

# Limited access to electricity and digital technologies a barrier to e-learning in Uganda

**Afrobarometer Dispatch No. 515 | Makanga Ronald Kakumba**

## Summary

On March 15, 2020, Uganda's government ordered the closure of all primary and secondary schools, universities, and other educational institutions to stem the spread of COVID-19, keeping approximately 15 million children out of school (Independent News, 2020).

Twelve months later, the government began a phased reopening of schools, only to close them again in June 2021 as coronavirus cases were surging in the country. On 10 January 2022, the schools opened again after nearly two years of lockdown, marking the end of the world's longest school closure due to the COVID-19 pandemic (Voice of Africa News, 2022).

While schools were closed, the government adopted several approaches to keep children in lower schools learning, including the printing and distribution of home learning materials as well as the delivery of lessons via television, radio, newspapers, and the Internet (Independent News, 2021a). But due to limited access – especially among rural and economically disadvantaged children – to electricity, the Internet, televisions, and newspapers, many children missed out on learning, exacerbating educational inequalities in the country.

The extended school closure posed other challenges as well. Since the outbreak of COVID-19, pregnancies among school-age girls are estimated to have risen by 30% (New African, 2021). Many teachers had to resort to small businesses to support their families (Guardian, 2021). Some private school owners sold their schools or converted them to other businesses (Parliament of the Republic of Uganda, 2021).

According to a report by the National Planning Authority (2021), about 3,507 primary and 832 secondary schools were expected to close due to financial hardship, and nearly 30% of students are projected never to return to school because of teenage pregnancies, early marriages, and child labour.

In the event of future disruptions to in-school learning in Uganda, how feasible is e-learning as an alternative?

Recent Afrobarometer survey findings show that relatively few Ugandan households have access to electricity, Internet-enabled phones, televisions, and computers. Access is particularly low among poor citizens and those who live outside the cities and the Central Region. For the foreseeable future, e-learning is likely to disadvantage or exclude more children than it serves.

## Afrobarometer surveys

Afrobarometer is a pan-African, nonpartisan survey research network that provides reliable data on African experiences and evaluations of democracy, governance, and quality of life. Eight rounds of surveys have been completed in up to 39 countries since 1999.

Afrobarometer conducts face-to-face interviews in the language of the respondent's choice.

This dispatch draws mainly on findings from a survey conducted in December 2020 and January 2021 with financial support from the Embassy of the Kingdom of the Netherlands in Uganda. The Afrobarometer team in Uganda, led by Hatchile Consult Ltd., interviewed a nationally representative, random, stratified probability sample of 2,400 adult citizens in 300 enumeration areas across 110 districts. A sample of this size yields country-level results with a margin of error of +/-2 percentage points at a 95% confidence level. This was the 11th Afrobarometer survey in Uganda since 1999.

## Key findings

- Only one in four Ugandans (26%) live in households that are connected to the national power grid. Poor citizens and residents in rural areas and in the Northern Region are least likely to be connected.
- One-fourth (26%) of adults own a mobile phone with Internet access. About one-third (35%) live in a household with a television set, while one in 10 (11%) have access to a computer in the household.
  - Access to these technological devices is far more common in cities and in wealthy households than in rural areas and poor households.
- One in five Ugandan adults (20%) use the Internet “every day” or “a few times a week.” This number has more than doubled over the past decade.
- Only half (52%) of Ugandans live in zones served by the electric grid. Nine in 10 (91%) live in neighbourhoods with cell phone network coverage.

## Connection to the electric grid

Electricity is a prerequisite for using mass media tools such as computers, televisions, tablets, and Internet-enabled phones for e-learning. Without access to electricity, virtual learning becomes practically impossible for school-age children.

According to Afrobarometer data collected in late 2019, only one-fourth (26%) of Ugandans live in households that are connected to the electric grid (Figure 1). Urban residents (67%) are five times as likely to have an electricity connection as their rural counterparts (13%) (Figure 2).

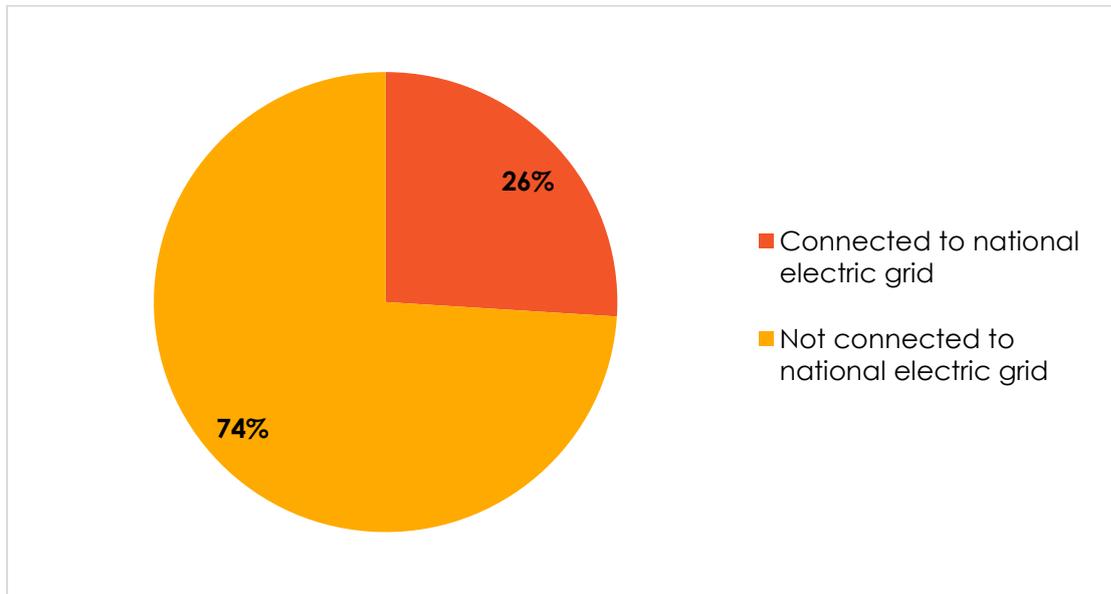
Almost half (47%) of residents in the Central Region have electricity connections, compared to fewer than one-fourth of residents in the Eastern (23%), Western (18%), and Northern (11%) regions. As might be expected, the poorest citizens (14%) are far less likely to be connected to the power grid than those experiencing no or low lived poverty (37%-38%).<sup>1</sup>

These findings suggest that only about a quarter of Uganda's school-age children – and far fewer in rural and poor households – would be able to continue their education through e-learning during a prolonged school closure.

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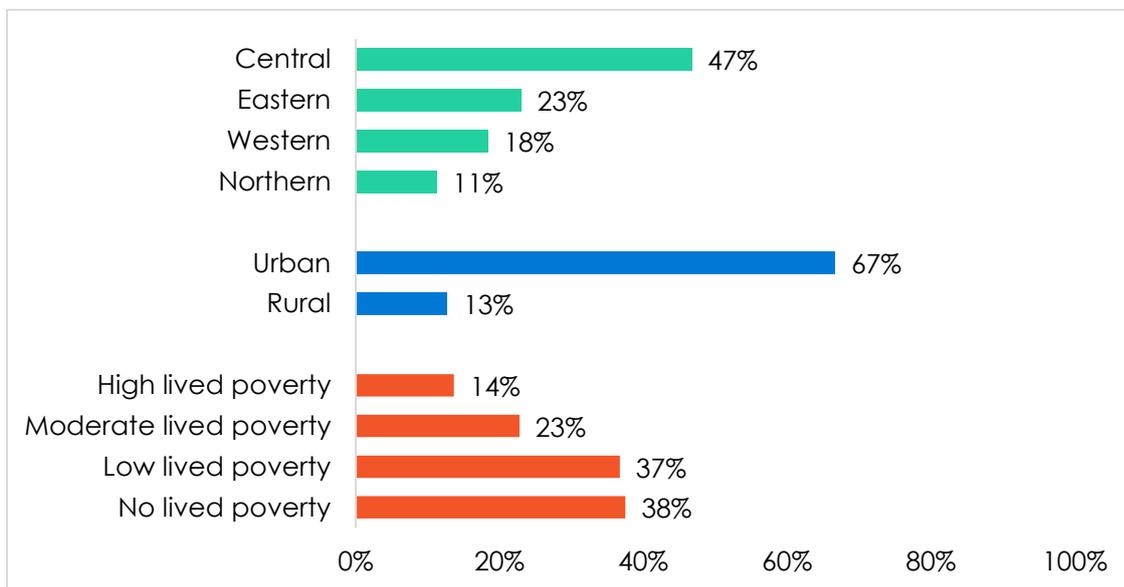
<sup>1</sup> Afrobarometer's Lived Poverty Index (LPI) measures respondents' levels of material deprivation by asking how often they or their families went without basic necessities (enough food, enough water, medical care, enough cooking fuel, and a cash income) during the preceding year. For more on lived poverty, see Mattes (2020).

**Figure 1: Connection to the national electric grid | Uganda | 2019**



**Respondents were asked:** Do you have an electric connection to your home from the national power grid?

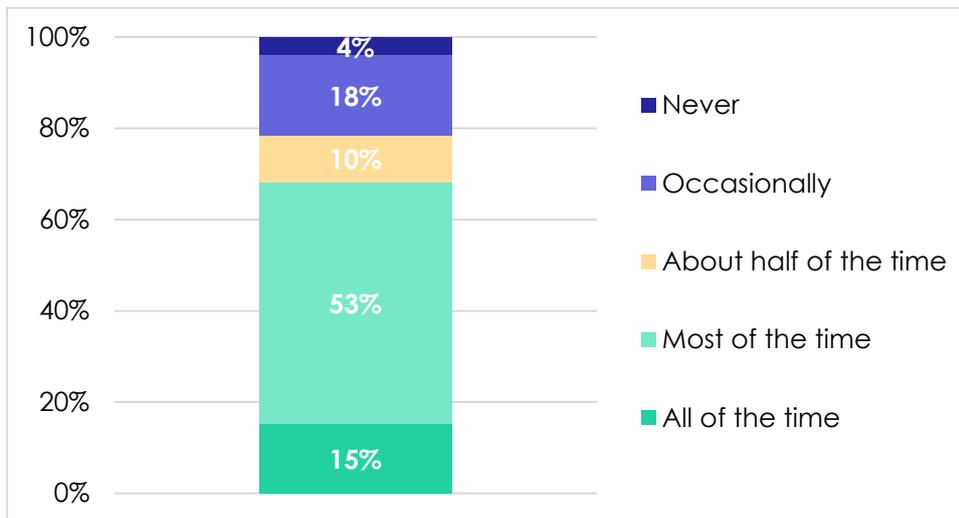
**Figure 2: Connection to the national electric grid | by location and lived poverty | Uganda | 2019**



**Respondents were asked:** Do you have an electric connection to your home from the national power grid? (% "yes")

Moreover, not everyone with a connection has a reliable supply of electricity. Among the 26% of citizens who report being connected to the power grid, more than two-thirds (68%) say that electricity is available "most of the time" or "all of the time." But about one-third of those have a connection say power is available only "about half of the time" (10%), "occasionally" (18%), or "never" (4%) (Figure 3).

**Figure 3: How often is electricity available?** | Uganda | 2019



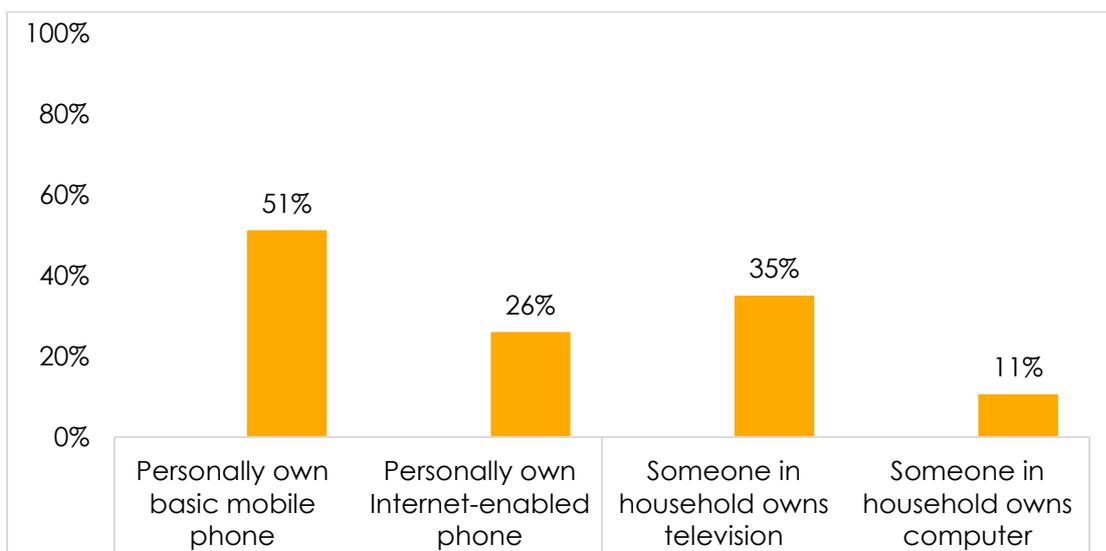
**Respondents who said they have a connection to the national electric grid were asked:** How often is electricity actually available from this connection? (Respondents without a connection to the national grid are excluded.)

### Ownership of technological devices

Technological devices such as Internet-enabled phones, computers, and televisions are essential for the success of the e-learning environment. However, access to these devices remains limited in Uganda.

Afrobarometer findings show that while more than three-fourths (77%) of Ugandan adults say they personally own a mobile phone, only one-fourth (26%) own a phone with Internet access. About one-third (35%) live in a household with a television set, while one in 10 (11%) have access to a computer in the household (Figure 4).

**Figure 4: Ownership of technological devices** | Uganda | 2021



**Respondents were asked:** Which of these things do you personally own: Mobile phone? Television? Computer? [If "no":] Does anyone else in your household own one?

**Respondents who said they personally own a mobile phone were asked:** Does your phone have access to the Internet?

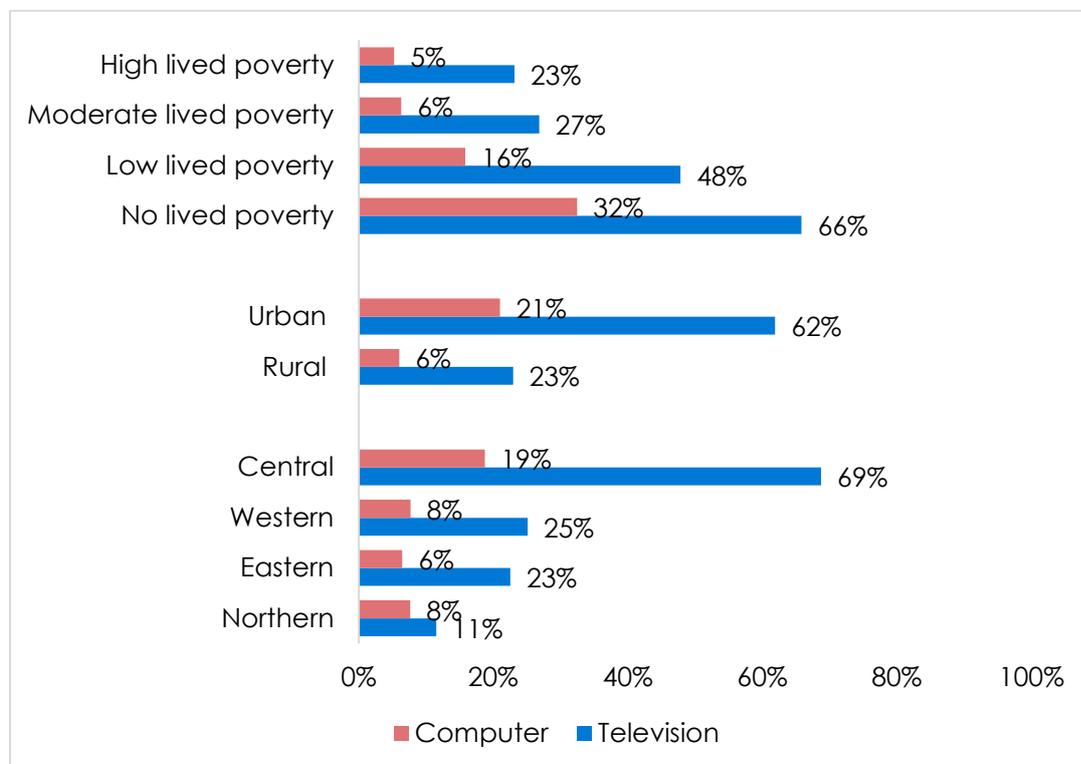
Substantial disparities in access to these essential e-learning tools suggest that e-learning during the pandemic was far less likely to benefit children in rural areas; in the Northern, Eastern, and Western regions; and in poor households.

Urban households are almost three times as likely as those in rural areas to own a television set (62% vs. 23%) and almost four times as likely to own a computer (21% vs. 6%) (Figure 5).

Residents in the Central Region, which includes Kampala, are more than twice as likely to have access to televisions and computers in the household as their counterparts in other regions (69% vs. 11%-25% for televisions and 19% vs. 6%-8% for computers).

Equally large gaps separate the poor and the wealthy, ranging from 23% to 66% for televisions and from 5% to 32% for computers.

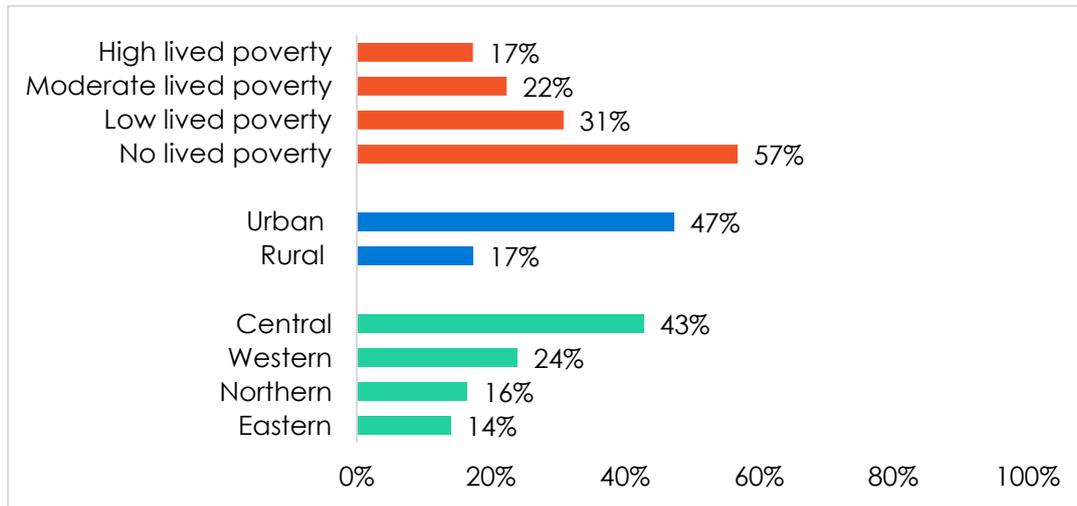
**Figure 5: Ownership of television and computer** | by location and lived poverty | Uganda | 2021



**Respondents were asked:** Which of these things do you personally own? [If "no"]: Does anyone else in your household own one? (% who say "Yes, do own" or "Yes, someone else in the household owns")

Ownership of Internet-enabled phones shows similar disparities favouring urban and Central Region residents as well as economically well-off respondents (Figure 6).

**Figure 6: Ownership of Internet-enabled phone | by lived poverty and location | Uganda | 2021**

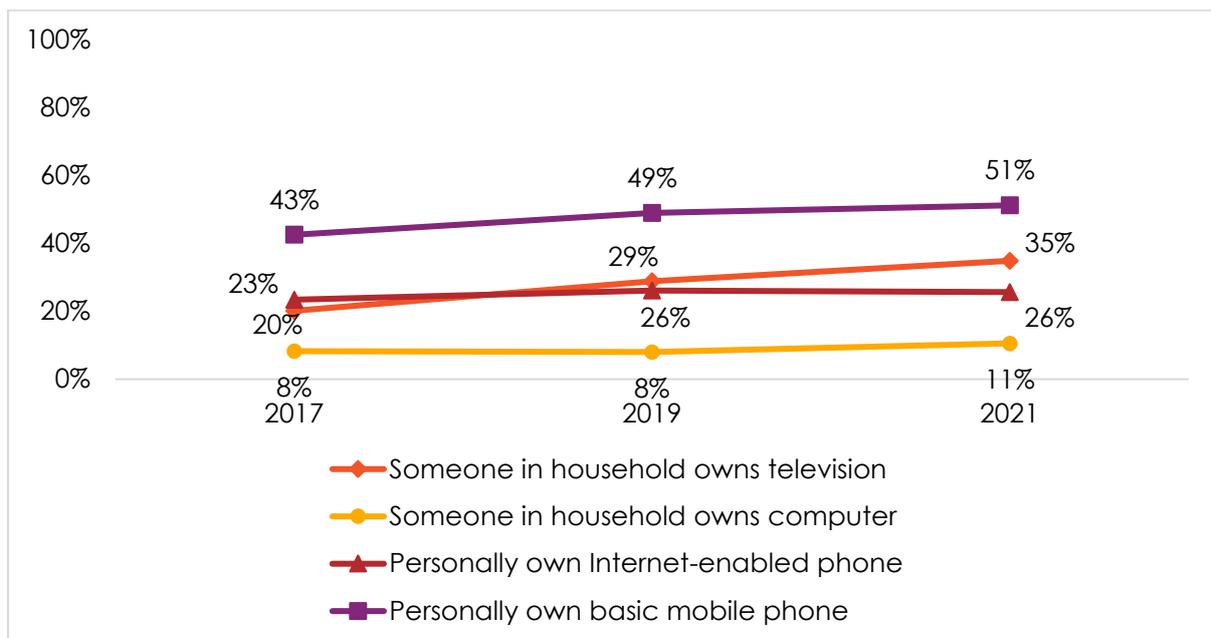


**Respondents were asked:** Which of these things do you personally own: Mobile phone? [If “yes”:] Does your phone have access to the Internet? (% of all respondents who own an Internet-enabled phone)

*Trends in ownership of technological devices*

Ownership of technological devices in Uganda has been increasing in recent years. The proportions of households with televisions rose by 15 percentage points between 2017 and 2021. While the share of individuals who own basic mobile phones increased by 8 percentage points over the period, growth in households with computers and in individuals with Internet-enabled phones was marginal (3 percentage points each) (Figure 7).

**Figure 7: Ownership of technological devices | Uganda | 2017-2021**



**Respondents were asked:** Which of these things do you personally own: Mobile phone? Television? Computer? [If “no”:] Does anyone else in your household own one?

**Respondents who said they personally own a mobile phone were asked:** Does your phone have access to the Internet?

*Radio as alternative means for e-learning*

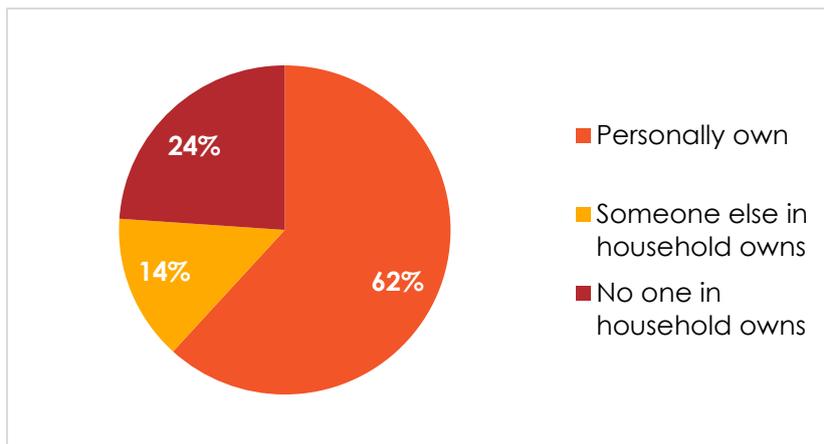
In 2020, the government proposed to acquire and distribute at least 10 million radio sets to help children continue their education after schools were closed due to COVID-19 (Monitor, 2020). However, Parliament questioned the need, raised concerns about the suppliers' credibility, and rejected the proposal (Independent News, 2021b).

In a scenario where access to televisions, smartphones, and computers is limited, could radio be a useful learning option during a pandemic? How many school-age children would have access to radio for educational purposes?

The most recent Afrobarometer findings show that three-quarters (76%) of households have at least one radio set (Figure 8).

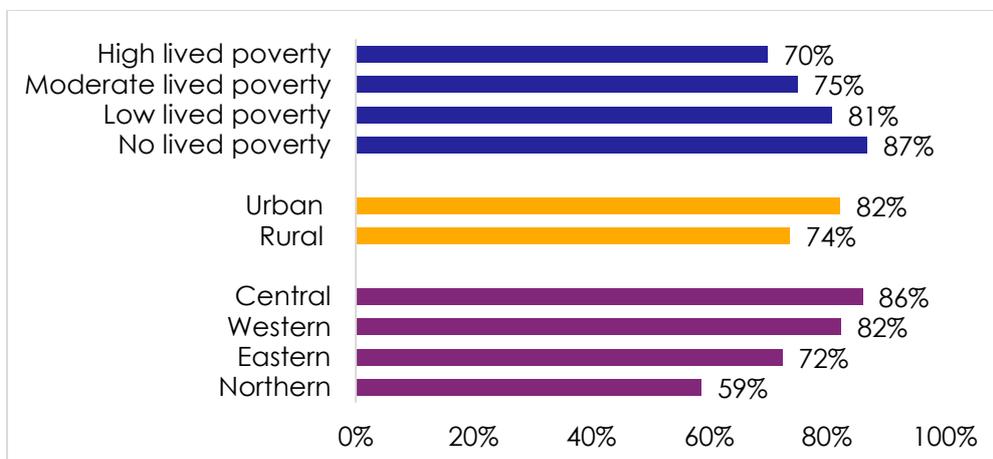
Disparities in radio ownership mirror the pattern for other electronic devices, but at a higher level: Even among poor and rural households, 70% and 74%, respectively, own radios. Residents in the Northern Region (59%) are least likely to have access to a radio in the household (Figure 9).

**Figure 8: Radio ownership | Uganda | 2021**



**Respondents were asked:** Which of these things do you personally own: Radio? [If “no”:] Does anyone else in your household own one?

**Figure 9: Radio ownership | by lived poverty and location | Uganda | 2021**



**Respondents were asked:** Which of these things do you personally own: Radio? [If “no”:] Does anyone else in your household own one? (% who say they or someone in their household owns a radio)

## Internet usage

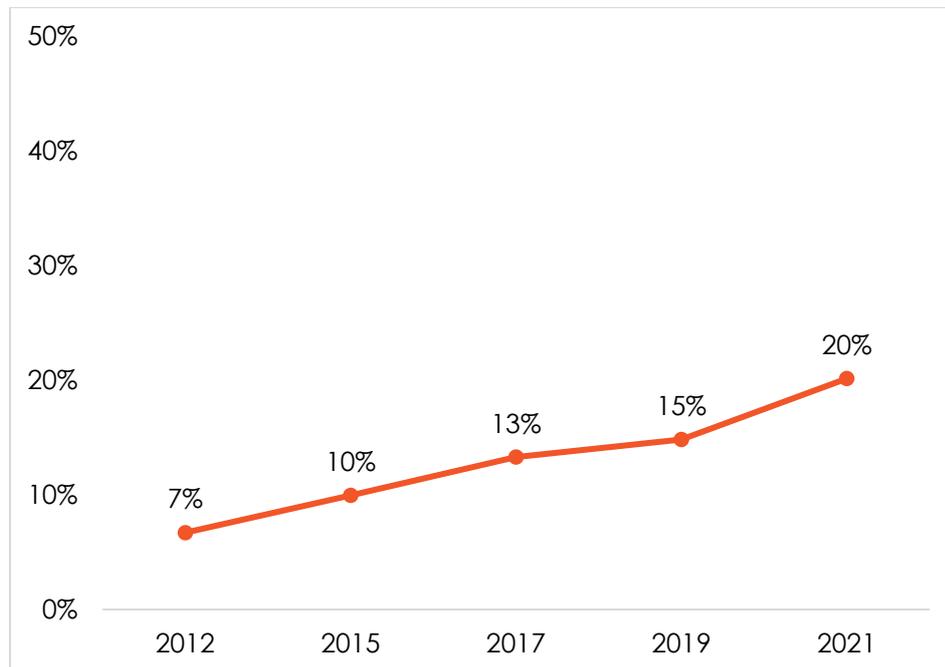
Effective e-learning requires the active participation of students, parents, and teachers in the use of available e-learning technologies. How often they use the Internet and Internet-enabled devices is thus an important parameter to assess their level of digital literacy (Krönke, 2020). If adults in a household are knowledgeable about how to use the Internet, they can readily pass that knowledge on to school-age children who live with them, making e-learning far more attainable.

According to the most recent Afrobarometer survey, only one in five adult Ugandans (20%) use the Internet “every day” or “a few times a week” (Figure 10). This proportion has more than doubled since 2012, a trend suggesting that e-learning might become widely feasible in the future.

The level of regular Internet usage is lower among women (16%) and rural residents (13%) than among men (25%) and urbanities (37%) (Figure 11). It increases with respondents’ education level, ranging from no regular users among those with no formal education to 55% among those with post-secondary qualifications, and with respondents’ economic status (12% of the poorest to 45% of the well-off).

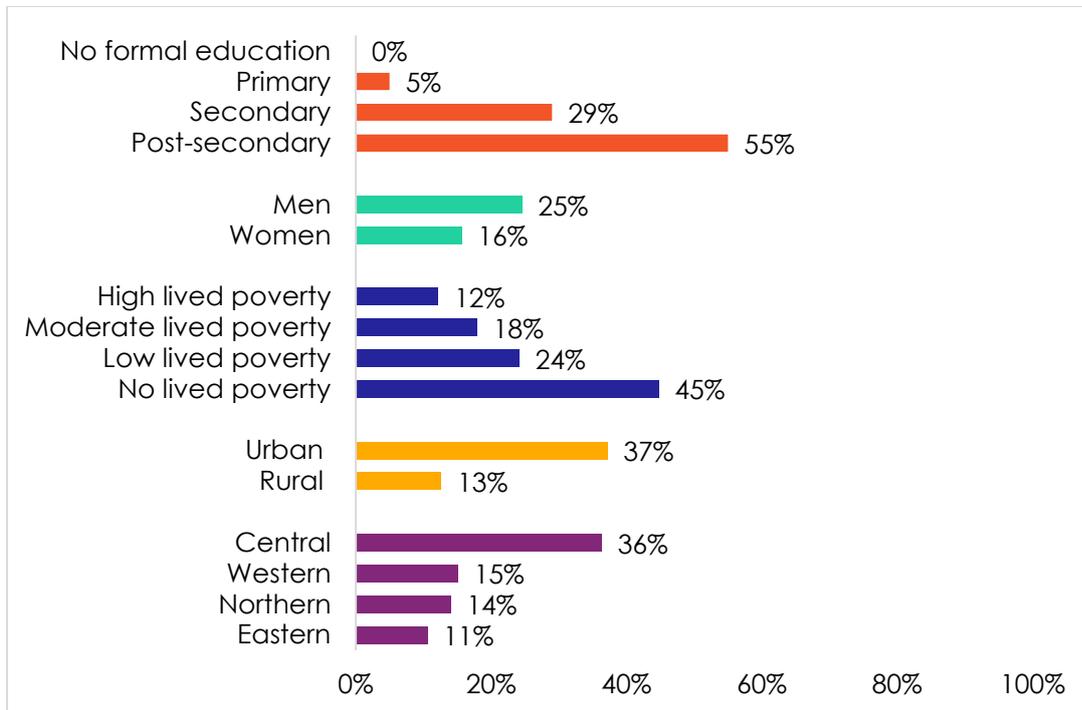
Citizens living in the Central Region (36%) are more than twice as likely as their counterparts in other regions (11%-15%) to use the Internet regularly.

**Figure 10: Regular Internet usage | Uganda | 2012-2021**



**Respondents were asked:** How often do you use the Internet? (% who say “every day” or “a few times a week”)

**Figure 11: Regular Internet usage** | by socio-demographic group | Uganda | 2021



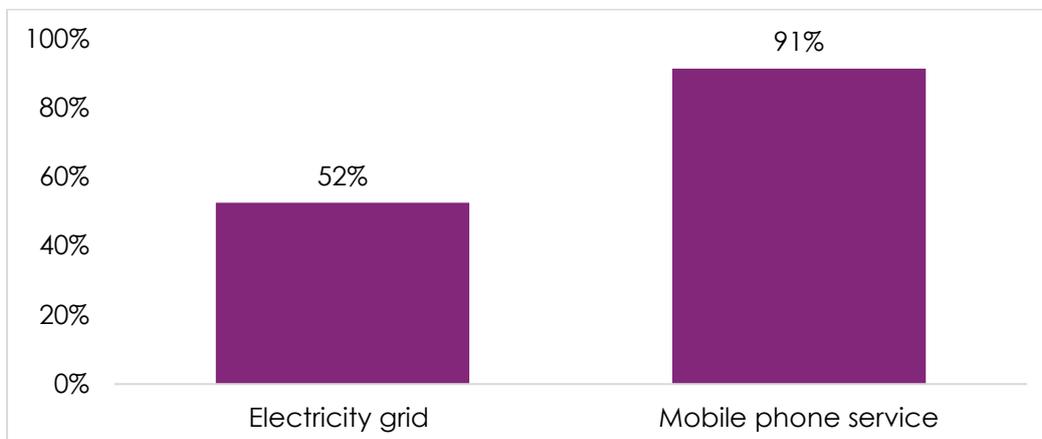
**Respondents were asked:** How often do you use the Internet? (% who say "every day" or "a few times a week")

### Availability of digital infrastructure

Digital infrastructure development is crucial for successful e-learning. Household electricity connectivity and Internet access depend on the availability of functioning electric grids and cell phone network coverage. The frequency of Internet and mobile phone usage is also strongly associated with the availability of this digital infrastructure (Krönke, 2020).

Afrobarometer data show that only about half (52%) of Ugandans live in zones served by the electricity grid, while nine out of 10 neighbourhoods (91%) surveyed by Afrobarometer had cell phone network coverage (Figure 12).

**Figure 12: Availability of digital infrastructure** | Uganda | 2021



**Afrobarometer interviewer were asked to record:** Are the following services present in the primary sampling unit/enumeration area: Electricity grid that most houses can access? Mobile phone service?

## Conclusion

The COVID-19 pandemic greatly disrupted education in Uganda, keeping 15 million children out of school for the better part of two years. While e-learning was offered as part of the government's response, Afrobarometer findings indicate that relatively few households in Uganda have televisions, Internet-enabled phones, and computers. Poor households and those outside the cities and the Central Region are at a particular disadvantage when it comes to the tools needed for e-learning.

In addition, the limited reach of the national electric grid and low Internet usage are likely to hinder e-learning. These findings suggest that major government investments to expand digital infrastructure and access to digital technologies will be needed to make widespread e-learning a reality in the future.

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**Makanga Ronald Kakumba** is a research associate for Hatchile Consult Ltd., Afrobarometer's national partner in Uganda. Email: [makanga.ronnie@gmail.com](mailto:makanga.ronnie@gmail.com).

Afrobarometer, a nonprofit corporation with headquarters in Ghana, is a pan-African, non-partisan research network. Regional coordination of national partners in about 35 countries is provided by the Ghana Center for Democratic Development (CDD-Ghana), the Institute for Justice and Reconciliation (IJR) in South Africa, and the Institute for Development Studies (IDS) at the University of Nairobi in Kenya. Michigan State University (MSU) and the University of Cape Town (UCT) provide technical support to the network.

Financial support for Afrobarometer is provided by Sweden via the Swedish International Development Cooperation Agency, the U.S. Agency for International Development (USAID) via the U.S. Institute of Peace, the Mo Ibrahim Foundation, the Open Society Foundations, the Bill & Melinda Gates Foundation, the William and Flora Hewlett Foundation, the European Union, the National Endowment for Democracy, the Mastercard Foundation, the Japan International Cooperation Agency, the Konrad Adenauer Foundation, the University of California San Diego, the Global Centre for Pluralism, the World Bank Group, Freedom House, the Embassy of the Kingdom of the Netherlands in Uganda, GIZ, and Humanity United.

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**Afrobarometer Dispatch No. 515 | 12 April 2022**