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Assessing Rural and Urban Teenagers' Domestication of Technology:
The Role of Digital Literacy

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ABSTRACT

This paper focuses on a qualitative analysis of the ways in which rural and urban teens domesticate digital technologies that are available to them. The study draws from 16 focus group interviews with teenagers in the southeast and north central parts of Nigeria using a child-centered approach. Anchored on domestication and technological appropriation framework, the paper explores the circumstances whereby technology assumes the meanings and uses assigned to them by the teens. From gaming, social connections, leveraging schoolwork, information and news, family connection, to self-learning and education, the findings foreground the idea of domestication whereby the teens metaphorically tame digital technologies to suit their realities as children in specific contexts. Analysis foregrounds barriers such as digital illiteracy and other factors limiting children's digital development. Recommendations are made on how to improve children's full digital participation in the local context.

KEYWORDS

Agency, Digital Gatekeepers, Digital Literacy, Digital Technology, Focus Groups, Nigeria, Rural and Urban, Technology Appropriation, Young People

INTRODUCTION

Within the African continent, the growth and use of new media technologies such as mobile phones, social media and the Internet are steadily rising. Technology is changing the communicative and socio-political practices in many African countries. Despite this, there is little that is known about the impact of digital technology in everyday life of key populations, particularly young people and children. Using the internet and other technologies has become a common routine for many children and adolescents from high-income countries. Many children are accessing the internet at quite early ages, and mobile devices such as smartphones are becoming embedded in many children's daily life, for education, socialisation, and play. With everyday life disrupted and almost 'digital by default',

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the COVID-19 pandemic has revealed both the potentials of digital technology and the growing divide in access to and use of technology, skills and digital literacy across many parts of the world.

This paper, supported by the domestication and technology appropriation framework, focuses on a qualitative discussion of the ways in which rural and urban teens domesticate, appropriate and localize digital technologies that are available to them such as mobile phones, mobile internet, and social media. From a child-centered perspective, the paper utilized data from focus group interviews with teenagers in southeast and north central parts of Nigeria. It explores the circumstances whereby technology assumes the meanings and uses assigned to them by teens and the challenges they encounter in their negotiations with technology. The paper also exposes the challenge of digital literacy associated with children's access to and use of technology and asserts the agency of children growing up in a digital world.

LITERATURE REVIEW

Children's Relationship With Media

Young people are increasingly playing a key role in the global adoption and diffusion of digital media, even in developing countries, to the extent that technologies have become a common aspect of children and young people's lives. Their relationship with technology is borne out of two key reasons. Firstly, since they grow up in an increasingly ubiquitous digital media environment, young people are predisposed, more than any other generation, to the use of new technologies. Secondly, children have a penchant for curiosity, playfulness, and creativity. This is based on the concept of "playful engagement" – a term which suggests that children's tendency to play and explore puts them in an almost comfortable and natural position to organically engage with technology on their own (Woolsey and Woolsey, 2008, p.128). In the contemporary era, young people's success with technology has been linked to 'digital literacy' (Pangrazio, 2016).

As technology continues to evolve and improve, young people's digital practices and digital literacies appear to be taken for granted, even when their natural inclination towards technology is palpable. This 'taken-for-grantedness' is traced to debate surrounding children, youth, and the media since the 1950s. Historically, the debate has raised broad questions around the impact of media technology – beginning with television, and now, internet and social media – on the educational, moral and social development of this 'special audience'. These have contributed to policy discussions on the regulation of media technologies and contents for young people. Because many children and young people are believed to be spending more time with various kinds of media than with parents, physical activity, homework, and chores, there have been both moral and media panics over the long-term negative effects of children's media use. This focus on the negative influence of media technology often led to a neglect of positive accounts of the role of the media in children's lives and have tended to perpetuate the rhetoric of "the Internet as an ungovernable 'Wild West', unsafe for the impressionable young" (Livingstone, Mascheroni & Staksrud, 2018, p. 3).

Studies, media reports and perspectives around children's relationship with the media such as television has largely been characterized by moral anxieties and negative media narratives, resulting in negative impacts of this relationship being the focus. In the new digital and visual media era, there is a growing new anxiety around how the online world presents risks and dangers to vulnerable children's safety which ranges from exposure to pornography, paedophilia, to cyberbullying, etc. Other concerns and risks include privacy issues, online grooming by strangers, being exposed to malware or viruses. Another possible explanation for these concerns is the growing assumption that there is a possible lack of skills and digital literacy among young people which means that they are susceptible to digital harms (UNICEF & Intermedia, 2013; Third, et al., 2017).

The eventual consequence of focusing on the negative impact of media technology and the moral panics associated with this, is the shutting down of positive outcomes of technology and a

dispossession of agency from children and youth, often by social actors, including parents, adults, researchers and the media. The traditionally held beliefs which tend to view children as incompetent and immature, or as Coady (2008, p. 4) puts it, "human becomings, not human beings" undermines the level of literacy they may have as well as the children's agency and rights in the digital age, as espoused by the United Nations.

The problem is even more intense in Africa where young people continue to be viewed as vulnerable and disruptive, growing up in social systems that do not value their views and visions or what they have to contribute to their own well-being (Uzuegbunam, 2020). In recent years, however, a growing number of research have been conducted on the digital practices of young people, without focusing merely on the negative impacts of technology. However, while the number of such research has been growing in global North contexts, the same cannot be said of global South contexts such as Africa. There is a huge research, policy and opportunity gap in Africa where the issue of young people's domestication of technology and the level of their digital literacy is concerned.

Digital Divide

Despite Africa being the second largest continent in size and population after Asia, it is the most excluded and marginalised region in the world based on "unequal geography that excludes large parts of Africa" (Fuchs & Horack, 2008, p.100). The continent is affected by poverty and low levels of infrastructural investment and development. Linked to Africa's marginality in technological and infrastructural development are regional and local digital divides in the diffusion of ICTs in the continent. In many parts of the continent, social media use is still elitist and mostly an urban phenomenon due to the uneven penetration of technology which further creates a dichotomy between users of technology.

There is now a growing body of knowledge that has shown a flip side to the reality of digital divides. Digital divide goes beyond the notion of "meaningful connectivity" demonstrated by Alliance for Affordable Internet (2020) characterized by regular Internet use, appropriate device, enough data, and a fast connection (p. 3). The digital divide debate has shifted by moving beyond first-level digital divide occasioned by differences in access and connection, to include second-level divide occasioned by differences in skills, experience, social support, autonomy of use as well as types and patterns of usage (Hargittai, 2010), and then to the third-level which focuses on the beneficial outcomes of Internet use (Scheerder, van Deursen & van Dijk, 2017). In parts of Africa, these new levels of digital divide or disconnection exist. For instance, Wamuyu (2017) highlights a clearly challenging situation whereby urban digital divide exists between those living in low-income neighbourhoods and those living in more affluent residential areas.

In the age of digital and social media, it is now commonplace for scholars and educators to view children and young people as the most active and innovative users of new communication technologies. Young people have been dubbed the most media literate of any generation, most connected and plugged in, most technology savvy and most receptive digital media users (Dodge, Barab, Stuckey, Warren, Heinselt & Stein, 2008; Loubser, 2012). Other common terms used to characterize them include Digital Natives, Millennials, Net Generation, Generation M, Netizens, and Cyberkids. While these colloquial terminologies, especially the notion of 'digital natives' are indicative of the immersive relationship between young people and technologies that are available to them, the terminologies have been found to be problematic. For instance, Brown and Czerniewicz (2010, p. 357) argue that the concept of the 'digital native' is especially misguided, offensive, and inacurrate both empirically and conceptually. Some of the reasons they proffer include: children with increased digital access and opportunity are often found among the privileged elites; the term 'native' connotes colonialism, apartheid, and domination; and age is not a determining factor in young people's digital lives, but instead, it is their familiarity and experience using ICTs that count. Furthermore, Livingstone (2018) has referred to the colloquial terms above as myths associated with generational power hierarchy between children and adults in the digital age. Other scholars argue that characterising young people as a monolithic

group with universal talent to manage digital media does not account for their different age groups, skills, and motivations (Plowman & McPake, 2013; Beavis, 2013; Correa, 2016).

THEORY AND METHOD

This study draws on the framework of domestication and technology appropriation theory. The theory is a multidisciplinary approach which describes the processes by which innovations, particularly new technologies are appropriated, adapted or contextualised by users who often are bound to have different characteristics depending on their personality and geography. Also known as appropriation and adaptive structuration (Donner, Gitau & Marsden, 2011, p. 578), the theory is attributed to scholars such as Silverstone, Hirsch and Morley (1992) for their influential work on domestication, focusing on how technologies are integrated into everyday life and adapted to daily practices, particularly from the domestic standpoint. Within the domestication framework, emphasis is on "the meanings that people attribute to technologies, as well as how they use them – that is, both the material and the symbolic aspects of technology." (Lievrouw, 2009, p. 313).

The methodological principles and procedures followed in this study were informed by and drawn from the child-centred approach (the new sociology of childhood) espoused by sociologists such as Corsaro (2005). Here, "the general trend is research with or for children" which repositions children as the subjects, rather than the objects of research, and reflects a direct concern to capture children's voices, perspectives, interests, and rights as citizens" (Corsaro, 2005, p. 45). The overarching idea of this methodology is that children must be perceived as social actors with autonomy and rights; hence, methods must be adapted and made to fit their particularities. In order to explore the practices and lived experience of children with digital media, this study approaches the terrain not with the moral panic lens of the old research paradigm, but with a clear-sighted, contemplative, and dispassionately critical lens. Sefton-Green (2006) observes that the new sociology of childhood concentrates on the positioning of children and young people as having agency or power in contradistinction to classic descriptions of these social groups as passive objects of adult supervision.

The qualitative method of focus group discussion was used because of the opportunity it afforded to "hear the children's voices directly" (Haddon and Livingstone, 2014, p. 39). Focus group discussion was especially appropriate since "group interviews with children is one of the strongest methods of exploring children's shared life experiences and children's own interpretations of their lives" (Corsaro, 2005, p. 49). Sixteen focus groups were conducted with 175 schoolchildren sampled from eight public and private schools located in Anambra State and FCT-Abuja (two of the major states in Nigeria). The children were aged 13 to 18 and were located in rural, peri-urban and urban areas. The discussions as analysed in this specific paper focused on questions pertaining to the following: how necessary or important they feel digital media are in their everyday life; the particular needs that any or a combination of these technologies satisfy in their lives; if they can live without these digital technologies and reasons why or why not; whether they derive joy in using any of these digital media and why this is so.

The study adhered to a carefully mapped ethics protocol, covering important aspects such as information disclosure, informed assent and consent, confidentiality, potential harm to participants and institutions, and financial compensation (Uzuegbunam, 2022). These ethical principles ensured that the children's rights, agency, and dignities were assured in the research process. The qualitative data was transcribed into full text, and coded for qualitative thematic analysis from which common themes and insights were identified across the data.

A deductive approach was used and the data were coded using a scheme for classifying and labelling statements and exchanges. Categories were generated by the various topics covered in the interview guide which were also informed by the research questions. After the pre-generated categories or themes (or nodes and sub-nodes) were organised in NVivo, the next step was to devote a considerable amount of time reading, sorting and re-reading the material to try out, test and revise

emerging interpretations. The final step was data reporting which involved synthesising, summarising and data cleaning.

FINDINGS AND DISCUSSION

Overall, it was evident that teens are accessing and making use of digital technologies in both direct and alternative ways. This means that some of them have personal devices like mobiles either bought for them by adults in their lives or by themselves using their personal savings, whereas some of them do not own personal devices but make use of friends', older siblings', parents' and neighbours'. This foregrounds the notion of "mobile leapfrogging", a term defined by Puspitasari and Ishii (2016, p. 472) as the process by which new Internet users access the Internet using mobile phones, skipping the wired Internet connection. The premise is that mobile Internet can play more significant role by serving as a tool to leapfrog the digital divides in developing countries.

The children's domestication of technology in everyday life is located within a number of broad themes focusing on uses, impacts and outcomes. They include: Social connections; Gaming; Schoolwork, Information and News consumption; Fostering family connection in real time; and Leveraging self-learning and education requirements. In addition, the barriers to the children's digital development and competence are highlighted.

Social Connections

One of the most prominent uses to which teens put digital technologies was to create, foster, and maintain their social relationships with peers, parents and people they considered important. The teenagers relied very much on their mobile phones to communicate, stay connected and to feel a part of certain social groups. These social groups, crucial to their everyday life, extend from home to school and similar spaces.

In addition, the theme of social connection explores the psychological and emotional satisfactions derived when teens feel so connected and belonged. Studies have argued that contemporary teens want to engage in the same practices they have always engaged in such as talking, sharing, flirting, joking, confiding, comparing, making new friends, building relationships and widening their circle of friendships (Ito, et al., 2008; Livingstone, 2014; Stern and Burke Odland, 2017). The difference is that a part of these now go on through their mobile phones and online networks via texting, instant messaging, and Internet connections. These technologies support them in extending friendships that they navigate in the familiar contexts of school, religious organisations, sports, and other local activities. The theme of Social Connections is further discussed under three broad sub-themes - use of social media; communication and friendship; and dealing with boredom, routine, and mental wellbeing.

Use of Social Media

Many of the children used their mobile phones and social media to connect and exchange information with old peers and to make new ones, including from outside the country. The most dominant of the social networks they signed up on was Facebook, although a few reported having an Instagram account as well. Their Facebook friends ranged from as low as 100 to as high as over 1,000. Also, many of them used Instant Messaging platforms such as WhatsApp and Facebook Messenger.

The use of social media among teenagers has emerged as a key practice associated with contemporary youth culture. Nigerian teens' motivation to transgress boundaries with social networks is more likely driven by the growing need to be independent from parents and to establish a desirable identity in their peer network (Lauricella, et al., 2014; boyd, 2014; Livingstone, 2014; Stern & Burke Odland, 2017). A good number of the teens, especially those who did not own mobiles of their own tended to use their parents' devices to sign up on or create social media accounts. In some cases, their parents were not even aware that the apps were installed in their mobiles because these parents did not have the time to notice everything going on with their own phones. A study by UNICEF and

Intermedia (2013) found that when adolescents in Kenya share a mobile phone with anyone, they created separate folders or spaces on the phones for their own content and contact lists.

Research has demonstrated that social media can be an online playground in which children assemble with their friends and interact almost in ways impossible to interact in real-life. Such shared online communication is essential for children's personal wellbeing in the digital age since according to Arnett (1995) cited in Livingstone & Sefton-Green (2016, p. 34), young people prefer to control the resources that inform their self-biography, through the media and in transgression of the authorised narratives of themselves from parents and school – which are often moralistic and teleological. Bock (2013, p. 69) has called this "cyber socialising" while arguing that these media enable adolescents to be socially connected as part of an in-group, despite physical and geographic constraints.

Communication and Friendship

Communication and friendship were very important to the young people. They reported using mobile phones to call their friends and relatives, send text messages, chat on social networks, specifically Facebook and WhatsApp, and to generally keep in touch with classmates, friends and relatives who were faraway. The practice of keeping in touch with far-away relatives and friends is essentially the lived experience of many of them who lived with relatives and godparents in the city or away from immediate families in order to attend school.

If I am not with my phone I won't be okay because I don't stay with my parents and I can't stay without talking with them. (Student 1, Male, Anambra state)
I do not have a phone, but I usually use my uncle's phone to call my mother… (Student 8, Female, Anambra state)
I do not have a phone, but I use my aunt's phone to play games and make calls to my parents. (Student 6, Female, Anambra state)

Several studies have corroborated this finding in relation to the ways in which digital technologies aid children's social connection and relationships (Chmielowski, 2021; UNICEF & Intermedia, 2013; Livingstone, 2014; Xie, 2014; Livingstone & Sefton-Green, 2016; Lorenz & Kapella, 2020; Ergler, et al., 2016; Stevens, et al., 2016; Third, et al., 2017; Stern & Burke Odland, 2017). Like children in Austria, and reported by Chmielowski (2021), they attach great importance to their use of technology to make and maintain social contacts.

Furthermore, mobiles helped in transmitting important information between the teens and their friends when they got sick or missed school for any reason.

When I don't go to school I can use the device to communicate with others, find out what happened in school. They can use it to send me the assignment or anything they did in school and I can use it to browse the internet… (Student 5, Male, FCT-Abuja)

The children's use of mobile technology also helped to reduce the stress of friendship with regards to the time and resources it normally would take to maintain them. For instance, sometimes it would normally cost more money and time visiting friends in their respective homes than staying connected via digital spaces. In deepening their friendships also, the data suggest that digital technologies helped the young people in reaching and helping themselves out with mutual favours; and sometimes this was done through a simple text message. This is consistent with other studies such as Bock's (2013, p. 70) finding that South African adolescents' use of social networks was more relational than transactional and that they used them to achieve a number of communicative goals such as making plans, asking for and offering help and support. boyd (2014) also opines that developing meaningful friendships is a key component of teens' 'growing up'. By offering advice, support, entertainment and escape route

to loneliness to each other, young people "enable the transition to adulthood by providing a context beyond that of family and home" (boyd, 2014, p. 17).

Dealing With Boredom, Routine, and Mental Wellbeing

The children strongly reported using mobile phones, the Internet and social networks to negotiate issues related to their (mental) wellbeing ranging from boredom, routine, sadness, to loneliness. They reported that these were sometimes triggered by the strict rules of their parents, relatives, guardians, schools, and other external factors. They deal with these issues through chatting, texting, occasional phone calls, watching funny videos, playing games, and listening to music. The significant outcomes from these practices included restoration of happiness, relaxation, gainful distraction, and relief from the stress of schoolwork, home chores and errands.

Like when I am bored I will just take my phone I hear music and at the same time I play my game… that's when I have finished everything I am doing because my phone keeps me going. There is this vibe when I am using my phone like mehn! I can't even stop. It just comes like when I am using my phone…I am actually high in spirit because it gives me joy, because when I am sad I just carry my phone and start listening to my music or playing my games. I am just free. (Student 8, Male, FCT-Abuja) WhatsApp and Facebook. I may be sad, they might have annoyed me at home and I pick up my phone and start chatting with them, they might share jokes that make me happy and make me forget all my sorrows. If the social media is not there I think it may affect me. (Student 10, Male, FCT-Abuja)

Research evidence (see Lorenz and Kapella, 2020), demonstrates that, like Nigerian teens, young people elsewhere are dealing with boredom, exhaustion from routine, sadness and loneliness through their use of digital technologies such as mobile phones and the Internet. In Kenya, as reported by UNICEF and Intermedia's (2013) study, one of the overarching motivations for children's use of digital and social media is to alleviate boredom, and to pass the time by using mobile phone for texting, making calls, etc. Highlighting the notion of self-care, Wilson (2016, p.283) in a study of children in Scotland, argued that their use of digital technologies may constitute resources for taking care of oneself, or what the author calls "technologies of self-care" in dealing with anxiety and difficult circumstances. In a similar vein, Livingstone and Sefton-Green (2016, p. 32) write about a "third sphere" in children's private space after the home and school, and conclude that this sphere is where they hang out and escape the strictures of home and school.

Although there is no strong evidence to suggest that leisure time activities are being completely displaced, however, for an increasing number of teens in Nigeria, media-related and internet-based activities are becoming important components of their lives. This assertion is supported by authors like Kadiri and Muhammed (2011) who contend that there are now few recreational facilities in most developing countries, including Nigeria. Consequently, this makes children rely on media as a past-time and hobby.

Gaming

Gaming was found to be popular among the teenagers, with both male and female participants affirming their love for playing games with mobile phones, computers and video game machines purchased by their parents or owned by their older siblings and friends. They enjoyed playing games for a variety of reasons. These range from the support they gain for emotional and physical wellbeing, fun and entertainment when bored, keeping busy when they had nothing else such as studying or house chores to do, stimulating a happy mood, to relaxing when their parents, relatives and guardians were not available to police them.

Technology has done so many good things. In my life as a child I can't stay a day without playing games. I play mobile games with my dad's phone or I play outside. So technology did great thing for me through mobile games because I don't think I can cope a day without game. (Student 7, Male, FCT- Abuja)

Digital or electronic play as an increasingly popular outcome of children's practices with technology contributes to their social and mental development. It replaces traditional forms of play with toys (from a western perspective) and physical play activity rooted in cultural symbolism which is peculiar to the Nigerian society – characterised by folk tales, football, outdoor games, etc. Fleming (2008, pp. 55-69) has called mobile or video games "mediatised toys" or "mediatised symbolic objects" which replace traditional toy objects, especially for boys.

However, electronic play as a new site of recreation for children is still largely unexplored. In their study of Australian young people's use of digital technologies, Swist, et al. (2015) found that online and video games, provide opportunities for learning, creativity, identity formation, socialisation, relaxation and stress relief. Like Nigerian children, the study finds that digital social games, like traditional forms of play, can contribute substantially to positive youth development.

Schoolwork, Information, and News Consumption

Analysis indicated a strong inclination to rely on the Internet for schoolwork and information, using mobile phones and occasionally, computers. The children reported having used Internet-enabled mobile- and smart-phones to tackle their school assignments and "to get answers to difficult questions". Equally, some of them had had to go to cybercafés for this same purpose. Some of the participants shared thus:

I use my mobile phone to browse the internet e.g. Google. If I am given a hard assignment, I go to Google and ask some questions… (Student 10, Male, FCT-Abuja)
Mostly I use the internet. Whenever they give us assignment, I go to the internet and sometimes they ask you to do research. (Student 3, Female, FCT- Abuja)

Several studies, old and new, have corroborated the importance that children attach to using digital technologies for their schoolwork (Chmielowski, 2021; Thinyane, 2010; Livingstone & Sefton-Green, 2016; Third, et al., 2017; Badri, Nuaimi, Guang & Rashedi, 2017). Besides the opportunity to access information quicker, when compared to the old or legacy media such as books and newspapers, another reason for preferring the Internet and the mobile phone was so that their parents, godparents and relatives would spend less money on physical books that they need for schoolwork. The data also suggest that the teens, especially those living within the urban and peri-urban areas, were encouraged by some of their teachers to use the Internet for their assignments, although the teachers still frowned at their appearing in school with mobiles or gadgets. Their responses also suggest that these teachers gave them the impression that whatever they were unable to teach them could be grasped from the Internet.

Furthermore, news was another priority of the children when using mobiles, the Internet and computers, for the few who could afford to use computers. However, some of them confessed to not pandering towards news emanating from the legacy media such as television but preferred and relied on Facebook and blog sites for news. On Facebook, some of them followed the Facebook pages of major news sites and got updated on latest news.

For me, using mobile phone is important to a growing child because through the mobile phone you get information about things happening around you and you will also socialise with people. (Student 1, Male, Anambra state)

I make use of mobile phone to make calls, browse and do researches. I also use it to assess Linda Ikeji's blog, read news and know the latest happening. (Student 9, Male, Anambra state)

Fostering Family Connection in Real Time: Childminding, Monitoring, Emergency

There is an indication of the mobile phone assuming a largely-felt, critical place in the symbiosis between and among parents/guardians, the children and their older siblings particularly in urban settings. The children reported that their parents and godparents would normally use mobile phone as a childminding and monitoring tool in the family setting. This corroborates what Plowman and McPake (2013, p. 29) had rightly called "electronic babysitting" in their study of UK parents and their children. Similarly, Ling and Haddon (2008, p. 138) described this practice as "remote parenting", describing the state of affairs, like the children in this study testified, whereby parents and their children communicate about and keep track of family plans and household chores, etc. Some parents and guardians lead busy lives and find digital technologies as welcome alternatives to traditional parenting. Some of the children reported to have been more allowed by their parents, godparents and older siblings with whom they lived, to use mobile phones because with the devices, they could easily reach them when they are not home, and vice versa.

The mobile phone assumes an important device domesticated in the family setting for such social, yet serious, use – especially as landline telephones have become almost inexistent in Nigerian households. By serving as a useful digital device during emergencies, to keep track of family members when the family is not together, and for family coordination, the mobile phone becomes appropriated in this way as a unifying point for familial connection and monitoring. Some of the children enthuse as follows:

My parents support me to use the mobile phone because of the need to contact them when they are not home or to send me on errand. (Student 10, Male, Anambra state)
My dad bought the phone for me, so I can contact him and also to find my way around in case I miss my way because I am new here. (Student 1, Male, Anambra state)
I used my phone last yesterday afternoon to call my mom to know what to prepare for dinner. (Student 8, Female, Anambra state)
Using a mobile phone is good because there may be an emergency especially when your parents are not home, you can use the phone to contact them immediately. (Student 4, Female, Anambra state)

There is increasing new evidence that digital technology is becoming a more accepted part of everyday family life in many places around the world and that they can play a key role in facilitating intra-familial communication and strengthen family ties (Lorenz & Kapella, 2020; Ling & Haddon, 2008; Third, et al., 2017, p. 72; Ergler, et al., 2016). Technology is also critiqued as changing family dynamics positively and negatively (Schofield-Clark, 2009; Livingstone & Sefton-Green, 2016) and advancing a bottom-up digital transmission from children to their parents, thereby helping to close up some digital inequality and literacy gap (Correa, 2015). Furthermore, scholars argue that adolescents are gradually playing the role of digital facilitators, digital champions and technology experts in their families – to support and encourage parents, siblings and adults to go online (Chmielowski, 2021; Correa, 2015; Eynon & Helsper, 2015; Correa, 2016) and to disrupt the traditional sense of family and parental authority. As one of the participants said:

There are some things my parents don't know in the internet. When they see me do them they will be like I want to learn this, so they are very happy seeing me do those things. (Student 10, Male, FCT-Abuja)

Leveraging Self-Learning DIY and Requirements of Formal Education

Although this was not widespread and was only observed in the two urban schools in FCT- Abuja and among a few male children, data analysis showed that digital technologies such as computers and the Internet helped them to leverage on personal (self) learning efforts. Some of them have computers (laptops and desktops which they used at home), acquired by their parents and with which they learnt and engaged with micro and macro activities. By micro activities is meant word processing, spreadsheet and presentation, and printing documents. By macro activities is meant such uses as experimenting with basic computer programming, designing, website development and blogging.

Here, we have an ICT teacher, so we can do all those things. After he has taught us, we go home and practice. We also use the internet. There is a website that is called Touch Develop; there, we get more things on how to do other things. Mostly, it is computer that I use. (Student 10, Male, FCT-Abuja)
To me…I get the chance to get updated news and get more knowledge on how to create a website, applications and other sorts of things on the internet and get daily updates on software and applications... (Student 11, Male, FCT-Abuja)

Studies have evidenced the fact that digital technologies are enabling children to participate in e-learning and to access a wide range of educational and learning resources not previously accessed by older generations of children (Thinyane, 2010; Third, et al., 2017; Livingstone, Lemish, Lim, Bulger, Cabello, Claro, Cabello-Hutt, Khalil, Kumpulainen, Nayar, Nayar, Park, Tan, Prinsloo & Wei, 2017). Nevertheless, significant disparities continue to severely limit educational opportunities (Beavis, 2013).

Besides the more technological outcomes in their personal development drive, the Internet was also useful for some others who relied on it for self-learnings, e.g. DIYs (Do-It- Yourself's) – how to play different kind of sports, food recipes, etc. They watched YouTube videos to learn how to develop or enhance a skill or interest. Some of the children similarly used Internet resources to gain wider knowledge of the field they wanted to pursue a future career in. Recent research has suggested the crucial role that Web 2.0 technologies such as YouTube clips, interactive Apps and instructional videos could play in fostering and supporting self-directed learning and aspirations of young people who are disengaged from mainstream schooling (Swist, et al., 2015), although questions of digital inequality and marginality remain rife across the world.

I derive great joy because first I educate myself in the internet and also, I am training myself because my career interest is to become a computer scientist, so I just like training myself for the future so whatever I am doing now is like for me, I am going further. I derive joy in doing it. (Student 9, Male, FCT- Abuja)
I derive joy when I watch them because they give me more knowledge to know what I am supposed to know in future; to become what I want to become. (Student 4, Male, FCT-Abuja)

Clearly, Nigerian children's appropriation of technology for leveraging on personal development and self-learning appears to be very gendered and classed as data shows that this is common among male children living in urban cities, much more than the females and those who live in the rural or even peri-urban areas.

Further analysis show that the children got help with some of the processes and academic requirements that have become associated with their formal education. They recount, for instance, that they used the Internet to complete a number of academic essentials – registrations, applications, examinations, result checking, etc. – making the Internet and digital devices indispensable. Existing research supports the assumption that ICTs and the digital culture are widely recognised to have implications for education, raising both challenges and possibilities (Beavis, 2013).

Digital (il)Literacy as a Factor Limiting Children's Digital Development

In this study, analysis of teens' appropriation of digital technology in everyday life throws up a number of barriers to their access to and use of technology. What this means is that despite the agency and promise they showed in their practices with digital technologies discussed earlier, the barriers prevent them from fully exploring and taking advantage of digital opportunities. They experience a debilitating level of poor digital literacy and skill (not just them but also their parents, guardians and teachers). The lack of digital literacy and skill limit the children's agency, digital participation and opportunities and results in unchecked risks such as exposure to pornography, meeting with online strangers and online grooming, distractions from studies, identity issues and negative role modelling. There is a lack of basic knowledge of the full range of positive uses to which they can put digital technology in their lives. As a consequence, they get lured into exploring mainly the negative aspects of new media use whenever they have a chance to use digital devices and the Internet. UNICEF and Intermedia (2013) had found that the more parents tried to control children in Kenya, the more they are attracted to what is prohibited, explore technologies on their own terms and conceal their digital practices from their parents and other digital gatekeepers.

Other constraints the children experience include strict mediations by parents, guardians, schools and other adults; high cost of Internet data and airtime; limited power supply; lack of government support.

Previous studies share similar outcomes in relation to children's lack of adequate digital literacy in Africa. In a study involving adolescents aged 10 to 19 in 26 countries, Amanda Third and her colleagues (2017) report that the children experienced significant challenges in accessing and making the most of all that digital technologies have to offer. They grappled with limited digital literacy in order to participate in the digital world. Similarly, UNICEF Ghana's (2017) study of children aged 9 to 11 found that children received very little support in terms of digital literacy education from both home and school. Many of them also believed that the positives inherent in technology use are greater than the negatives, although many of them are concerned about their lack of full digital skills and awareness of digital opportunities to leverage on. In a rapid evidence review of young adolescents and digital media in low- and middle-income countries, Livingstone, et al. (2017, p. 2) found that few children had received much guidance from school or home, too many lack skills other than basic functional skills, with particular gaps in their critical information literacy skills that merit urgent attention.

CONCLUSION AND RECOMMENDATIONS

This paper has discussed findings from a child-centred study which explored the ways in which rural, peri-urban, and urban teenagers domesticated and appropriated digital technologies available to them. The child-centred paradigm is in contradiction to the agelong focus on stereotypical media commentaries and narratives around negative effects of media on children. By intentionally bracketing the negative aspect of digital technologies on children, and particularly from the worldview of adults, the study investigated children's everyday lived reality with technologies from their own voices and views alone. This is in recognition of not only their agency as full human beings, but as a social group with autonomy and rights.

The study acknowledges that the agency of teens in appropriating digital technologies is of great value, particularly in the context of the digital divide and its complexities and children's overall relationship with media highlighted in the literature review.

Findings from this study have reflected the important and varied uses of digital technology for the children in Nigeria, and the underlying impact and significant outcomes from their practices with, and domestication of, technology. The themes explored in this paper foreground the idea of domestication whereby the teens metaphorically tame digital technologies to suit their realities as children in specific contexts, asserting their sense of agency and reflecting on their everyday and

collective social practices with technology. The young people's significant outcomes with technology mostly centred around the need for communication and interaction with friends first, and then family, cultivation and maintenance of their peer cultures, and as critical resources for their education and information seeking.

Furthermore, Nigerian children's views of technologies as self care orients the conversation to the ways in which children are using technologies to cope with everyday life challenges, mental health issues, and restrictive mediations by parents and other gatekeepers. This coping mechanism, an important point of departure on the thesis of domestication, has been described by different scholars (Wilson, 2016; Livingstone and Sefton-Green, 2016) in different ways, particularly in spatial terms connoting both the literal and figurative space that could be occupied by children.

Given the challenges experienced by the young people in their everyday practices with technology, it does appear that the issue of lack of digital literacy and skill is much more serious than many other challenges. There is evidence (Mba, 2020) that schools in Nigeria lack the curriculum necessary to expose children to digital skills, information literacy and opportunity. Unlike children in sub-Saharan African countries, majority of young people growing up elsewhere (Lorenz & Kapella, 2020) are very well aware of the opportunities ICTs offer them. Due to many adults' lack of understanding and use of digital media in African countries, the role that digital media can play in aiding education and learning in children's lives is rarely addressed and maximised. Such related issues such as 'digital knowledge divide' (UNICEF & Intermedia, 2013) or 'digital parenting divide' (Livingstone & Byrne, 2015) or 'second-level digital divide' (Livingstone, et al., 2017; Scheerder, van Deursen & van Dijk, 2017) may result in deeper levels of divide between young people, their parents and other gatekeepers.

It is acknowledged that digital literacy may not be the 'silver-bullet solution' to protecting children's rights and safety in the digital age because everyone cannot be taught all that they need to know at the same time and pace (Livingstone, 2018). However, getting media and digital literacy to be incorporated in Nigerian school curriculum as well as a substantial government investment in digital infrastructure and ICT training is a first step in the right direction. Sustained efforts are needed by government to improve digital literacy initiatives in formal spaces and increase funding for ICT education, equipment and infrastructure for diverse populations in Nigeria, including the vulnerable or those with special needs. Government, families and schools must come to terms with the fact that digital technologies have come to stay in children and young people's lives. People who need to educate the children must be taught and trained as well (Uzuegbunam, 2020).

CONFLICT OF INTEREST

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REFERENCES

A4AI. (2020). *Meaningful connectivity: A new target to raise the bar for Internet access*. Alliance for Affordable Internet.

Arnett, J. J. (1995). Adolescents' uses of media for self-socialisation. *Journal of Youth and Adolescence*, *24*(5), 519–533. doi:10.1007/BF01537054

Badri, M., Guang, Y., & Al Nuaimi, A. (2017). School performance, social networking effects, and learning of school children: Evidence of reciprocal relationships in Abu Dhabi. *Telematics and Informatics*, *34*(8), 1433–1444. doi:10.1016/j.tele.2017.06.006

Beavis, C. (2013). Young people, new media and education: Participation and possibilities. *Social Alternatives*, *32*(2), 39–44.

Bittman, N., Rutherford, L., Brown, J., & Unsworth, L. (2013). Digital natives? New and old media and children's outcomes. *Australian Journal of Education*, *55*(2), 161–175. doi:10.1177/000494411105500206

Bock, Z. (2013). Cyber socialising: Emerging genres and registers of intimacy among young South African students. *Language Matters*, *44*(2), 68–91. doi:10.1080/10228195.2013.784924

boyd, d. (2014). *It's Complicated: The Social Lives of Networked Teens*. New Haven, CT: Yale University Press.

Brown, C., & Czerniewicz, L. (2010). Debunking the 'digital native': Beyond digital apartheid, towards digital democracy. *Journal of Computer Assisted Learning*, *26*(5), 357–369. doi:10.1111/j.1365-2729.2010.00369.x

Byrne, J., Kardefelt-Winther, D., Livingstone, S., & Stoilova, M. (2016). *Global Kids Online Research Synthesis, 2015-2016*. UNICEF Office of Research Innocenti and London School of Economics and Political Science.

Chmielowski, A. (2021). Opportunities and dangers of digital technologies: the views of children and young people on their leisure time behaviour. *Parenting for a Digital Future* (Blog). Available at https://blogs.lse.ac.uk/parenting4digitalfuture/2021/09/22/children-and-leisure/

Correa, T. (2015). The power of youth: How the bottom-up technology transmission from children to parents is related to digital (in)equality. *International Journal of Communication*, *9*, 1163–1186.

Correa, T. (2016). Acquiring a new technology at home: A parent-child study about youths' influence on digital media adoption in a family. *Journal of Broadcasting & Electronic Media*, *60*(1), 123–139. doi:10.1080/08838151.2015.1127238

Corsaro, W. A. (2005). *The Sociology of Childhood* (2nd ed.). Pine Forge Press.

Coyne, S. M., Padilla-Walker, L. M., & Howard, E. (2013). Emerging in a digital world: A decade review of media use, effects, and gratifications in emerging adulthood. *Emerging Adulthood*, *1*(2), 125–137. doi:10.1177/2167696813479782

Dodge, T., Barab, S., Stuckey, B., Warren, S., Heiselt, C., & Stein, R. (2008). Children's sense of self: Learning and meaning in the digital age. *Journal of Interactive Learning Research*, *19*(2), 225–249.

Donner, J., Marsden, G., & Gitau, S. (2011). Exploring mobile-only internet use: Results of a training study in urban South Africa. *International Journal of Communication*, *5*, 574–597. doi:10.4017/gt.2001.01.01.003.00

Ergler, C. R., Kearns, R., Witten, K., & Porter, G. (2016). Digital methodologies and practices in children's geographies. *Children's Geographies*, *14*(2), 129–140. doi:10.1080/14733285.2015.1129394

Eynon, R., & Helsper, E. (2015). Family dynamics and Internet use in Britain: What role do children play in adults' engagement with the Internet? *Information Communication and Society*, *18*(2), 156–171. doi:10.1080/1369118X.2014.942344

Fleming, D. (2008). Managing monsters: Videogames and the 'mediatisation' of the toy. In K. Drotner & S. Livingstone (Eds.), *The International Handbook of Children, Media and Culture* (pp. 55–70). Sage. doi:10.4135/9781848608436.n4

Haddon, L., & Livingstone, S. (2014). *The meaning of online problematic situations for children: The UK report.* EU Kids Online.

Ito, M., Horst, H., Bittanti, M., boyd, d., Herr-Stephenson, B., Lange, P. G., Pascoe, C. J., Robinson, L., Baumer, S., Cody, R., Mahendran, D., Martínez, K., Perkel, D., Sims, C., & Tripp, L. (2008). *Living and Learning with New Media: Summary of Findings from the Digital Youth Project*. The John D. and Catherine T. MacArthur Foundation Reports on Digital Media and Learning.

Kadiri, K. K., & Muhammed, A. Y. (2011). Mass media as correlates of children's behavioural problems in Kwara State, Nigeria. *Journal of Media and Communication Studies*, *3*(5), 198–202.

Lauricella, A. R., Cingel, D. P., Blackwell, C., Wartella, E., & Conway, A. (2014). The mobile generation: Youth and adolescent ownership and use of new media. *Communication Research Reports*, *31*(4), 357–364. doi:10.1080/08824096.2014.963221

Lievrouw, L. A. (2009). New media, mediation, and communication study. *Information Communication and Society*, *12*(3), 303–325. doi:10.1080/13691180802660651

Ling, R., & Haddon, L. (2008). Children, youth and the mobile phone. In K. Drotner & S. Livingstone (Eds.), *The International Handbook of Children, Media and Culture* (pp. 137–151). Sage. doi:10.4135/9781848608436.n9

Livingstone, S. (2011). Internet, children and youth. In M. Consalvo & C. Ess (Eds.), *The Handbook of Internet Studies* (pp. 348–368). Blackwell. doi:10.1002/9781444314861.ch16

Livingstone, S. (2014). Developing social media literacy: How children learn to interpret risky opportunities on social network sites. *Communications*, *39*(3), 283–303. doi:10.1515/commun-2014-0113

Livingstone, S. (2018). Six myths about children in the digital age. *Parenting for a Digital Future* (Blog). Available at http://blogs.lse.ac.uk/parenting4digitalfuture/2018/10/10/six-myths-about-children-in- the-digital-age/

Livingstone, S., & Byrne, J. (2015). *Challenges of parental responsibility in a global perspective*. Retrieved from https://papers.ssrn.com/sol3/papers.cfm?abstract_id=2585686

Livingstone, S., Lemish, D., Lim, S. S., Bulger, M., Cabello, P., Claro, M., & Wei, B. (2017). Global perspectives on children's digital opportunities: An emerging research and policy agenda. *Pediatrics*, *140*(Supplement 2), S137–S141. doi:10.1542/peds.2016-1758S PMID:29093049

Livingstone, S., Mascheroni, G., & Staksrud, E. (2018). European research on children's internet use: Assessing the past and anticipating the future. *New Media & Society*, *20*(3), 1103–1122. doi:10.1177/1461444816685930

Livingstone, S., & Sefton-Green, J. (2016). *The Class: Living and Learning in the Digital Age*. New York University Press.

LorenzT.KapellaO. (2020). Children's ICT use and its impact on family life (DigiGen - working paper series No. 1). 10.6084/m9.figshare.12587975.v1

Loubser, B. (2012). A connected and plugged-in worldview: Young people and new media. *Koers - Bulletin for Christian Scholarship, 77*(1), 1–7. 10.4102/koers.v77i1.27

Mba, D., & Barikzai, S. (2020). Nigeria can equip every child with basic digital skills if it takes three simple steps. *The Conversation*. Retrieved from https://theconversation.com/nigeria-can-equip-every-child-with-basic-digital-skills-if-it-takes-three-simple-steps-133086

Pangrazio, L. (2016). Reconceptualising critical digital literacy. *Discourse (Abingdon)*, *37*(2), 163–174. doi:10.1080/01596306.2014.942836

Plowman, L., & McPake, J. (2013). Seven myths about young children and technology. *Childhood Education*, *89*(1), 27–33. doi:10.1080/00094056.2013.757490

Prensky, M. (2001). Digital natives, digital immigrants. *On the Horizon*, *9*(5), 1–6. doi:10.1108/10748120110424816

Puspitasari, L., & Ishii, K. (2016). Telematics and informatics digital divides and mobile internet in Indonesia: Impact of smartphones. *Telematics and Informatics*, *33*(2), 472–483. doi:10.1016/j.tele.2015.11.001

Scheerder, A., van Deursen, A., & van Dijk, J. (2017). Determinants of Internet skills use and outcomes. A systematic review of the second- and third-level digital divide. *Telematics and Informatics*, *34*(8), 1607–1624. Advance online publication. doi:10.1016/j.tele.2017.07.007

Schofield Clark, L. (2009). Digital media and the generation gap. *Information Communication and Society*, *12*(3), 388–407. doi:10.1080/13691180902823845

Sefton-Green, J. (2006). Youth, technology, and media cultures. *Review of Research in Education*, *30*(1), 279–306. doi:10.3102/0091732X030001279

Silverstone, R., Hirsch, E., & Morley, D. (1992). Information and communication technologies and the moral economy of the household. In R. Silverstone & E. Hirsch (Eds.), *Consuming Technologies: Media and Information in Domestic Spaces* (pp. 115–131). Routledge. doi:10.4324/9780203401491_chapter_1

Stern, S. R., & Burke Odland, S. (2017). Constructing dysfunction: News coverage of teenagers and social media. *Mass Communication & Society*, *20*(4), 505–525. doi:10.1080/15205436.2016.1274765

Stevens, R., Gilliard-Matthews, S., Dunaev, J., Woods, M. K., & Brawner, B. M. (2017). The digital hood: Social media use among youth in disadvantaged neighbourhoods. *New Media & Society*, *19*(6), 950–967. doi:10.1177/1461444815625941 PMID:28694736

Swist, T., Collins, P., McCormack, J., & Third, A. (2015). *Social media and the wellbeing of children and young people: A literature review.* Report compiled for the Commissioner for Children and Young People, Western Australia. Available at http://www.uws.edu.au/data/assets/pdf_file/0019/930502/Social_media_and_children_and_young_people.pdf

Thinyane, H. (2010). Are digital natives a worldwide phenomenon? An investigation into South African first year students' use and experience with technology. *Computers & Education*, *55*(1), 406–414. doi:10.1016/j.compedu.2010.02.005

Third, A., Bellerose, D., De Oliveira, J., Lala, G., & Theakstone, G. (2017). Young and online: children's perspectives on life in the digital age (The State of the World's Children Companion Report). Western Sydney University. doi:10.4225/35/5a1b885f6d4db

UNICEF & Intermedia. (2013). *A (private) public space: Examining the use and impact of digital and social media among adolescents in Kenya*. UNICEF: The Social and Civic Media Section.

UNICEF Ghana. (2017). Research report on risks and opportunities related to child online practices – Ghana Country Report. UNICEF and Ministry of Communications.

Uzuegbunam, C. E. (2020). Why it's time for adults to accept that Nigerian teenagers have a digital life. *The Conversation*. Retrieved from https://theconversation.com/why-its-time-for-adults-to-accept-that-nigerian-teenagers-have-a-digital-life-139498

Uzuegbunam, C. E. (2022). Negotiating youth-centred research: Ethical reflections on research with young people in rural and urban spaces in Nigeria. In Ethics and Integrity in Research with Children and Young People (pp. 43-55). Emerald Publishing Limited.

Wilson, S. (2016). Digital technologies, children and young people's relationships and self- care. *Children's Geographies*, *14*(3), 282–294. doi:10.1080/14733285.2015.1040726

Woolsey, K., & Woolsey, M. (2008). Child's play. *Theory into Practice*, *47*(2), 128–137. doi:10.1080/00405840801992330

Xie, W. (2014). Social network site use, mobile personal talk and social capital among teenagers. *Computers in Human Behavior*, *41*, 228–235. doi:10.1016/j.chb.2014.09.042

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