

# GENERATIONAL PERSPECTIVE OF DIGITAL LITERACY AMONG GHANAIS IN THE 21<sup>ST</sup> CENTURY: WITHER NOW?

**Delali Adjoa Dovie :: Dan-Bright S. Dzorgbo :: Charles C. Mate-Kole :: Helen Nana Mensah ::  
Albert F. Agbe :: Alexander Attiogbe :: Gloria Dzokoto**

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**ABSTRACT** *This paper investigates the nexus between generations and digital literacy. For the study, simple random sampling was undertaken in selecting 361 respondents, while ten participants were selected through purposive sampling. The authors made use of mixed methods, including the interview survey method. The data were subjected to bivariate, correlation and thematic analysis. Concerning the results, younger people turn out to be comparatively more digitally active and more digitally skilled than older people, which is indicative of the fact that there is a generational gap between the two distinct generations in terms of being in a technologically savvy position. This was influenced significantly by the era in which they were born, as each generation comes with its own technological innovations, the phenomena of socialization and social interaction with self-organization as the focus. It is concluded that digital literacy, expositions and exploits are significant in relation to how they shape generational interactions, including the adaptation to digital device utilization in later life.*

## KEYWORDS

GENERATIONS, DIGITAL SKILLS, SOCIAL INTERACTION, SOCIALIZATION, HEALTH, DIGITAL DEVICE

### Authors' Note

**Delali Adjoa Dovie** :: University of Ghana, Accra, Ghana :: [dellsellad@gmail.com](mailto:dellsellad@gmail.com)  
**Dan-Bright S. Dzorgbo** :: University of Ghana, Accra, Ghana :: [ddzorgbo@yahoo.co.uk](mailto:ddzorgbo@yahoo.co.uk)  
**Charles C. Mate-Kole** :: University of Ghana, Accra, Ghana :: [jagbatey@hotmail.com](mailto:jagbatey@hotmail.com)  
**Helen Nana Mensah** :: Dominion University College, Accra, Ghana :: [fosua68@gmail.com](mailto:fosua68@gmail.com)  
**Albert Foli Agbe** :: Dominion University College, Accra, Ghana :: [albertbfm2013@gmail.com](mailto:albertbfm2013@gmail.com)  
**Alexander Attiogbe** :: University of Ghana, Accra, Ghana :: [aattioqbe@yahoo.com](mailto:aattioqbe@yahoo.com)  
**Gloria Dzokoto** :: Dominion University College, Accra, Ghana :: [novis12@yahoo.com](mailto:novis12@yahoo.com)

## INTRODUCTION

Digital literacy comprises the 21<sup>st</sup> century skills related to effective and appropriate use of technology. According to Paul Gilster (1997), digital literacy is the ability to understand and to use information from a variety of digital sources, as required by the new digital age. Kate Pahl argues that the “stuff” of digital literacies is materialized in smartphones, screens, tablets, and other complex digital literacy artifacts that spill into the ‘stuff’ of everyday life” (Pahl, 2014: 173). Julian McDougall *et al.* (2018: 3) outlined three main research fields which provided the conceptual framework and approaches to his project, namely ‘Digital Literacy’, ‘The Third Space’, and ‘Uses (of Digital Literacy)’. The first includes work on the relationship between technology and learning, where learning entails identity work and civic engagement; the second provides ways of understanding geographies of activity and the blurred boundaries between these territories; and the third provides a lens through which sense is made of the range of things that people do with digital technology. Of these, the uses of digital literacy dimension are significant for this paper.

As Robert Hoggart (1957) observes, there is a duality of uses in the digital age. Other uses encompass the following: educational/academic interventions that range from addressing competency gaps to co-creative, participatory projects seeking to utilize digital literacy for constructivist pedagogic means and more ethnographic work seeking to explore how digital practices integrate with socio-cultural factors and personal narratives (see Livingstone and Sefton-Green, 2016); economic/employability interventions aimed at increasing digital literacy competencies for accessing services, benefits and trainings and the 21<sup>st</sup> century workplace practices, whilst civic engagement/societal well-being initiatives attempt to use digital literacy as a conduit for participation in democracy or accessing public services (*e.g.*, Nuffield Trust, 2016). This may be facilitated by social interaction and socialization.

Alton Chua (2002) and Delali Adjoa Dovie (2019a, 2019b) have observed that social interaction occurs in a myriad of settings, namely informal networks formed in organizations, within community practice, informal chats during social events, interpersonal relationships and everyday sense making activities among individuals, even in group settings. Social interaction refers to meaningful dialogue (Hurst *et al.*, 2013) among individuals. Social interaction can enhance good health through a positive influence on people’s living habits. The emotional support provided by social connections helps to reduce the damaging effects of stress and can foster ‘a sense of meaning and purpose in life’ (Park *et al.*, 2010: 6). Social interaction improves or enhances knowledge or literacy (critical thinking) and problem-solving skills (Hurst *et al.*, 2013). It is vital to the process of learning.

Socialization refers to the ways through which people interact with others to acquire knowledge, attitudes and behaviors essential for onward effective participation in society (Dzorgbo, 2008: 97). Socialization occurs throughout the entire life course. There are five dimensions to socialization – primary socialization, secondary socialization, re-

socialization, anticipatory socialization and adult socialization (Dzorgbo, 2008; Dovie, 2017). It has to do with the exposure to digital literacy and the associated competences. Of these, adult socialization is applicable in the context of this paper.

## DIGITAL LITERACY RESEARCH APPLIED TO GHANA

There are reports that a significant gap in supply and demand exists across all levels of digital skills in the sub-Saharan Africa region, with a lower availability of skills than in other markets and significant gaps in supply of intermediate and advanced skills. *L.E.K* and the *International Financial Corporation (IFC)* (2019) note that there is a need to increase the supply of digitally-skilled labor in Sub-Saharan Africa and Ghana in order to meet anticipated labor market needs. Companies are already turning abroad in search of talent, while governments have taken steps to integrate information and communication technologies (ICT) in education, yet with insufficient policy response. Demand for digital skills in Sub-Saharan Africa and Ghana is powered both by latent economic growth and the digitization and automation of agriculture, manufacturing as well as services.

It is noteworthy that the need to ensure new or expanded digital skills training is aligned to industry. Ultimately, these new skills must be integrated into the curriculum at an early age in order to ensure that the topic becomes as ingrained as reading, math (including critical thinking), decision-making, team work and a host of others. Such skills will ensure that humans can adapt and transform in a digitally-enabled future. Appropriate public and private sector education stewards and systems will meet the existing challenge. Ghana's ability to take advantage of the digital opportunity to become more competitive and prosperous depends largely on whether the human capital – its population's health, skills, knowledge, experience, and habits – keeps up with workforce transformational dynamics. As a point of fact, digital skills are an essential part of that human capital development and paramount to future success (*L.E.K* and *IFC*, 2019).

Digital skills refer to skills related to the use of technology (*L.E.K* and *IFC*, 2019). Digital literacy skills have been categorized into three categories: basic, intermediate and advanced skills. Of these, basic digital skills, being entry-level functional skills required to make rudimentary use of digital devices and applications (*UNESCO*, 2017), are imperative. This is the focus of this study, especially among Ghanaian younger and older people, particularly the latter.

The 2012 *RIA Ghana Survey* found that a majority (70.5%) of respondents, who have access to the Internet first gained access through desktop computers or laptops, and a minority (29.5%) first gained access through a mobile handset (*Frempong*, 2012). *Godfred Frempong* demonstrates that computer access provides opportunities to access the Internet for various activities and services, including social networking, governance, education, health, commerce and other online services. Also, the capacity to utilize digital skills is, to some extent, dependent on the population's literacy levels, due to the fact that some level of literacy is required to understand and use computer technology. In addition,

Frempong (2012) opines that many Ghanaians are participating in social networks. Among those who connect to the Internet, 81% are signed up to at least one social network. *Facebook* is the most popular social networking site in Ghana.

It has been observed that over the past eight years governments in Ghana have vigorously pursued an ICT in education policy agenda aimed at integrating ICTs in schools (MOE, 2008). Information and Communication Technology resources such as digital technologies and digital information are defining contemporary societies (Quarcoe and Pata, 2015). The benefits of ICT resources on teaching and learning cannot be underestimated, hence the awakening of governments and institutions to make digital literacy and information literacy the central pivot around which schools' business revolves (Fu, 2013). Therefore, digital literacy should be seen as the very essential prerequisite for individuals to be economically and socially functional (Murray and Perez, 2014). James S. Quarcoe and Kai Pata (2015) explored on a sample of Ghanaian schools regarding the role of the teachers' digital divide in determining the digital divide in the context of public schools. They demonstrated that, in order to ensure digital divide minimization in schools, it is required of teachers to digitally reposition themselves to be able to contribute meaningfully to the development of their unique school digital culture and exhibit literacy skills which embrace digital literacy and information literacy. Increasingly, technology is becoming a driver of learning and growth among young people in school systems all around the world, including Ghana (Thomas, 2017).

The world is technologically advanced in contemporary times, necessitating the need for older people to be equipped digitally to aid access to services and help in general. The challenge is that even though the extended family support system has declined (Doh *et al.*, 2014; Dovie, 2018), it still offers some form of support to older people. However, there are still some older people who live alone, which means that they are exposed to loneliness and helplessness – depending on the situation. The development of an awareness of how a digital environment can assist in self organization and foster links with a variety of spectrums is imperative. Dovie (2019b) has underscored the fact that there is a generational gap between younger and older Ghanaians in terms of digital literacy. Thus, this study seeks to explore the extent of generational digital literacy gap dynamics in Ghana; to investigate the way forward in terms of facilitating a solution to this gap. It also explores the linkage between digital literacy and competence in digital skills regarding digital device usage.

## THEORETICAL FRAMEWORK

Douglas Belshaw's (2014) digital model separates digital literacy into eight meaningful components. These are as follows: cultural (how to believe); cognitive (how to do); construction (how to use); communication (how to communicate); creative (how to make); critical (how to evaluate); confident (how to belong); civic (how to participate). Belshaw refers to these eight elements as digital literacies. Significantly, the model suits the

premise of this paper best. It is also a suitable learning framework for improvement in digital fluency of both novices and confident learners alike. What is noteworthy is that theoretical elements such as construction; communication; creative were used in the construction of the questionnaire. Belshaw (2014) notes that a 'digitally literate' individual is someone who has a good balance of the eight elements.

The need for the development of the cultural component of digital literacy implies the ability to move easily between different digital environments and use learning technologies in a variety of different contexts, *e.g.*, knowing how to distinguish between using social media for personal and social connections. Cognitively, one needs to know how to use specific tools and technologies that are important for personal development, including those that are specific to more general tools that will make an individual a more digitally literate person. To develop the constructive element, the individual needs to understand and demonstrate how to take existing resources and content and re-use/remix it to create something new for his/her own benefit.

Essentially, there is a need to understand the importance of networks and communication and the significant role they play in the development of digital literacy. This entails understanding the many different ways through which one can communicate by means of different devices, including mobile and other digital devices as well as the development of an understanding of the particular norms, values, protocols and ethics that are appropriate to social networking and other web 2.0 technologies (Belshaw, 2014). A confident user of digital technologies needs to understand and capitalize on the differences between the analogue and digital worlds. This requires the assessment and review of individual competence(s) with digital technologies, managing one's own personal digital learning environment, and developing a community of practice to help progress skills and attributes. Worthy of note is that the digital gap affects communication across generational, cultural and ethnic groups, and digital inequalities in access and skills (Norris, 2001; Hargittai, 2002) may develop into social inequalities (*e.g.*, van Deursen and van Dijk, 2014). Further, several conceptualizations of the digital divide exist (DiMaggio and Hargittai, 2001; Norris, 2001). More often than not, conceptualizations generally identify four areas of importance: attitudes, access, skills, and types of usage. Skills and usage access is the focus of this paper and entails the purpose of the whole process of technology appropriation. Jan A.G.M. Van Dijk (2005) argues that the conditions of having sufficient motivation, physical or material access, and skills to apply digital media need to be met, yet, these may not be sufficient conditions for actual use. Even if differences in terms of physical access have diminished, significant differences may remain in terms of differential skills and the nature of Internet use (Hargittai and Hinnant, 2008; Van Dijk, 2005; Zillien and Hargittai, 2009). Van Dijk (2005). Moreover, Zillien and Hargittai (2009) have observed that the intensive and extensive nature of Internet use among the well-off and well-educated is indicative of an elite lifestyle from which those with less capital are marginalized.

## METHODS

This study used quantitative and qualitative datasets and a cross-sectional design to investigate digital literacy, expositions and exploits, and the propensity of it to shape adaptation to digital device utilization in later life. Use was made of the survey data to explore digital literacy among generations in relation to the process of social interaction and socialization, while the interview data explicate the issues raised.

### Site Selection

Accra and Tema situated in the Greater Accra Region of Ghana were chosen as the study sites. Also, they present a web of social relations, occupational diversity, a variety of activities as well as various events over time, which provides richer and more interesting data, and suitability.

### Survey Structure

The survey structure comprised survey methodology, sampling of individual units from the population of the Greater Accra Region of Ghana and associated techniques of survey data collection, such as questionnaire and methods for improving the number and accuracy of survey responses.

The face-to-face survey method was utilized in the study because of its propensity to produce data of high quality to a large extent, barring item non-response as the general concern of the study was to obtain a high response rate (96%).

### Sample Selection

The study adopted the simple random sampling technique in selecting the respondents. This technique of sampling was used for two reasons. First, young people and older adults are distinct groups of study participants. Second, the study intended to identify particular types of cases for in-depth investigation. For the quantitative data, 361 younger individuals and older adults were selected. The sampling process involved a random sample of individuals aged 18-59 years (181) in the Tema Metropolis and a sample of people aged 60+ (180) from both Accra and Tema Metropolises. The sample was selected from a total population of 4,010,054 of the Greater Accra Region (Ghana Statistical Service (GSS), 2012) of which Accra and Tema are part and a sample of people aged 60+ (180) from both Accra and Tema Metropolises. The sample size was calculated using the following formula:  $n = 2(Z\alpha + Z1 - \beta)^{2\sigma^2} / \Delta^2$ , with a power of 80% and a constant of 1.65 and a  $p < 0.05$  (Kadam and Bhalerao, 2010). In the case of the qualitative data, ten in-depth interviews were conducted with a section of participants. The sample for the qualitative phase was selected from that used in the quantitative phase, utilizing the purposive sampling technique. Purposive sampling was used for diverse reasons, including its importance in the selection of participants who had specific characteristics, such as sources of information.

Therefore, 361 questionnaires were given out and were returned. Although the sample size was constrained by the resources, 361 observations were selected as adequate for the study. The sample is large enough to help address the research questions accurately. The research objectives of this study include the following: to investigate the generational digital literacy gap between young and old and how to address that; to ascertain the role of social interaction and socialization in fostering generational digital literacy among young and old generations; to outline how generational digital literacy facilitates digital device utilization among older people. The corresponding research questions are: (1) *To what extent can the generational digital literacy gap between young and old generations be mitigated?*; (2) *To what extent does social interaction/socialization facilitate generational digital literacy related skills?*; and (3) *Does generational digital literacy foster digital device utilization?* The study hypothesizes that digital literacy exposition positively correlates with digital device usage among older adults; that social interaction influences digital skills acquisition; and that socialization influences digital skills acquisition.

## RESEARCH INSTRUMENTS

### Questionnaire

A questionnaire made up of both closed and open-ended questions was the instrument used for the study. It is noteworthy that theoretical elements such as construction; communication; and creativity were used in the construction of the questionnaire. The questionnaire that was used in the process of data collection contained two sections. Section 1 was on socio-demographic characteristics, such as age, sex, including level of education. The second section explored issues pertaining to digital literacy expositions among younger and older individuals, and digital device use propensity among older people, measured with a combination of Carol Barnett and Lisa Ellen Monda-Amaya's (1998) four-point verbalized scale from 'extremely' to 'not at all'; Elizabeth J. Mutran *et al.* (1997) verbalized scale from 'frequently' to 'never'; as well as Douglas A. Hershey and John C. Mowen's (2000) verbalized scale from 'strongly agree' to 'strongly disagree'. The questionnaire was created on the basis of previous research (Dovie, 2019b), input from colleagues and also the study's research interests. After the initial pool of questions were written, qualified experts reviewed and made suggestions for improvements. To ensure reliability of the instrument, it was pretested on a sample of thirty individuals, following the guidelines proposed by Perneger *et al.*, (2015). Further, a pilot test among the intended respondents for initial validation was undertaken.

Together, these were collectively contextualized to fit this study and the Ghanaian scenario. The survey questionnaire instrument's reliability was ensured in diverse ways, namely, through facilitation by clear instructions and wording of questions. The questionnaire contained standardized instructions, namely "please tick where appropriate." Also, trait sources of error were minimized through interviewing respondents at their convenience. The validity of the survey data was attained following Peter M.

Nardi's (2006) guidelines. The validity of the data was obtained by means of face-to-face interviews. Also, the survey sought an alternative source for confirmation through further in-depth interviews. The face-to-face interviews were conducted in both the English language and Ghanaian languages, namely Ga, Ewe, and Twi.

## Interviews

The interviews were designed to gain an understanding of digital literacy expositions among young and old generations, and digital device use propensity among older people. The interviews lasted for approximately 45 minutes. Initially, the researchers reminded participants about the aims of the study. Each in-depth interview took the form of a semi-structured interview and was conducted individually in the participant's office or in any other chosen place. The interviews were audio-taped.

The ten participants were divided into three planned interviews based on their convenience (*i.e.*, participants' preference of time and location). Participants were excluded if they were younger than eighteen years. The interviews were conducted in October 2018, approximately two months after the completion of the questionnaire. The interview themes that emerged were related to the perceptions regarding generational digital literacy, generational digital skill use and the implications of digital device use in one's old age, for instance.

## Ethical Consideration

Written informed consent was obtained from each research participant during the process of data collection.

## Data Analysis

Methodological triangulation was deployed to include the combination of methods to understand and explain digital literacy expositions among young and old generations and digital device use propensity among older adults. The answered questionnaires were cleaned and serialized for easy identification. The survey data were entered into *Statistical Package for Social Science (SPSS)* and were analyzed with selected descriptive statistics, namely frequencies, percentages, Pearson Chi-square and Pearson's Product Moment correlation tests.

The interviews were transcribed mostly along with data collection. The transcripts of the interviews were subjected to thematic analysis. For the interviews, the data analysis was first conducted by the researchers and subsequently by an independent researcher with experience in qualitative data analysis to increase confirmability and dependability. Both researchers ensured dependability by keeping a coding manual, which included original extracts from the interviews and definitions of the emergent themes. Each of the researchers read the scripts in detail, and then individually coded and categorized data from the same interview. The data from the interviews were coded by the researchers and across all the interviews. The data captured diverse views. Through constant comparison,



constant refining resulted in a list of themes (e.g., social interaction, socialization, digital skills) with their importance determined by frequency, multiplicity of participants' views as well as uniqueness.

An inductive thematic analysis using NVivo11 software was undertaken following the steps of Bazeley and Jackson (2014). Nvivo Software was used to facilitate coding text and retrieving coded text as well as to interpret the data. The NVivo software was employed in this study in order to obtain rigor in dealing with such data using six (6) distinct steps. First, there was the creation of a project which comprised all the documents, coding data and related information that assisted in the process of data analysis as well as saving the NVivo project. Second, the transcribed audio-recorded interview files were respectively named. Third, the process of analysis also entailed working with qualitative data files which involved the preparation of documents for import. Subsequently, the requisite documents that were intended to be analyzed were then imported. Fourth, nodes were used, for example, for references in lieu of code text(s). Both tree and free nodes were created and used.

Fifth, in data coding, a chunk of data in a project document under a particular node was taken by highlighting the requisite text using the mouse and pulling the highlighted text to the identified node using the coder. This included finding obvious themes as well as auto-coding. Subsequently, multiple codes were assigned to the same chunk of text while repeating the process. The codes formed a pattern. The passage of texts was compared and contrasted for ways in which they were similar and different. The emergent concepts were, for example, digital literacy and digital skills responses: limited digital literacy skills among older persons, etc. The final step which was aimed at going further in the process of data analysis encompassed the following: the start of analysis, going further with concepts, categories and themes including narratives and discourse. Memos were used to tell the story of the research by adding descriptions. The knowledge developed from the data was reported.

The outcomes of these activities were recorded in discussion memos. The analysis started with a concept. A thematic multi-case analysis was employed, the comparative focus of which was on individual cases including the preservation of their uniqueness.

## RESULTS

### Socio-Demographic Characteristics of Respondents

The study population consisted of males (49.9%) and females (50.1%) aged 18+ years (Table 1.). 58% of the respondents were married. The highest educational level attained by the majority of the respondents (80.3%) was tertiary education, including first and second degrees, and post-graduate diploma. It is worthy of note that the reference universe of the sample is significantly restricted to urban, educated people.

Table 1. Respondent Demographics

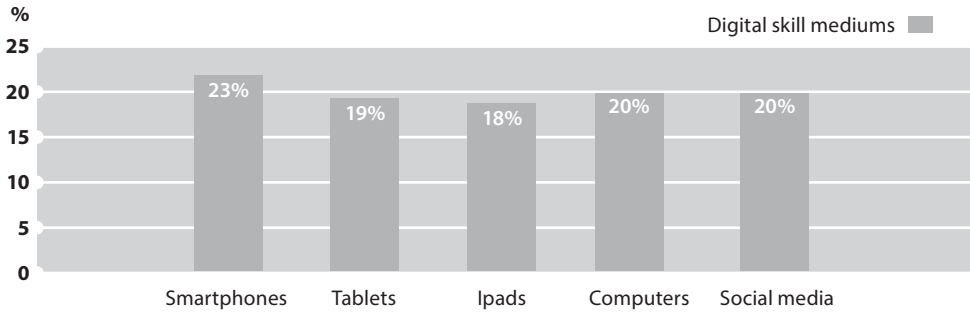
Variables	Characteristics	Percentage (%)
Age	18-29	12.5
	30-39	12.5
	40-49	12.5
	50-59	12.6
	60+	49.9
Sex	Male	49.9
	Female	50.1
Marital status	Married	58.0
	Divorced	23.5
	Widowed	7.5
	Single	11.0
Educational level	Primary	1.03
	JHS/MSLC	5.6
	SHS/Tech/Com/Secretarial	6.3
	GCE O' Level	2.3
	GCE A' Level	4.5
	Bachelor's degree	58.2
	Post-graduate diploma	9.3
Master's degree	12.8	

Source: Field data, 2018.

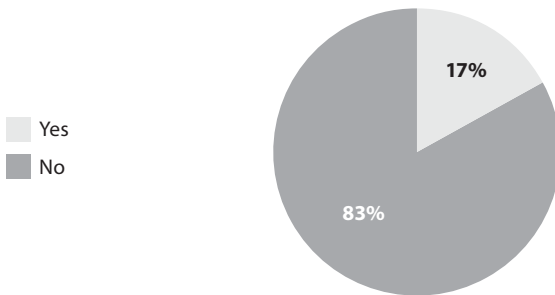
## THE DYNAMICS OF THE DIGITAL DIVIDE

Digital skills among younger and older generations can be displayed through mediums such as smartphones (23%), tablets, ipads (18%), computers and social media (Figure 1.). Demographically, the respondents are divided into three categories: 18-39, 40-59, representing the younger people here mentioned, whilst older adults relate to people aged 60+.

In assessing the display of digital skills, the study explored the notion as to whether older people use social media platforms more than younger people and found, on the contrary, with an emphatic no response (83%) (Figure 2.), that younger people utilize social media platforms more than their older generation counterparts.



▲ Figure 1.  
Mediums of Digital Skills among Generations  
Source: Field data, 2018



▲ Figure 2.  
Intergenerational Use of Social Media Platforms  
Source: Field data, 2018

As a result, the qualitative data provide the following observations:

*Aside entertainment, young people use social media platforms in school for academic purposes (Male youth).*

*Basic education on computer literacy should be extended to older generation individuals (Male youth).*

*The older generation was born before digital technological breakthroughs (Female youth).*

*The lack of interest and the complexity of it also pertains (Female older adult).*

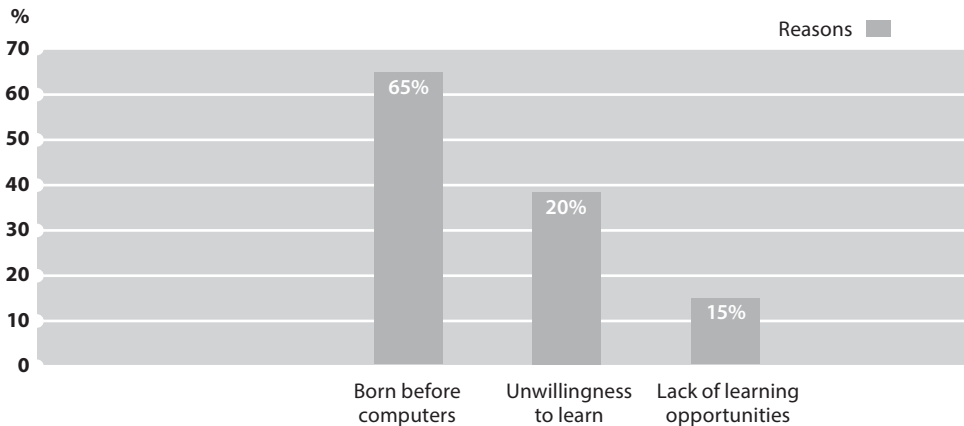
*This is because of constant technological advancement in the past few years (Male older adult).*

In essence, these are reflective of the use of and dependence on digital knowledge.

### Notions of Digital Skills Use

One of the ways of assessing the technological savvy nature of a people was through the use of social media platforms such as *Pinterest, WhatsApp, YouTube, Instagram, Twitter, Google, LinkedIn, and Facebook*. This is reminiscent of the fact that there are a variety of reasons as to why older generations of Ghanaians are not technologically savvy in using social media portals. The reasons are that they were born before computers (BBC) (65%); unwillingness to learn (20%); and lack of the requisite learning opportunities (15%), (Figure 3.). Noteworthy is that the digital literacy related to the generational gap between younger and older generations of Ghanaians may be due to a myriad of factors, namely because each generation comes with its own technological innovations or due to the fact that they were born prior to the advent of digital technological breakthrough. Further, it became popular during the younger generation’s era. This implies that the gap here indicated was historically shaped.

Older adults in this context could then be said to be largely digital illiterates, which implies that they cannot use, communicate and/or participate in digital skills utilization. This contradicts Belshaw’s (2014) use of communication and participation components in the digital platform.



▲ Figure 3.  
Reasons for Older Adults not Being Technologically Savvy on Social Media Portals  
Source: Field data, 2018

The life cycle can be turned to for a possible explanation of the perpetuation of the generational gap. In consequence, the data – ‘yes’ answers (87%) – indicate that the life span can be attributed to the existence of this generational gap of digital literacy between the young and the old (Figure 4.). There are diverse reasons why this is so, including the differences in digital eras. They are summarized in the following quotations:

*Younger people were born during the era of computer invention and were given basic education on it, hence they have encountered computer literacy (Male older adult).*

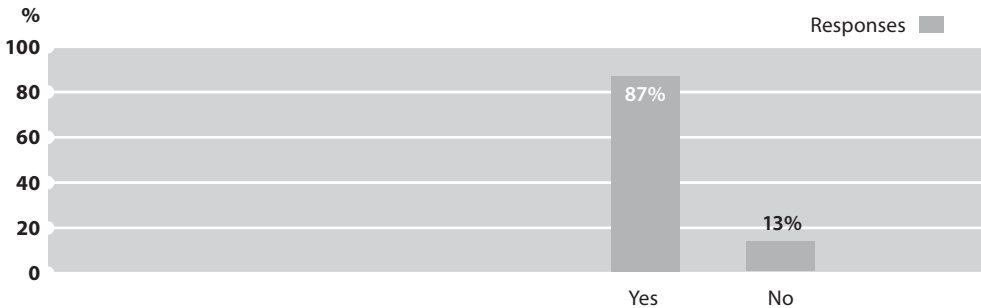
*Older people find it time-wasting and boring (Male youth).*

*If a critical look is taken, this 21<sup>st</sup> century younger people came to meet the computer world, while the older people did not get that chance (Female older adult).*

*Older people do not use social media platforms more than younger people because they do not have time like younger people do (Male youth).*

*The older generation lived most of their lives without the use of digital devices (Female older adult).*

*Technology has advanced greatly in the time of the younger ones, which was not so before, therefore the young ones easily adopt technology (Female youth).*



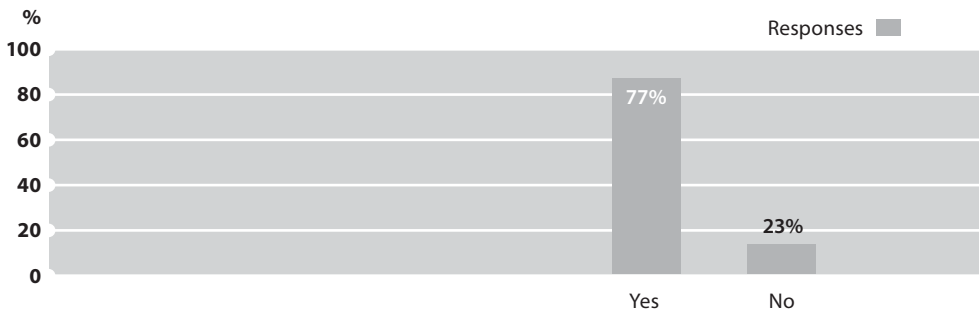
▲ *Figure 4.*  
Life Cycle Explanations of the Generational Gap in Digital Literacy  
Source: Field data, 2018

Overall, in terms of digital literacy or competency among Ghanaians, the observation is that: younger people are more digitally active and digitally skilled (56%); older people are less digitally active and digitally skilled (24%); older people are digitally active and digitally skilled (20%); younger people are less digitally active and digitally skilled (0%); and older people are more digitally active and digitally skilled (0%) (Table 2.). The depiction that younger people are not less digitally active and digitally skilled and that older people are not digitally active and digitally skilled alludes to the fact that there is a generational gap between the two distinct generations in relation to being technologically savvy and digitally literate. Thus, Figure 5. demonstrates that there is a generational gap (77%) between younger and older generations of Ghanaians in terms of digital literacy.

Table 2. Digital Skills among Ghanaians

Ratings of digital skills	Percent (%)
Younger people are more digitally active and digitally skilled	56.0
Younger people are less digitally active and digitally skilled	0.0
Older people are digitally active and digitally skilled	20.0
Older people are more digitally active and digitally skilled	0.0
Older people are less digitally active and digitally skilled	24.0

Source: Field data, 2018



▲ Figure 5.  
Indication of the Existence of Generational Gap between Younger and Older Ghanaians  
Source: Field data, 2018

## FACTORS INFLUENCING DIGITAL LITERACY

In assessing the display of digital skills, the study explored the notion as to whether older people use social media platforms more than younger people and found, on the contrary, with an emphatic no response (83%), that younger people utilize social media platforms more than their older generation counterparts. As mentioned earlier, whereas some studies (e.g., van Dijk, 2005; Zillien and Hargittai, 2009) document that the intensive and extensive nature of Internet use among the well-off and well-educated is indicative of an elite lifestyle, which implies that individuals with less capital are marginalized, this study finds that the extent of digital skills use among young and old people is reflective of a youthful lifestyle, which makes it evident that older people are relatively marginalized.

In furtherance to this, the respondents were asked closed-ended questions on whether they considered age, education, era of birth, technological savvy, social media platform use, family background, socio-economic status (SES), social interaction, socialization, digital skills use (construction, creativity and participation) as digital literacy related. All of

these were mentioned diversely. The next section discusses how age, social interaction, socialization and digital skills use (construction, creativity and participation) influence generational digital literacy.

### Age Differences in Digital Literacy

An individual's age is capable of influencing his/her digital literacy even in the era of birth, due to exposure to and influence of technological innovations. Given this possibility, the study investigated the extent to which age influences digital literacy. Most respondents within the 18-39 category of age (96.8%) intimated that age influenced digital literacy skills. Thus, age influenced digital literacy dynamics ( $p$ -value=0.000), likewise the level of education, era of birth and family background (See Table 3. for details). But technological savvy ( $p$ -value=0.153), social media platform use ( $p$ -value=0.238), and SES ( $p$ -value=0.087) did not influence digital literacy.

Table 3. Chi-square Test: Age differences in digital literacy

Factors considered in digital literacy	18-39	40-59	60+	p-value
Age	96.8%	61.3%	59.4%	0.000
Education	65.4%	58.0%	51.0%	0.005
Employment	90.1%	95.5%	62.3%	0.009
Birth era	97.8%	98.0%	91.9%	0.000
Technological savvy	91.3%	91.9%	45.7%	0.153
Social media platform use	84.8%	52.5%	30.4%	0.238
Family background	100.0%	87.5%	73.1%	0.005
SES	77.0%	88.9%	90.1%	0.087

Source: Field data, 2018; Significance level of 0.05 was used.

## FACTORS THAT INFLUENCE THE UPTAKE OF DIGITAL LITERACY

### Influence of Socialization in Digital Literacy Uptake

The generational gap in digital literacy can be addressed using social interaction, socialization and a host of others. The socialization viewpoint alludes to the older generation being guided and taught by the younger folks, which is a depiction of adult socialization.

As a result, the study investigated the extent to which socialization influences digital literacy. Age ( $p$ -value=0.000), education ( $p$ -value=0.040), family background ( $p$ -value=0.000) as well as SES, ( $p$ -value=0.049) constitute a depiction of differences in digital literacy; hence their various influences (See Table 4. for details). However, the era of birth ( $p$ -value=0.241) did not influence digital literacy. This means that there is still

intergenerational socialization, particularly the one undertaken by youngsters in aid of the elderly, which is contrary to the traditional norm of older adults socializing their young folks.

Table 4. Chi-square Test: Socialization Differences in Digital Literacy

Factors considered in digital literacy	Low socialization	Average socialization	High socialization	p-value
Age	98.9%	93.9%	98.0%	0.000
Education	91.3%	88.0%	87.8%	0.040
Birth era	96.8%	79.6%	77.6%	0.241
Family background	33.7%	92.0%	79.2%	0.000
SES	79.3%	58.0%	79.2%	0.049

Source: Field data, 2018; Significance level of 0.05 was used.

### Influence of Social Interaction in Digital Literacy Uptake

Significantly, the socialization process is aided to a large extent by social interaction, which was deployed frequently by the study respondents. The findings show that age (100%) and family background (100%) scored highly on social interaction ratings. Similarly, age ( $p$ -value=0.000) and family background ( $p$ -value=0.038) influence digital literacy oriented social interaction (Table 5.), whereas education, employment, birth era and SES did not show any difference in this regard.

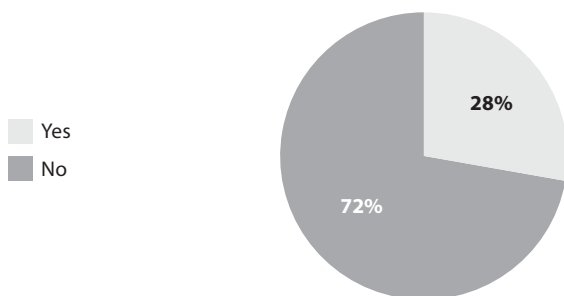
Table 5. Chi-square Test: Social Interaction Differences in Digital Literacy

Factors considered in digital literacy	Low social interaction	Average social interaction	High social interaction	p-value
Age	76.1%	97.0%	100.0%	0.000
Education	57.0%	98.0%	68.0%	1.000
Employment	80.4%	51.0%	90.0%	0.087
Birth era	61.5%	65.0%	78.8%	0.143
Family background	56.5%	91.9%	100.0%	0.038
Social economic status	84.1%	79.7%	10.9%	0.065

Source: Field data, 2018; Significance level of 0.05 was used.

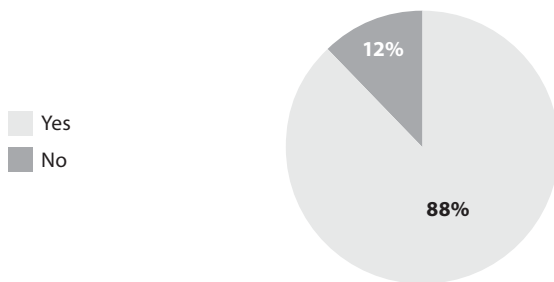
This notwithstanding, the findings show (72%) that the rate and/or the extent of digital literacy vary/varies among younger and older generations (Figure 6.). In this context, the rate may favor younger people over the older ones.





▲ *Figure 6.*  
Digital Literacy Variation among Young and Old Generations  
Source: Field data, 2018.

Being digitally skilled amounts to digital literacy. This has implications for the use, communication and participation as variables for digital competency (See Belshaw, 2014 for details). However, this situation can be improved for the sake of older adults (88%) in particular, (Figure 7). The no responses speak in favor of the fact that there could be some challenges to the attainment of improvement.



▲ *Figure 7.*  
Improvement in Digital Literacy for Older People  
Source: Field data, 2018.

Interestingly, this can be achieved through a variety of ways, including adult education, digital literacy acquisition through life-long learning (38%), learning by the self (6%), induced learning by a given ICT program as well as intergenerational learning between younger and older people (Table 6.).

Table 6. Ways to Improve Digital Literacy among Older People

Improvement strategies	Percent (%)
Adult education in digital literacy	30.0
Life-long learning	32.0
Learning by the self	6.0
ICT program induced learning	14.0
Intergenerational learning between younger and older people	18.0

Source: Field data, 2018.

Intergenerational learning has implications for digital literacy skills transfers between young and old persons. Consequently, the interview data outlines the following:

*Intergenerational learning relegates to the background digital illiteracy and incompetence (Male older adult).*

*Intergenerational learning has the propensity to remove the difference in digital era label (Female youth).*

*Older people who are grandparents may obtain digital literacy from their grandchildren (Female older adult).*

*As older people interact with the younger ones, they get to improve their digital literacy base by soliciting technological assistance from them (Male youth).*

This means that there is generational socialization, particularly the one undertaken by youngsters directed towards the elderly, which is contrary to the traditional norm of older adults socializing their young folks as previously indicated.

### Acceptance and Diffusion of Technology

The findings show that a variety of variables such as gender, age, education and SES all play significant roles in the acceptance and diffusion of technology and digital literacy. Age (99.8%) plays a key role in this context. In a similar vein, gender plays an important role in the acceptance and diffusion of technology (see Table 7.). This is because, comparatively, more men than women are technologically savvy, perhaps due to adventurousness and extent of exposures. Education (98.0%) plays an essential role in lieu of the acceptance and diffusion of technology, since being educated and/or literate may sometimes have implications for digital literacy. Further, SES plays an essential role in the acceptance and diffusion of technology. This variable includes the location where the individual was raised or oriented. For example, in a wealthy family in a developed country context, the propensity to be digitally literate is higher than in a less developed country context. Similarly, age ( $p$ -value=0.015) and education ( $p$ -value=0.015) enormously influenced the acceptance as well as diffusion of digital literacy compared to gender and SES.

Table 7. Chi-square Test: Acceptance and Diffusion of Technology Differences in Digital Literacy

Factors considered in digital literacy	Low acceptance & diffusion	Average acceptance & diffusion	High acceptance & diffusion	p-value
Age	99.0%	87.0%	99.8%	0.015
Gender	50.2%	65.9%	50.9%	0.857
Education	78.0%	99.1%	98.0%	0.010
SES	30.2%	69.0%	76.1%	0.755

Source: Field data, 2018; Significance level of 0.05 was used.

## APPLICATION OF GENERATIONAL DIGITAL LITERACY SKILLS

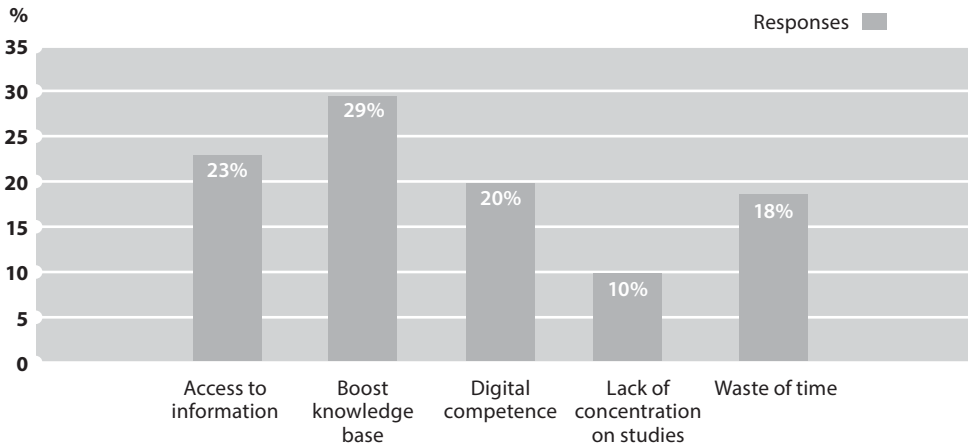
Generational digital literacy skills are normally displayed as proof of the application of the same. Hence, application was ascertained through how digital literacy skills are used or constructed among the age categories 40-59 (90.0%), the associated p-value=0.002; communication – 18-39 year group, p-value=0.000; including participation – 18-39 (98.9%), the corresponding p-value=0.042 (Table 8.). This can be interpreted by Belshaw's (2014) elements of the digital literacy model. The above finding is indicative of the fact that out of the four conceptualizations identified, namely attitudes, access, skills, and types of usage (DiMaggio and Hargittai, 2001; Norris, 2001), this study identifies with digital skills, and forms of usage.

Table 8. Chi-square Test: Generational Differences in Digital Literacy

Factors considered in digital literacy	18-39	40-59	60+	p-value
Construction	99.1%	90.0%	51.5%	0.002
Communication	100.0%	89.6%	49.9%	0.000
Participation	98.9%	92.1%	52.9%	0.042

Source: Field data, 2018; Significance level of 0.05 was used.

Digital literacy has two distinct outcomes, both positive and not so positive. On the one hand, the positive outcomes pertaining to being technologically savvy refer to the ease of the use of technology and applications, which ensures access to information, boosts one's knowledge base (37%), and enhances competence. On the other hand, it comes with some challenges as well, such as the lack of concentration on academic work (18%) among the youth, (Figure 8.). This is because digital literacy and its associated competences lure technologically savvy persons (*e.g.*, the youth, students) into spending so much time on that, particularly on social media platforms, sometimes to the detriment of their educational careers and/or studies, instead of enhancing them. Yet, such competence could be used to assess the requisite information to facilitate academic work.



▲Figure 8.  
Effects of Digital Literacy  
Source: Field data, 2018

The study examined the correlation between digital literacy expositions and digital device usage among older adults. The result is a Pearson  $r$  of 0.514 (51.4%). Hence, for every change of one standard z-score unit in digital expositions, there is 0.514 standard unit of digital device usage orientation required in the same direction. Put differently, in predicting variations across the sample on the dependent variable, errors were reduced by 9.95% (*i.e.*  $r^2$ ) for all respondents. Digital literacy exposition positively correlates with digital device usage among older adults (Table 9).

Table 9. Correlates of Digital Literacy Expositions and Digital Device Usage among Older Adults

	Digital literacy expositions	Digital device usage among older adults
Digital literacy expositions	1	.514** .000 361
Digital device usage among older adults	.514** .000 361	1 361

Source: Field data, 2018; Significance level of 0.05 was used.

Significantly, the utilization of technology has implications for onward usage of health-related gadgets such as alarms, robots (*e.g.*, *Robot Sofia*) among others.

## DISCUSSION

Digital literacy is oftentimes expressed in social media platform usage. Social media are platforms that facilitate social networking, including access to vital information. It is indicative of the domination of social media as a medium of information dissemination and access. Hence, social media are a huge opportunity to reach out to an audience and to increase information dissemination and access. Dovie (2019b) documents that social media platforms such as *Facebook, Twitter, Instagram, LinkedIn, YouTube, WhatsApp, Snapchat, Google, Pinterest, etc.* offer a social interaction opportunity for people across varied economic or social backgrounds and age categories. Older generations often depend on the younger ones by way of becoming socialized digitally, including the improvement thereof. This is an indication of digital literacy oriented adult socialization, facilitated by social interaction with younger generations. However, this mode of socialization is oriented towards digital skill transfer. Therefore, adult socialization (Dzorgbo, 2008; Dovie, 2017, 2019b) cannot be underestimated in the context of generational digital literacy. Beth Hurst *et al.* (2013) demonstrate that social interaction has a strong propensity of improving and/or enhancing knowledge or literacy (critical thinking) as well as problem solving skills. Neil Selwyn also notes that: "the likelihood of gaining advantage from digital education is clearly related to the resources that social groups command, therefore pointing towards the role of digital technology in the perpetuation of accumulated advantage and the reproduction of inequalities" (Selwyn, 2014: 138).

Dovie (2019b) also finds that comparatively more young people use and obtain diverse types of information from social media sources. With the exception of the *WhatsApp* platform that older adults registered a greater presence for (38.9%), they could not compete with the younger generation in relation to other platforms. This may also be indicative of being technologically savvy, which applies more to younger than to older individuals. Also, this is indicative of intergenerational gap in social media platforms usage. This has repercussions for the generational gap in social media access and utilization. In the same vein, the findings articulate the fact that the generational digital literacy gap among younger and older people can be filled with social interaction and socialization. The case of older people interacting with their younger folks, including their grandchildren, may result in their being socialized intergenerationally with implications for enhancing their digital literacy skills. Other measures that could be turned to for the same gains encompass: adult education in digital literacy, digital literacy acquisition through lifelong learning, self-learning, ICT program induced learning and intergenerational learning between younger and older people.

Social media platforms are vehicles for human interaction. The results reveal that a significant connection exists between the health and healthcare dimension of later life, digital literacy and competence, social interaction and socialization, since they facilitate or lay the foundation for digital literacy and facilitate digital device utilization. Similarly, Brody (2017) writes that social interaction is a critically important contributor to good health and longevity.

The benefits of digital literacy are enormous. They include access to information, boost in one's knowledge base, digital competence and a host of others. Dovie (2019b) documents the belief that with the acquisition of knowledge, generational barriers can be broken. Inasmuch as social interaction is an everyday part of life, in the context of this paper, it facilitates the transfer or sharing of vital information or ideas that cut across a broad range of life's trajectories, including body image enhancement targeted at social acceptance. Encouraging social interaction is one of the most effective ways of learning creative methods to solve complex problems (Darling-Hammond and McLaughlin, 1995, cited in Hurst *et al.*, 2013). Digital literacy can be employed to facilitate digital storytelling by grandparents to their grandchildren (Mendes, 2019). The issue of digital literacy can also be narrowed to security issues (Mendes, 2019), especially with respect to the use of technological gadgets in enhancing activities for daily living (ADLs) for older adults, *e.g.*, alarms or digital tools in the area of e-threat.

Generational digital literacy has implications for the extension and boosting of the silver market economy. The utilization of the products of the silver economy facilitates access to information as well as social inclusion. For example, new technologies provide opportunities for the delivery of broad, flexible interventions to older people via digital tools and services, both physically and psychologically (Vaportzis *et al.*, 2017),, including financial planning, banking, keeping healthy, independent living, and shopping (even for people who live alone).

Digital knowhow may facilitate social networking among older people through text messaging, and call for help. As a result, in developed countries, the following abound: robots, alarm watches that can provide signals of help seekers to an ambulance, healthcare, police, fire service, *etc.*. The replication of the same in Ghana is presently imperative and attainable through: New Year school at the University of Ghana, organized yearly, lifelong learning protocols, telecommunication companies such as *Vodafone, MTN, Airtel-Tigo, Glo, Kasapa*.

## CONCLUSION

Digital skills use is expressed in a variety of ways, including participation on social media platforms. However, older adults are handicapped on this trajectory for reasons such as being born before computers, unwillingness to learn, and lack of the requisite learning opportunities. This alludes to the fact that younger people are more digitally active and digitally skilled, whereas their older counterparts are less digitally active and digitally skilled. In essence, digital literacy related to the generational gap exists between young and old persons. It is worth mentioning that this gap may be historically shaped. The generational digital literacy gap situation can be improved by means of taking measures such as adult education in digital literacy, lifelong learning, learning by the self, ICT program induced learning as well as intergenerational learning between younger and older people.

The factors that influence digital literacy are diverse: age ( $p$ -value=0.000), education, era of birth and family background influence digital literacy. The results reveal that a myriad of factors, namely gender, age, education and SES facilitate the acceptance and diffusion of technology and digital literacy. Application of generational digital literacy skills was explored by means of the factors of construction ( $p$ -value=0.002), communication ( $p$ -value=0.000) and participation ( $p$ -value=0.042).

There are two dimensional outcomes pertaining to digital literacy, namely positive and not so positive. The positive outcomes pertain to being technologically savvy, with implications for technology use and application ease, access to information, boosting one's knowledge base, and facilitating competence. The problem, however, is the lack of concentration on academic work. The study outlines connections to how to do, how to use, how to communicate, as well as how to participate – even in terms of daily activities, needs and challenges regarding health service providers, care providers and other stakeholders. Particularly, Belshaw (2014) illuminates that a 'digitally literate' individual is someone who has a good balance of the eight elements. However, the scope of this paper accommodates only three (*i.e.*, use, communication and participation) of these eight elements.

Younger generations are by far more digitally literate than the older ones. It is therefore concluded that older generational dependence on the younger ones through the phenomenon of socialization ensures being socialized digitally through digital-literacy-skill-transfer oriented socialization. The benefits of digital literacy use among older people cannot be overemphasized. Further, digital literacy, expositions and exploits are significant in terms of how they shape adaptation to digital device utilization in later life.

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# GENERACIJSKA PERSPEKTIVA DIGITALNE PISMENOSTI U GANI U 21. STOLJEĆU: VEĆ ZAOSTALI?

**Delali Adjoa Dovie :: Dan-Bright S. Dzorgbo :: Charles C. Mate-Kole :: Helen Nana Mensah :: Albert F. Agbe :: Alexander Attiogbe :: Gloria Dzokoto**

**SAŽETAK** Rad istražuje vezu između različitih generacija i digitalne pismenosti. Za potrebe istraživanja jednostavnim slučajnim uzorkovanjem odabran je 361 ispitanik, dok je 10 ispitanika odabrano namjernim uzorkovanjem. Autori su koristili mješovite metode, uključujući i metodu ankete. Podaci su podvrgnuti bivarijantnim, korelacijskim i tematskim analizama. Rezultati pokazuju da su mlađe osobe digitalno aktivnije i digitalno vještije u usporedbi sa starijima, što ukazuje na postojanje digitalnog jaza između dvije distinktivne generacije kada je riječ o tehnološkim sposobnostima. Na to značajno utječe razdoblje kada su ispitanici rođeni, s obzirom na to da se svaka generacija susreće sa specifičnim tehnološkim inovacijama, socijalizacijskim obrascima i obrascima samoorganizirajuće socijalne interakcije. Zaključuje se da su digitalno opismenjavanje i prakticiranje digitalne pismenosti značajni za oblikovanje generacijskih interakcija, uključujući i prilagodbu na korištenje digitalnih uređaja u starijoj dobi.

## KLJUČNE RIJEČI

GENERACIJE, DIGITALNE VJEŠTINE, SOCIJALNE INTERAKCIJE, SOCIJALIZACIJA, ZDRAVLJE, DIGITALNI UREĐAJI

*Bilješka o autorima*

**Delali Adjoa Dovie** :: University of Ghana, Accra, Ghana :: [dellsellad@gmail.com](mailto:dellsellad@gmail.com)

**Dan-Bright S. Dzorgbo** :: University of Ghana, Accra, Ghana :: [ddzorgbo@yahoo.co.uk](mailto:ddzorgbo@yahoo.co.uk)

**Charles C. Mate-Kole** :: University of Ghana, Accra, Ghana :: [jagbatey@hotmail.com](mailto:jagbatey@hotmail.com)

**Helen Nana Mensah** :: Dominion University College, Accra, Ghana :: [fosua68@gmail.com](mailto:fosua68@gmail.com)

**Albert Foli Agbe** :: Dominion University College, Accra, Ghana :: [albertbfm2013@gmail.com](mailto:albertbfm2013@gmail.com)

**Alexander Attiogbe** :: University of Ghana, Accra, Ghana :: [aattioegbegh@yahoo.com](mailto:aattioegbegh@yahoo.com)

**Gloria Dzokoto** :: Dominion University College, Accra, Ghana :: [novis12@yahoo.com](mailto:novis12@yahoo.com)