, '..at home, there are no rules they don't mind if I'm using my laptop.' We found that part of their lack of involvement emanates from their lack of digital skills.

The exclusion from the digital economy is so widespread that the participants reported that in their home communities, the students have very little to no contact with anyone who can help them to develop digital skills. As stated by one participant, '… [in] my home town Bizana most people know nothing about using mobile devices or the internet.' This suggests that the young people that are not enrolled in universities or employed by any institution have limited contact and scope to develop the digital skills that are necessary for exploiting ICT enabled opportunities that are getting more important in the information age.

There is also a difference in the division of labour. The university system has technical skill and assistance from lecturers, fellow students and ICT helpdesk knowledge support, yet the home can only provide limited financial assistance and almost no digital skills at all. Participant Si15 said, 'I can't say I learned something (from friends) because the community I come from is a bit behind, in fact, I had to be the one teaching them when I went home.' Participant Oi6 added '[Parents] at my home there is no one to help me with the money to buy bundles because no one has it.' Another participant suggested that poor support is due to lack of knowledge of the usefulness of the internet. In her own words, '… [in] my home town Bizana most people know nothing about using mobile devices or the internet. As a result, even when I asked for money to go to the library they would not understand why I need to go to the library.' This is a serious disadvantage for young people growing up in the digital era where more and more government and business to citizens' information is migrating to online platforms.

Since activity theory assists use to unearth the contradictions in the phenomena under investigation [45], we found different levels of access between activity systems that enjoy the same coverage yet there are no rules or actors that inhibit use of ICTs by the marginalized people. The home and institutional activity systems have roughly the same 3G, 4G and LTE mobile coverage in the Eastern Cape. The same applies to fixed internet infrastructure within city limits yet the home activity system has less access. As a result, the disparities in access and usage cannot be conceptualized as a spatially determined anomaly but rather as socio-economic and socio-culturally defined one. For that reason, the ICT infrastructure and mobile operator companies may claim to be serving the nation equally yet the end users face different levels of access. There is, however, a discernible co-existence of being previously disadvantaged and being currently uninvolved in the digital world as typified by the home activity system.

According to Hickey and du Toit, [46] social exclusion can be associated with political, economic, socio-cultural and spatial imperative and these are said to be closely related to long-term historical processes. Such a situation represents adverse incorporation on the part of the users on the home front [46].

6 Limitations and Conclusion

This study made its contribution to inclusive access by identifying the factors that shape the access disparities between the home and institution activity systems. While it has revealed the of glaring disparities in access between the two activity systems, the paper faces limitations in attempting to assess the socio-historically determined factors and effects of exclusion thorough the eyes of students since they did not experience the causal influence of apartheid. We conclude that there is evidence of socio-demographically shaped patterns of social exclusion within the Eastern Cape Province. While we found no deliberate effort to perpetuate exclusion by social status, this study shows that it is inadequate to ensure uniform investment in ICT infrastructure between the home and the institution. There is a desperate to address the socio-political and socio-economic factors before equal opportunities in the digital front can be realized. We confirm that ICT access disparities require no technological deterministic solution. Future research must consider the using adverse incorporation theory for assessing access inequalities because it enables an assessment of the effect of localized livelihood strategies over both time and space.

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