

Impact of COVID-19 on Inclusive Education in Higher Learning Institutions in Rwanda

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ABSTRACT

This study analysed the impact of COVID – 19 pandemics on the inclusive learning process of students in the higher learning institutions in Rwanda. A quantitative research design was adopted. Primary data was collected from 1170 students in 30 learning institutions in Rwanda using a closed ended questionnaire. Data was analysed using descriptive and inferential statistical analytical tools. The results indicated covid -19 has impacted the inclusive learning process of students in the higher learning institutions in different ways. Students in rural areas were more affected due to limited access to internet connections, lack of internet data and limited access to electricity all of which were caused by limited infrastructure in the online learning. Students from poor families regardless of their locations suffered more due to limited access to electricity and internet connections in their homes. The study contributed to the existing knowledge in two ways, Firstly, it established the impact of covid–19 pandemic on the inclusive learning process in higher learning institutions. Secondly, it established the learning inequality based on location and social economic status.

Keywords: Covid–19, Learning, Education institutions, inclusive learning, online learning, Students

INTRODUCTION

Inclusive education is one of the key pillars that African leaders need to concentrate on if they are to achieve the sustainable growth and development. Inclusive education is the key that opens the door to the social and economic development worldwide and Rwanda in particular. Various scholars have indicated the role inclusive education in socio-economic development (Nikos B. and Stefania, 2013, Hanushek, 2016 and Hanushek, 2013). Hanushek (2013), for example, points out that improving schooling to allow inclusive learning is a fore front of many

countries in the world because the development of cognitive skills on the majority of population forms the foundation for social and economic development in both the developed and developing countries. Both the neoclassical and endogenous economists converge at one point that inclusive education forms the foundation for human capital which is a core variable in the economic growth. Education inequality continues to be a major challenge in many developing countries where students in rural areas are more marginalised. Zhang et al. (2015) posits that students in the rural area perform lower than students in the urban areas. Human capital is very important factor in the journey of economic growth.

The coronavirus pandemic which started in China in December 2019 has not only created challenges on the health system, but it has had a very big impact on the education systems across the globe (Owusu *et al.* 2020, Daniel, 2020; Chan, 2020; Peters *et al.*, 2020 and Karalis, 2020). The measures which were introduced to combat Covid 19 pandemic such as lockdowns, social distancing and quarantine have disrupted the operation of the education institutions (Daniel, 2020, Ognodiet *al.*, 2020, Reimers and Schleicher, 2020). In order to implement the Covid-19 measures, teaching was shifted from the physical to the virtual classrooms and from schools to home (Zhangaet *al.*, 2020). This has not only affected the teaching and learning processes, but as well as the operation of education institutions since many private institutions survive solely on school fees from students (Karalis, 2020). Wargadinataet *al.* (2020) points out that with the covid -19 measures such as social and physical distancing; online learning appears to be a solution in the situations where the normal learning process cannot take place.

Covid – 19 pandemics has had numerous impacts on the learning process of students in the higher learning institutions in the world. Joseph *et al.* (2020) points out that universities were unable to redesign their curriculum to suit the online learning. Aziz and Ojcius (2020) point out that covid -19 led to delay in graduation. Calhoun (2020) points out that students were unable to acquire practical skills due limited virtual laboratories. Wargadinataet *al.* (2020) asserts that the pandemic has affected academic calendar; Aziz and Ojcius (2020) lamented on delay in graduation and Reimers and Schleicher (2020) pointed out that students in their final years were unable to collect data to finalize their research work due to lockdowns. The Covid -19 pandemic affected the assessment process of many of the education institutions as well. The internal

assessment which provides information about the progress of the students has been compromised (Reimers and Schleicher, 2020) because of failure to recognize the ability of the student is detrimental to the learning process (Piopiuniket *al.* 2020). A study conducted by Aziz and Ojcius (2020) point out that covid -19 led to delay in graduation. Zhangaet *al.* (2020) showed that there was no internal assessment of students during the Covid 19 pandemic.

Following the outbreak of Covid – 19, the teaching and learning process was shifted from the normal classrooms to the virtual classrooms through the use of various technologies. Although use of mobile phones allows learning to take place at any time and in any place as pointed out by Naciriet *al.* (2020), the infrastructure development to support the online learning is still very low in many education institutions (Bao, 2020, Reimer and Schleicher, 2020, Sintama, 2020). Poor networks have greatly affected the online learning process during the covid – 19 pandemics (Owusu and Hanson, 2020, Joseph *et al.*, 2020). Covid- 19 pandemic has created a big challenge to science students' learning process (Sintama, 2020, Abidahet *al.* 2020 and Peters *et al.*, 2020). The interruption in the learning process was due to lack of virtual laboratories, cadavers, dissection rooms, specimens, skeleton, and lack of practical learning materials as pointed out by (Abidahet *al.*, 2020 and Peters *et al.*, 2020). This has affected mostly science students in their final years. Furthermore, the academic calendar has been disrupted by covid – 19 (Ogunodeet *al.*, 2020, Daniel, 2020). Huston et al (2020) asserts that students doing natural science subjects were unable to have access to laboratories due to lack of virtual laboratories in many education institutions. More to that, many students lacked skills to study and practice online Wargadinataet *al.*, 2020; Owusu *et al.* 2020; Draneet *al.*, 2020; Calhoun, 2020 and Caoa et al., 2020) Owusu and Hanson (2020) points out that students were unable to study effectively at home. Owusu *et al.* (2020) and Drane et al (2020) pointed out that online learning has got various challenges which includes limited internet connections, unconducive home environment and failure of parents to assist in the learning process, learning from others through group discussion and limited skills to study online.

Daniel (2020) carried out a study on education and covid -19 pandemic. Data was collected from different education institutions using a questionnaire which was emailed to the respondents. The findings from the survey show that covid -19 has impacted on students in different ways

which included finalists may not complete their education in the normal ways, employment challenges, completion of school curriculum and assessment in the normal ways. Zhangaet *al.* (2020) analysed on suspending classes without stopping learning focusing on China's education emergence management policy in the covid – 19 outbreaks. A qualitative approach was adopted through review of literature. The findings revealed weakness online teaching infrastructure, inexperienced teachers, unequal learning outcomes created by the inexperienced teachers, information gap, complex environment at home, proportion and efficacy of the use of the online teaching resource are still low, and both teachers and students face a problem of teaching and studying online, unclear teaching mode and pedagogy.

Chan (2020) carried out a study on covid – 19 pandemic and global higher education evidence for future research and practice. A qualitative approach was adopted and data was analysed using Nvivo from a literature survey of 123 abstracts. Findings revealed that covid – 19 pandemics have impacted the academic calendar for students. Murphy (2020) analysed covid 19 and the emergency of eLearning, consequences of the securitization of higher education for post pandemic pedagogy. The study adopted a qualitative approach through review of literature. Findings show that securitization theory is an important tool for educators not for observing the phenomenon of emergency of eLearning but also advocates the desecuritisation of the schools after covid – 19. Wang *et al.* (2020) examined risk management of covid – 19 by universities. Covid 19 has had a great impact on social and economic development of china. Chinese universities have played a positive role in controlling the epidemic situation.

Naciri (2020) the study examined the role of mobile learning as a remote teaching strategy to sustain student centered learning. Findings show that use of mobile learning allows learning any time, any place and any time. Covid – 19 pandemics has had a great impact on the education need to change their education curriculum to adopt innovation teaching. The study identified a big challenge on developing the students' technological skills to use e-learning. Doyle (2020) analysed how covid – 19 exacerbated education inequality with evidence from Ireland. The adopted qualitative systematic review of 45 studies modeling the effect of covid on schools. The findings from the survey revealed that covid – 19 pandemics has widened the education inequality.

Owusu and Hanson (2020) examined the impact of covid – 19 pandemics on learning focusing on the Ghanaian students. The study used a descriptive research design. Data was collected using a questionnaire from a population of 214 students from the total institutions. A simple random sampling was used to select the sample. Findings revealed that students were unable to learn effectively from home, online learning is not effective, parents are incapable of assisting their children on how to access the eLearning platform, and don't get time to supervise their children, limited internet access and the technical knowhow.

Abidahet *al.* (2020) analysed the impact of covid – 19 pandemics to the Indonesian education sector and its relation to the philosophy of Merdeka Belajar. The study made a conceptual analysis of various research articles. Findings show that there was a lack of learning resources, digital classes, and virtual laboratories to the learning process during the covid - 19. Aziz and Ojcius (2020) examined the impact of covid -19 on dental educations in the United States of America through review of literature. Findings from surveys show that covid – 19 has impacted the teaching and learning process, graduations were delayed, graduation was moved online and parents were entrusted with their children.

Wargadinataet *al.* (2020) analysed the students' response on learning in the early covid -19 pandemic in Malang Indonesia. The study adopted both quantitative and qualitative research design and data was collected from both primary and secondary sources using questionnaire, interview and observation. The questionnaire was distributed using online google form and the interview was conducted online. The study population included 225 students from the higher learning institutions. The findings regaled that use of what's-up group was the easiest to communicate to the students since it does not require much data and it is simple to use. Education institutions adopted different learning models in order to ensure learning continues to take place even during the period of covid - 19 pandemic. These included what's-up groups, e-learning platforms, Zoom, google classrooms, Microsoft teams, WebEx and others as they develop. Huston et al (2020) examined the impact of covid -19 pandemic on the medical students in the United States of America. The study adopted a qualitative approach by reviewing various literatures. Students were sent home and removed from hospital and clinic settings, shifted from live groups to virtual teaching and this affected students' acquisition of practical skills.

Owusu *et al.* (2020) examined the impact of covid -19 on learning in Ghana. The study adopted a descriptive research design. The study population included 214 students from the tertiary institutions. Data was collected using a questionnaire which was designed using a Likert scale. Findings revealed that students are facing a number of challenges which include students are unable to effectively study from home which makes online learning less effective, parents are not capable of assisting the children during the online learning, limited access to internet, and lack of technological knowhow. Draneet *al.* (2020) analysed the impact of online learning on the educational outcomes of vulnerable children in Australia during the Covid -19 Pandemic. The study adopted a qualitative research approach through review of various research articles. Findings revealed that there are still limited skills in the use of technology during the learning process, limited internet coverage and lack of internet data, learning from others through group discussion is also limited digital inclusion as the internet coverage is still very limited as well as excess to the internet data. Emotional wellbeing and anxiety students may face a challenge of emotional that offsite learning that may bring and psychological anxiety which may lead to students to start losing the school connectedness.

Calhoun (2020) studied the impact of covid -19 on medical students' surgical education implementing extreme pandemic response measures in distributed surgical clerkship experience in America. The study adopted a literature review. The findings revealed that covid -19 acquired students to acquire practical skills. Caoaet *al.* (2020) studied the psychological impact of the Covid -19 on the college students in China. The researchers adopted a quantitative research design. Data was collected from primary sources using a questionnaire from 7143 students. Data was analysed using SPSS. A univariate analysis was used to explore the significant associations between the sample characteristics and the anxiety level during the covid – 19 pandemics. Spearman's rank correlation coefficient was used to evaluate the association between the variables. The findings revealed that living with parents had a significant effect on anxiety. The results further indicated that living in urban areas was a protective factor against the anxiety as compared to rural areas. Stability of student's family income and living with parents were also protective factors against anxiety.

Kapasiasa *et al.* (2020) carried out a study on the impact of lockdowns on learning status of undergraduate and postgraduate students during the covid -19 pandemics in India. An online survey was conducted using a structured questionnaire link from google form. The study population included 232 students. Findings revealed that students faced various challenges, students from the remote areas and marginalised faced more challenges. Daroedono *et al.* (2020) analysed the impact of COVID – 19 on medical education based on the students’ perception and practice of long-distance learning in Indonesia. The study used a cross sectional study design. Primary data was collected using electronic questionnaires and in-depth interviews. The study population included 545 students from medical schools. The findings revealed that covid 19 has affected students in different ways.

Zhang *et al.* (2015) made a survey on the education inequality between the rural and the urban areas analysing the potential bottleneck for human capital accumulation in China. The survey was made to a population of 18000 household and a random sampling technique was adopted. The study was carried out in both rural and urban areas of China. The findings revealed that family characteristics, there is a significant difference between family characteristics, school quality and student’s performance. The major contributors to the rural urban education disparity included the demographic features, physical health measures, parental education levels and household education spending. Zhao (2016) made a survey on the deficient to strength shifting the mind set about education inequality in America through the review of literature. The study found out that the disparity was based on colour. Hanushek. (2013) carried out a study on economic growth in developing countries analysing the role of human capital. The study adopted a quantitative research approach. Secondary data was collected from 21 countries across the globe. Descriptive and inferential statistics were used to analyse the data. The findings revealed that cognitive skills play a critical role in ensuring economic development of developing countries.

Whereas literature on the impact of covid – 19 on education sector has been established from different countries by different scholars Zhang *et al.*, (2020), Radwan and Radwan, (2020), Connorchicket *et al.* (2020), Karalis, (2020) Brown *et al.*, (2020) Reimers and Schleicher, (2020), the evidence to support the literature on inclusive education is still very limited. More to that, most studies that have analysed this phenomenon

have used a literature review Connorchicket *al.* (2020), Zhangaet *al.*, (2020), Ozer (2020) Ogunodeet *al.* (2020) Peters *et al.* (2020) and Karalis, (2020) to come up with the conclusion on the impact of covid-19 on the education sector

Secondly, previous literature provides little evidence on the inequality created by covid -19 pandemic on the students based on their area of location. It is important to mention covid -19 has created a learning inequality between students in rural areas and those in towns. Previous studies have mentioned the challenge of internet connections, electricity and lack of infrastructure that supports online learning (Draneet *al.*, 2020; Owusu *et al.*, 2020 and others mentioned above). However, their findings do not show which of the countries have been affected more with these challenges. Learning inequality arises when one area of the country group of the population can have access to education and others cannot (Caoaet *al.*, 2020). This study contributed to the existing literature by establishing the impact of COVID 19 on the inclusive education in the higher learning institutions.

METHODOLOGY

This study analysed the impact of COVID-19 pandemic on the inclusive learning process in the higher learning institutions in Rwanda. The following methods and techniques were used to collect and analyse the data.

Research approach and design

This research was guided by the pragmatism research philosophy as indicated by our thrust to understand how covid–19 pandemic has affected the inclusive learning processes of students in the higher learning institutions in Rwanda. In this study, the researchers adopted a quantitative research design. Quantitative research design has been adopted in studies analysing the impact of covid -19 pandemic on the education (Daroedonoet *al.*, 2020, Kapasiaaet *al.*, 2020 and Caoaet *al.*, 2020) This helped the researchers to establish the impact of covid–19 pandemic on the learning process of students in the higher learning institutions. Twesigeet *al.* (2020) points out that if study requires the use of questionnaires, the quantitative research design is the best that suits such studies.

The study population was drawn from the higher learning institutions in Rwanda. According to the Higher Education Council (2020), there are 30 higher learning institutions in Rwanda. These include 2 public institutions and 28 private institutions. The target population of this study included students from different programs offered by the higher learning institutions in different campuses. A total population of 1170 students were selected from the 30 higher learning institutions. A stratified sampling technique was used in order to select the students from three clusters which were Kigali city, towns and rural areas.

Primary data was collected using closed ended questionnaires which were designed using a likert scale. The questionnaire was emailed to students through their head department and class representatives. With restricted movement to deliver the instrument and social distancing measure, online delivery was considered to be more useful as compared to other tools. A pilot study was conducted with students from the department of accounting to ensure the reliability of the instruments. The reliability was tested using a Cronbach alpha test. The test indicated an alpha of 87% which indicated the instruments were reliable and could be used to answer the study objectives.

The Statistical Package for Social Scientists (SPSS) was used for data entry. Descriptive data analysis was conducted using frequency tables, mean and standard deviation. While, inferential data analysis was conducted using ANOVA and the Kruskal Wallis Test. The ANOVA was done to test the significance of the impact of COVID-19 pandemic on the learning process of students in the higher learning institutions in Rwanda. Kruskal Wallis test was used to determine the areas that were most affected by the COVID – 19 pandemic and to test the significance of the challenges of COVID 19-pandemic on the student’s online process.

FINDINGS AND DISCUSSION

This section presents and discusses the results from the survey.

Table 1: Mode of Learning during the Covid – 19 Pandemics

Tools used in online learning	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
Moodle online platform				22.0%	78.0%
Video conferencing	57.0%	15.2%	9.6%	8.0%	10.3%
Moodle and Video conferencing	46.6%	22.7%	11.5%	18.2%	1.0%
What’s-up groups			30.0%	65.0%	5.0%
What’ sup and Moodle			35.6%	50.4%	14.0%

Source: Survey Data 2020

The results in table 1 show the mode of learning used by the higher learning institutions in Rwanda. Findings show that 100% agreed that they studied using an online Moodle platform, 72.2% of the students disagreed on the use of video conferencing in the learning process whereas 18.3% agreed that they used video conferencing during the study and 9.6% of the students were neutral. Furthermore, on the use of combination of Moodle and video conferencing to support the learning process, 69.3% of the students disagreed, 11.5% were neutral whereas 19.2% agreed that they used both Moodle platform and video conferencing during their learning process. The results further revealed 70% of students indicated the use of what’s-up to support their learning process whereas 30% of the respondents were neutral. More still, the findings indicated 64.4% of the students agreed on the use of both Moodle and what’s up to support their learning process.

The findings revealed that during the Covid -19 Pandemic, learning was shifted from the normal face to face classrooms to online classrooms using different learning platforms. This concurs with findings from previous studies. The study by Zhangaet al. (2020), Wargadinataet al. (2020) and Daniel (2020) show that covid – 19 led to a shift in the learning process from face to face to virtual classrooms. The findings further revealed that Moodle e-learning platform was the most used learning platform used by students during the learning process followed by what’s-up. The findings revealed limited use of video conferencing in

the support of the learning process by students. Use of whatsapp has been very fundamental in sporting group discussion and interactive learning by students. Owusu *et al.* (2020) has also found the use of what's up in Ghana to support online learning through interactive learning and group discussion.

Table 2: Attendance of students

		Frequency	Percent	Cumulative Percent
Valid	Every day	309	28.1	28.1
	Once a week	348	31.6	59.7
	Twice a week	96	8.7	68.4
	Three times a week	25	2.3	70.6
	never attended	322	29.4	100
	Total	1100	100	

Source: Survey Data 2020

Table 2 shows how students were attending the online classes. Findings show that 28.1% of the students attended their online classes every day, 31.6% attended once a week, 8.7% attended twice a week, 2.3% attended three times a week whereas 29.4% never attended their online classes. The findings therefore revealed that covid – 19 have affected the students' attendance of classes as only 28.1% of the surveyed students managed to attend their classes on a daily basis. The findings concur with findings from previous studies. The study conducted by Daroedonoet *al.* (2020), Caoaet *al.* (2020) and Kapasiaaet *al.* (2020) shows poor attendance of students on online learning. This does not only to low skills attained by the students, but it also leads to learning inequality within the students.

Table 3: Gadgets used by students during the online process

		Frequency	Percent	Cumulative Percent
Valid	Smart phone	646	58.7	58.7
	Laptops	263	23.9	82.6
	Laptop and smartphones	149	13.5	96.1
	IPad	39	3.5	99.7
	Internet Cafe	3	0.3	100
	Total	1100	100	

Source: Survey Data 2020

In table 3, the respondents were asked the tools they are using during the online learning. Findings show that 58.7% they use smartphones, 23.9%

they have laptops, 13.5% have both laptops and smartphones, 3.5% have iPads whereas 0.3% of the students go to internet café in order to access online learning. Findings revealed that majority of the students only access the learning platform through the use of smartphones. Although this may look to be good news that majority of students can at least access the learning platform through the use of their platform, However, the challenge with the use of smartphone is that it is complicated for students to attempt assignments especially assignments that are quantitative. This further affects the quality of learning process of students. Huston et al (2020) asserts that lack of gadgets impinges on the student’s learning process.

Table 4: Challenges students face during Online Learning

			Location		
			Rural Areas	Towns	City of Kigali
Challenges faced during the online learning	Lack of computers	% within Location	75.60%	18.00%	6.40%
	Lack of enough skills to learn online	% within Location	75.00%	65.00%	70.00%
	Lack of electricity	% within Location	60.00%	25.00%	15.00%
	Home environment was not conducive	% within Location	65.00%	70.20%	65.8.0%
	lack of internet data	% within Location	50.90%	36.80%	12.30%
	poor internet connections	% within Location	79.60%	41.10%	39.30%
	Studying without doing exams	% within Location	78.00%	62.00%	80.00%
	Learning infrastructure are not sufficient	% within Location	82.90%	69.40%	57.60%
Challenges faced during the online learning	Lack of computers				
		% within Location	75.60%	18.00%	6.40%
	Lack of enough skills to learn online				
	Lack of enough skills to learn online	% within Location	75.00%	65.00%	70.00%
	Lack of enough skills to learn online				
		% within Location	60.00%	25.00%	15.00%

	Home environment was not conducive				
		% within Location	65.00%	70.20%	65.8.0%
	lack of internet data				
		% within Location	50.90%	36.80%	12.30%
	poor internet connections				
		% within Location	79.60%	41.10%	39.30%
	Studying without doing exams				
		% within Location	78.00%	62.00%	80.00%
	Learning infrastructure are not sufficient				
		% within Location	82.90%	69.40%	57.60%

Source: Survey Data

One of the key measures to combat the spread of covid – 19 was the closure of schools. After the closure of schools, teaching and learning was shifted from the normal classrooms to virtual classrooms using different technological tools. Table 4 shows the challenges that students face while studying online learning. Findings show that students faced numerous challenges while studying online. Findings revealed that 75.6% of students in rural areas have no access to the computers as compared to 18% and 6.4% of students in towns and Kigali city respectively. Furthermore, findings also revealed that students lacked enough skills to study online as reflected by 75%, 65% and 70% of students from rural areas, towns and cities of Kigali respectively. Results further showed that 60% of the students had a challenge of electricity in rural areas as compared to 25% and 15% of the students in towns and Kigali respectively. On the conduciveness of the home environment, results show 65% of the students from rural areas indicated that home environment was not conducive as compared to 65% and 70% of the students in towns and city of Kigali respectively. The results further showed that 50.9% of the students lacked internet data to follow the online learning as compared to 36.8 in towns and 12.3% in the city of Kigali. Another challenge that students faced while studying online is the

poor internet connections. Findings show that 79.6% of the students in the rural areas are affected by poor internet connections as compared to 41.1% and 39.3% of students in towns and cities of Kigali. Both Summative and formative examinations are tools used to assess the learning status of students. In order to combat the spread of covid -19, social distancing measures were introduced. This led to the closure of schools and thus limiting students from being unable to sit for their exams. 78% of the students from the rural areas were concerned with studying without doing exams as compared with 62% from towns and 80% from the city of Kigali. Results further showed that the learning infrastructures were not sufficient to support effective learning by the students. This is evidenced by 82.2%, 69.4% and 57.6% of the students from the rural area, towns and city of Kigali respectively.

The findings revealed various challenges that affect students while studying online. These included lack of computers, lack of enough skills to study online, poor internet connections, lack of internet data, lack of learning from peers through group discussions, lack of face to face clarification, insufficient learning infrastructures like virtual laboratories and poor home learning environment. The findings conformed to the findings from the previous studies. The study conducted by Kapasiaa *et al* (2020) found that students face various challenges while studying online. Similar finding is seen in the studies conducted by (Draneet *et al.*, 2020, Owusu *et al.*, 2020 and Abidahet *et al.*, 2020).

Table 5: Ranks of the most affected students

	Location	N	Mean Rank
Challenges faced during the online learning	Rural Areas	135	189.44
	Towns	94	158.03
	City of Kigali	81	131.38
	Total	310	

Source: Survey Data 2020

Results in the table 5 show the most affected area during the online learning using the mean rank. The results show that students in rural areas face more challenges with online learning as compared to students in towns and cities of Kigali. This was due to poor internet connections, lack of internet data and unstable electricity. The findings concur with the findings from the previous studies. The study conducted by Caoa *et al.* (2020) shows that students in rural areas are more marginalised with the

online learning as compared to students in towns and cities. Similar findings are seen in the study conducted by (Daroedonoet *al.*, 2020). It is clear that covid has led to learning inequality among students where students in rural areas are the more affected. This conforms to the findings in the study conducted by (Doyle, 2020).

Table 6: Test Statistics^{a,b}

	Challenges faced during the online learning
Chi-Square	21.049
df	2
Asymp. Sig.	.000

a. Kruskal Wallis Test

b. Grouping Variable: Location

Source Survey Data 2020

Table 6 shows the Kruskal Will’s test of the significance of the challenges faced by students during the online learning in the period of covid – 19 pandemics. The results from the survey show lack of computers, lack of enough skills to study online, lack of internet data, poor internet connections, home learning environment, electricity, and change of academic calendar are statistically significant the effective learning process of the students based on the location of the students.

Table 7: Significance test of the impact of covid -19 on the students learning process using ANOVA

		Sum of Squares	df	Mean Square	F	Sig.
Reduction in the maintenance costs	Between Groups	66.726	2	33.363	27.74	0
	Within Groups	369.223	1097	1.203		
	Total	435.948	1099			
affected the quality of learning	Between Groups	6.5	2	3.25	3.591	0.029
	Within Groups	277.836	1097	0.905		
	Total	284.335	1099			
lack of face to face clarification	Between Groups	22.301	2	11.15	9.31	0
	Within Groups	367.686	1097	1.198		
	Total	389.987	1099			
Studying without	Between	3.7	2	1.85	1.292	0.276

examination	Groups					
	Within Groups	439.771	1097	1.432		
	Total	443.471	1099			
Promoted independent learning	Between Groups	18.185	2	9.092	6.437	0.002
	Within Groups	433.635	1097	1.412		
	Total	451.819	1099			
Lack of group discussion	Between Groups	4.257	2	2.128	1.973	0.141
	Within Groups	331.192	1097	1.079		
	Total	335.448	1099			
Unable to do research	Between Groups	5.181	2	9.012	8.891	0.003
	Within Groups	379.224	1077	1.723		
	Total	384.405	1099			
Unable to do Internship	Between Groups	6.349	2	12.01	11.992	0
	Within Groups	831.92	1097	1.123		
	Total	838.269	1099			
Covid -19affected the academic calendar	Between Groups	39.667	2	19.833	22.496	0
	Within Groups	270.669	307	0.882		
	Total	310.335	309			

Source: Survey Data 2020

Table 1 shows the impact of covid -19 on the learning process of students. The results show that covid -19 has had numerous impacts on the students' learning process. Findings show that covid -19 have had a significant impact on the maintenance costs for the students, face to face clarification, quality of learning, independent learning, students' internship, students' research and the academic calendar as evidenced by P-values of less than 5%. The results concur with findings from the previous studies. The study conducted by Zhanga et al. (2020) and Daniel (2020) shows that this has led to a shift from the face to face to online learning which has affected the students' learning process. Furthermore, the study by Daroedono et al. (2020); Kapasiaa et al. (2020); Caoaet al. (2020), Calhoun (2020); Draneet al. (2020); Owusu et al. (2020), show that covid 19 led to a change in the academic calendar for the students more especially students in the final year. The study by Naciri (2020), Chan (2020) and Abidah et al. (2020) show that covid -19 pandemic has affected the quality of learning more especially to students doing science

courses due to lack of virtual laboratories, library, cardeva in addition, the findings from the survey show that covid -19 has had impacts on the group discussion and examinations. The findings contradict with the results from the previous studies. Studies by Draneet *al.* (2020) Owusu *et al.* (2020) Karalis, (2020) Brown *et al.*, (2020) show that learning from peers through group discussion is very fundamental in the learning process of students. More still, both formative and summative assessments are very critical in the learning process of the student.

CONCLUSION

The study analysed the impact of covid – 19 pandemics on the learning process of students in the higher learning institutions in Rwanda. The findings revealed the covid -19 pandemic has had numerous impacts on the students learning process in Rwanda. The impacts of covid – 19 pandemics on the learning process of students in the higher learning process are both positive and negative but the negatives outweigh the positive impacts. The negative impacts of covid – 19 pandemics include learning inequality among students, poor attendance of classes, lack practical skills for courses that require the use of laboratories which affected the quality of learning skills acquired by students, lack peer learning due to limitation of group work due social distancing measures. The positive impact of covid -19 on the learning process of students in the higher learning institutions included promotion of independent learning by the students; maintenance cost of students during the learning process and improved the technological skills of the students. Furthermore, the findings revealed students in rural areas were affected more with the challenges of internet connections, internet data and electricity as compared to students in towns and city of Kigali.

RECOMMENDATIONS

Closing the learning inequality gap that has been created among the students in towns, cities of Kigali and those from the rural areas due to poor internet connections in the rural areas. Also, a need to close the inequality gap between students who have access to the learning gadgets and those who cannot be able to access such gadgets.

Education institutions should train the students on online learning. A module should be introduced in the first year that introduces to students the online learning. More to that online learning should be part and partial

of the education institutions. Part of their modules should be delivered online and other parts face to face.

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