# Assessing the Digital Divide in Tertiary Education in Sierra Leone through the COVID-19 Pandemic

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# Executive Summary

The outbreak of the Coronavirus pandemic in early 2020 heightened the dependency of internet connection in education, forcing universities across the world to confront unprecedented challenges that simultaneously exposed the already existing digital divide. This research report investigates these challenges met in education during the COVID-19 pandemic when education turned online. It employed two surveys looking at student's internet connectivity levels and digital skills at the University of Makeni in Sierra Leone to explore if the pandemic had widened the digital divide in education. As well as outlining the rates of internet connectivity across the university, the research findings illustrated multiple constraints that prevent students from accessing or utilising digital appliances. It further highlighted how the COVID-19 pandemic had widened these digital inequalities. After observation and analysis of the data, the report also summaries key recommendations that can be achieved to bridge the digital divide gap and increase the educational livelihood of students.

# 1. Introduction & Background

The outbreak of the Coronavirus (COVID-19) pandemic in March 2020 significantly increased the dependency of internet connection and utility in education. As countries across the globe responded to the rapid spread of the disease with national "lockdowns", an educational emergency erupted when schools and universities were forced to close. While the educational community made concerned efforts to maintain adequate teaching during this period, students had to rely on their own resources as education turned online (Khalili, 2020). This has exposed fundamental inequalities across the digital world, where students who have access to information and communication technologies (ICTs), have an advantage over the students that do not.

Fundamentally, this digital advantage refers to the definition of a digital divide (DD), which in simplistic terms is a division between people who have access and use of digital media and those who do not (Compaine, 2001; Van Dijk, 2020). As expressed, the COVID-19 pandemic has exacerbated these divisions, generating a huge dependency on internet connectivity for education. Ultimately, these digital disparities have reflected and reinforced the prevalent differentiations of class, gender, age, race, location, disability and other social indicators (Zeleza, 2021). Thus highlighting the need to reimagine how teachers deliver and support educational learning to students no matter where they live or to what tools they can access (Correia, 2020).

This research is based on a virtual placement I undertook between June and August 2021 with the University of Makeni (UNIMAK) located in Sierra Leone. Universities in Africa are among the worst affected from the pandemic and least able to manage due to their pre-existing capacity challenges. One major challenge this alludes to, is the poor state and maintenance of physical and technological infrastructures. (Zeleza, 2021). This research was specifically concerned with these constraints, it evaluated the current disruption to tertiary education during the coronavirus pandemic, looking at the DD in place in education and if the pandemic has impacted this divide. In doing so, it focuses on the student's internet connectivity rates as well as questioning any constrains physically or socioeconomically that might hinder their access and digital skills.

This research specifically focussed on the students at the University of Makeni in Sierra Leone. It examined these imbalances to judge whether the coronavirus pandemic had

expanded the DD in education. Accordingly, this research was guided by the following research objectives:

1. To explore the rates of student internet accessibility during the COVID-19 pandemic
2. To understand the complexities and differences in student's socioeconomic implications that might prevent them from internet access and digital skills
3. To assess the gender and rural/urban DD in education and see if the COVID-19 pandemic has exacerbated this divide

# 2. Research Methodology

## 2.1 Virtual Study

Because of the current coronavirus restrictions for international travel, this project had to be undertaken virtually with the help of research assistants located in the study setting. This support consisted of two students studying themselves at UNIMAK as well as a research supervisor, who is a teacher at UNIMAK that overlooked and also assisted with the research. Their assistance within the study was significant, as they helped with the data collection aspect of which could not have been achieved virtually.

## 2.2 Research Methods

Data was collected within this research through employing two mixed method surveys: a quantitative sampling survey, followed by a qualitative questionnaire. The first quantitative survey was used as a broad sampling tool to identify the differing internet access rates across multiple educational departments at the university. Just over 700 students across 7 educational departments responded to the survey. This assessment was then analysed and the two educational departments with the lowest internet access rates and two with the highest were chosen to be subjects for the following qualitative survey. Furthermore, this second questionnaire included more in-depth detailed questions concerning the student's digital skills

and possible constraints and socioeconomic implications that might prevent their access. Overall, 25 students were assessed over the four educational departments.

This mixed method approach was employed as it was not feasible to collect more detailed information from the entire population at the university, therefore, a subset of the population based on the first sampling survey was used as an estimation to reflect the entire population (Ponto, 2015). It explored the educational departments with the lowest and highest rates of internet access in hope to see a significant difference in their perspectives on the Internet due to their range of digital capital.

### 2.3 Ethical Considerations

Ethical approval for this study was approved by the Ethics Panel at the University of Sheffield. As the research could have included personal sensitive information, anonymity was imperative to protect the privacy of the respondents (Wiles et al., 2008). In addition, the research ensured that all data was protected and kept on a password protected laptop. Only I and the research assistants had access to the anonymised data.

Informed consent was attained from all participants before collecting any results after the research was explained to them by the research assistants.

Furthermore, as the research assistants were collecting the data, it was imperative that they understood and acknowledged the same ethical considerations as myself before the research took place. It was significant that I, the researcher, did not neglect the ethical treatment of the research assistants and ensured that they did not experience any psychological or social risks involved with their assistance of the research (Naufel & Beike, 2013).

# 3. Key Findings

## 3.1 Computer Ownership and Data Rates at the University

This section outlines the results based on the quantitative sampling survey. The survey asked 5 questions concerning the student's gender, age, if they were living in a rural/ urban location when education was online, their computer ownership levels connected to the internet and their average monthly spending on data costs. Accordingly, the following sub-sections summarise the results across different parameters:

### *Educational Departments (faculty)*

The internet connectivity levels ranged across the different departments at the university. As illustrated in Figure 1, the *Postgraduate* and *Mass Communication & I.T.* departments had the highest computer ownership rates with 74.67% and 29.36% of students having a computer at home connected to the Internet respectively. In contrast, the *Humanities & Religion* and *Agriculture & Food Sciences* faculties had the lowest rates of internet connected computer ownership levels with 6.25% and 13.43% respectively. These departments were chosen as the subjects for the second qualitative questionnaire as they had the lowest and highest rates.

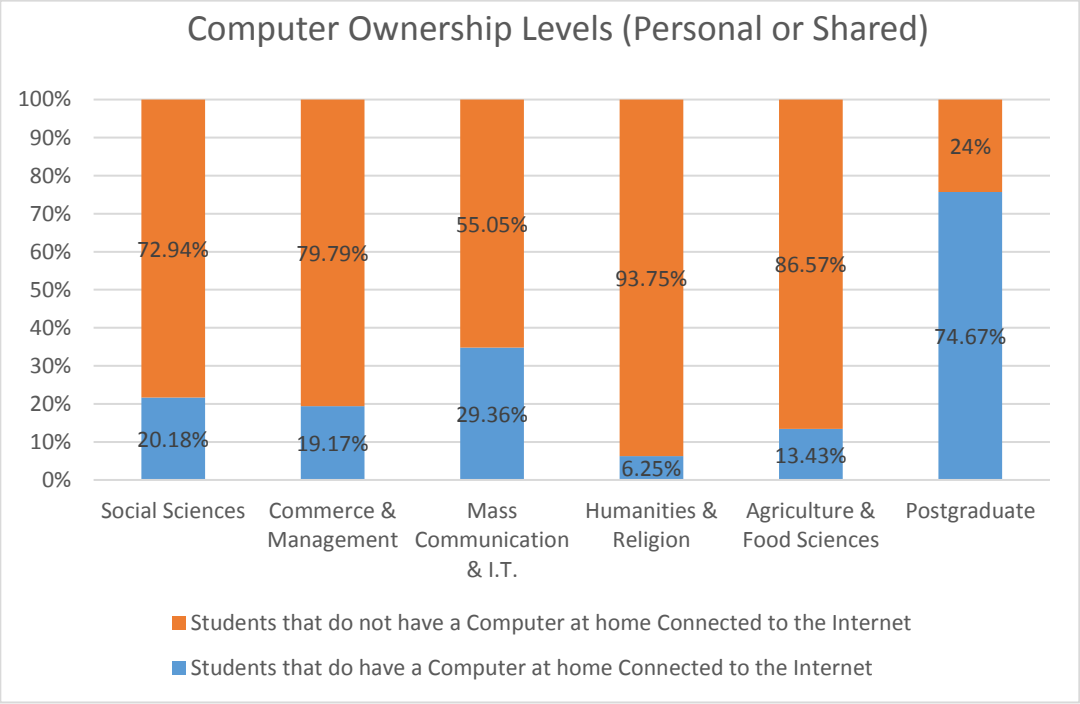


*Figure 1- Computer Ownership Levels within each Faculty at the University (Author of this Thesis, 2021).*

Consequently, although certain programmes of study will offer various methods of education and not all will require internet access or digital programmes and skills, the computer ownership rates illustrated in Figure 1 highlight the digital disparity in place at the university. When education has turned online during the pandemic, those with a computer with connected internet access will inevitably have a greater opportunity and advantage over those who do not. Consequently, the digital exclusion across the university heavily depicts to be an economic DD where a burden has shown on the poorer students.

### *Gender Differences*

The results highlighted significant numbers for gender differences when assessing the internet connectivity and data levels as suggested in Table 1. The average monthly spending on phone and data costs seemed to be indivisible with the male students averaging £10.75 a month and the female averaging £10.59 a month. However, despite their similar spending on mobile costs, gender dissimilarities were present for the computer ownership connected to the Internet data with the male's 32.35% in comparison to 20.86% for women.

*Table 1 - Gender differences in Computer Ownership Levels and Student Data Costs at the University (Author of this Thesis, 2021).*

| Gender | Average Monthly Spending on Phone & Data Costs (SLL) | Average Monthly Spending Converted to GDP | Percentage of Students that do have a Computer at home Connected to the Internet | Percentage of Students that do not have a Computer at home Connected to the Internet |
|---|---|---|---|---|
| **Male** | 153,549 SLL | £10.75 | 32.35% | 65.78% |
| **Female** | 151,228 SLL | £10.59 | 20.86% | 73.31% |

In comparison, the ITU statistics outlined women's access to the Internet across Africa also to be less, with only 20.2% using the Internet compared to 37.1% of men in 2019. Globally, these rates were increased but the gender disparity was still existent with 48.3% of women used the Internet as opposed to men's 55.2% (ITU, 2021). Although these statistics indicate overall internet access levels and not ownership rates, both results highlight the male dominance that is existent in technological wealth in developing countries. Literature has highlighted many barriers that are included in women not gaining as much access to ICTs as men: social norms favouring men, exclusion from technology, limited free time and financial constraints (Gill et al., 2010). These components have worsened during the pandemic creating a further gender digital divide.

## 3.2 Qualitative Survey Results

This section highlights the results attained from the second qualitative survey. It examined the social implications preventing students from accessing the Internet and utilising digital abilities. The following themes and patterns were evaluated from the data:

***Economic DD in Education***

Data showed that the price of digital components were the biggest challenge facing students accessing the Internet with 76% of the students claiming the data to be too expensive. It was also interesting to see that there was no correlation between the students who said these disparities to what access level of faculty they were in. Yet, it stresses the need to reduce these costs for the benefit of student's education as well as bridging the DD.

The COVID-19 pandemic has worsened this economic DD, deteriorating the already existent divide but also growing the existing DD inequalities during the pandemic where the economically less fortunate have less chance to access adequate education and the rich have more entitlement and an unfair advantage.

### *Internet Connection*

A second constraint found within the results concerns the actual internet speed and quality of connection. Likewise to the data costs, this result had no association to the different departments with both low and high access faculty students indicating the slow speeds. Furthermore, the results also showed how students pressed for the need of a better internet connection to improve their educational livelihoods.

### *Lack of Digital Skills*

The most prominent barrier to digital use this survey showed was the lack of digital skills. The data highlighted that many students felt like they were missing necessary digital skills when completing online work or accessing digital appliances. Further, also indicating that they knew the basics of controlling the Internet and digital software but found it crucial to learn more for their education. The pandemic has heightened the importance of digital ability with education turning digital. Those who are less able to utilise the digital appliances will have a disadvantage over those who can through digital dependency in education.

## 4. Conclusions

Although the disparities found within the research are all constraints that were already present before the onset of the pandemic, the international closure of schools heightened the dependency of internet use and widened these digital inequalities. Moving education online or even applying more digital utility made students with less digital skills and internet access further disadvantaged in education as opposed to those who have more. Ultimately, digital literacy and internet utility constitutes to the basis of citizenship in order for the effectiveness of a modern society. This research has uncovered these digital inequalities in education during the pandemic and shown the DD that is present across the university for students.

# 5. Recommendations

This report identifies a mammoth problem across the world in education due to the COVID-19 pandemic but also pre-existing challenges. To mitigate this digital divide, there is much to be done on an international and governmental scale to improve the technological, educational and social perspectives that constitutes to internet access and digital skills. However, there are still recommendations institutions like the University of Makeni can do to bridge this gap among students at the university:

1) Recommendation to redesign curriculum and assessment
   - Ensure that each programme of study includes a type of digital activity – Even where it is not applicable to the course directly, a basic understanding of digital use can be taught so those who do not have personal internet use/ devices can be educated for the future.

2) Recommendation to build digital skills
   - Ensure students have a clear understanding of the digital skills they may need for their course.
   - Could have an out of hours *digital skills programme* where basic digital skills are taught to those who want it – Students and/or staff.

3) Review and evaluate whether provision is inclusive and accessible
   - Ensure all students are able to give feedback on how inclusive their digital their learning environment is – This could be explicit to the digital dependant studies.

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