

## Psychological Implications of Covid-19 on Students Learning Outcome at the University of Buea, Cameroon.

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**ABSTRACT:** - Educational systems are heavily affected by measures taken against the spread of the COVID 19-virus. While COVID-19 is primarily affecting public health, spill over effects can already be observed in education, stemming largely from extended school closures. This study explored the psychological implications of COVID-19 on students learning outcome at the University of Buea in Cameroon. Explicitly, the study sought to find out students' attitudes towards COVID-19 and its influence on students learning outcome; to determine the upshot of learning styles during the pandemic period on students learning outcome and to examine student's lifestyle adjustment on students learning outcome during the COVID-19 period. The study adopted quantitative research approach with the cross-sectional survey research design. The sample population consisted 90 undergraduate final year students from the Department of Educational Psychology. Data were analysed descriptively and inferentially. The findings revealed a strong relationship between students' attitudes towards COVID-19 and students learning outcome ( $R= 0.561, p = 0.05$ ). Equally there is a strong relationship between students learning styles and the learning outcomes of the students ( $R = 0.498, P = 0.05$ ). Similarly, there exists a strong relationship between student's lifestyle adjustment and the learning outcome of students during the COVID-19 pandemic ( $R=0.702, P= 0.05$ ). The study exposed that students' attitudes, learning styles and lifestyle adjustments in the University of Buea are greatly influenced the learning outcomes of the students. Since students learning depend on social interactions in the University environment students tend to learn better when they interact with peers and with their teachers in the learning environment whether through face-to-face interactions or through online platforms. It is therefore important for the government of Cameroon through the Ministry of Higher Education of Cameroon and with the ministry of telecommunications of Cameroon as well as communication companies in Cameroon to develop infrastructures and provide good internet facilities that would promote online learning with good internet in the face of a global pandemic as such. This would in turn enable students to study at home and respect social distancing measures outlined to control the pandemic without fear of missing an academic year.

**Keywords:** Psychological implications; COVID 19, adjustment, students; learning outcome and university

### I. INTRODUCTION

The COVID 19-crises is having a vast impact on students and youth globally. Confinement and social-distancing measures change learning. School closures are enacted in most countries. This paper examines the psychological impact of the COVID 19-crises responses on Educational Systems. Three possible future scenarios for the ongoing school year are drawn and from there, the implications on learning during and after the crisis are discussed. According to UNESCO data as of the time of writing, confinement measures result in: 1,576,021,818 affected learners – 91.3% of total enrolled learners in 188 country-wide closures Educational systems are heavily affected by measures taken against the spread of the COVID 19-virus. In March 2020, several countries with Cameroon inclusive announced school closures under diverse settings (concerning target areas, length, reach) in order to allow the curve to flatten. During this time, teachers and education professionals have been asked to supply students with teaching material and instruct students directly via remote digital tools.

The expectation is that most students learn from home under the supervision of their parents. This is referred to as “home-schooling” in the media. In reality, the arrangement comes closer to remote learning or distance learning in that teachers and schools still remain responsible for the learning content and outcome.

Moreover, some countries have already postponed, adopted or put off the final exams for students in late spring/ early summer. In some countries, schools stay partly open for parents working in essential sectors. Students face extremely different learning circumstances: their parents may be at work or at home; they may telework or be out of their jobs (temporarily or be laid-off). This is to say that learning conditions are linked to labour market conditions along occupational groups and contract types. Access to digital learning varies on available equipment and connectivity. As such, some students may share their learning resources and space with other members of the household. All of the above, points to significant gaps in broadband coverage, housing challenges and inequalities adjacent to socio-economic background. As the OECD points out, “important factors include home educational resources, availability of space, parental level education, parents’ fluency in language of school instruction, and parents’ digital competencies, but also parents’ engagement with schools. In general, children from low socio-economic households are at a disadvantage for continuing their study and learning at home.” This paper therefore charts the way forward through the recommendation of context specific mitigation strategies for students to cope with learning during this enduring period of COVID-19 pandemic in Cameroon and beyond.

### **Conceptualizing the Context of COVID-19 Pandemic**

Corona virus disease 2019 (COVID-19) is an emerging respiratory infection caused by a novel coronavirus called Severe Acute Respiratory Syndrome corona virus 2 (SARS-CoV-2). The virus is a member of the corona virus family that are zoonotic pathogens, that is., the viruses cause and transmit illnesses between human and several animals’ species such as cattle, camels, cats, and bats (CDC,2020; Gao, Tian, & Yang, 2020)). The SARS-CoV-2 virus is similar to Middle East Respiratory Syndrome coronavirus (MERS-CoV) and Severe Acute Respiratory Syndrome corona virus (SARSCoV), which have their origins in bats. The COVID-19 disease was detected initially in late December 2019 in Wuhan, Hubei Province, China, and spread worldwide 2 months later. About 200 countries over the entire world have reported different numbers of cases; however, the disease has drastically expanded in the United States, Spain, Italy, Germany, France, China, Iran, the United Kingdom, and Turkey. COVID-19 had caused more than 13.4 million confirmed cases and killed at least 580,000 worldwide up to the 11th of July 2020, and these numbers are rising dramatically in the next few months. To date, 15,173 COVID-19-infected cases have been confirmed in Cameroon, and 359 people have died with COVID-19 (Ministry of Public Health of Cameroon, 2020).

The symptoms of COVID-19 illness range from very mild (fever and respiratory symptoms such as cough and shortness of breath) to severe (pneumonia, severe acute respiratory syndrome and kidney failure) with a mortality rate around 4% (WHO, 020).). Elderly persons and those suffering from co-morbidities like heart disease, lung disease and diabetes, are at higher risk of developing severe COVID-19 illness. On March 18, 2020, the CDC COVID-19 Response Team reported that 80% of COVID-19-related deaths were among the elderly aged > 65 years (CDC, 2019).). The WHO responded to the global public health threat by categorizing the COVID-19 outbreak as a pandemic on March 11, 2020, due to the fact that the number of COVID-19 cases outside China had increased by 13-fold, and the number of affected countries had increased by 3-fold (WHO, 2020).

On The 18<sup>th</sup> of March 2020, after about ten cases of COVID-19 patients were identified in the City of Yaounde and Douala the Government of Cameroon through all institutions of learning, announced a good number of measure to contain the spread of COVID-19 in Cameroon. Following the closure of schools in Cameroon, measures were taken to continue learning during the pandemic and the measures included online classes using, WhatsApp, zoom, Google classroom and emails just like in other parts of the world where similar measures were taken. The measures were taken to stop the spread of the COVID-19 pandemic as face-to-face interaction as well as social gatherings were prohibited, the online learning platform was chosen to continue the learning process.

A limited number of in vitro and clinical studies have reported that some medications such as chloroquine, hydroxychloroquine, remdesivir and azithromycin have the potential to reduce the duration and symptoms of COVID-19 infection (Gao, Tian & Yang, 2020). Unfortunately, a curative treatment or vaccine for the SARSCoV-2 virus has not been developed yet, and the available medical interventions are supportive only. COVID-19 disease has negatively affected global economics, and this has included the economy. Furthermore, many healthcare systems have collapsed or nearly collapsed due to COVID-19 (Armocida, Formenti, Ussai, Palestra & Missoni, 2020). Therefore, it is very important to flatten the shape of the crest in case numbers as

much as possible while communities experience an outbreak of COVID-19 to reduce the burden on the healthcare system.

In line with lessons learnt from the previous pandemic (H1N1) 2009 virus and SARS in 2003, management measures have been considered to prevent the transmission of COVID-19. These measures include prevention of the infection within animals, its transmission from animals to humans, and its transmission among humans (Rewar, Mirdha & Rewar, 2015; WHO, 2003). Transmission among humans is greatly reduced by promoting good hygienic practices among people to include enhancement of hand washing, use of personal protective equipment and minimization of hand-to-face contact (Pappaioanou & Gramer, 2010).

During the current pandemic, most countries are responding to contain the COVID-19 pandemic by retarding infection spread using different strategies such as contact tracing and self-quarantine, arrangement of health system infrastructures to treat severely infected patients who need isolation, oxygen therapy or mechanical ventilation, reducing, or banning events involving mass gatherings, and encouraging people to apply hygienic health measures, such as physical distancing, respiratory etiquette and frequent hand washing. The latter strategy requires a high level of knowledge about COVID-19 fostering attitudes among people to recognize and practice these measures properly. In the absence of COVID-19 treatment, the applications of protective measures potentially prevent the population from acquiring the disease and reduce disease dissemination (Bedford J, Enria D, Giesecke J, Heymann D. L, Ihekweazu C, Kobinger G, et al. (2020)).

### **Psychological Implications of COVID-19 on Students Learning**

Measures taken to contain the spread of COVID-19 have affected the functioning of schools and higher education institutions worldwide. As most countries began pursuing physical distancing, most higher education institutions also had to shift to online learning within a very short time and change the way they function and communicate with their staff and students (Quacquarelli Symonds, 2020). These changes, along with other measures taken to contain the pandemic, have affected the well-being, lifestyle, and functioning of students engaged in higher education. Studies conducted during the COVID-19 period have found that students worldwide have been dramatically affected by the spread of COVID-19, after facing travel restrictions, physical distancing, isolation, and quarantining, as well as dormitory and border closure (Quacquarelli, 2020). These changes affected both students' plans and priorities and their level of interest in attending classes online.

Also, while some students reported that they were enjoying the online classes, others, due to the closure of the educational institutions impact on their lifestyles, reported lack of motivation and negative attitudes towards learning online (Quacquarelli, 2020). Quarantining at home during COVID-19, and the closure of educational institutions were reported as major reasons for students feeling disconnected from society and their social circles (Killan, 2020). In some cases, students reported negative experiences while returning home during the pandemic owing to unpleasant family environments (Killan, 2020).

The decision to temporarily close Higher educational institutions (HEIs) was prompted by the principle that large gatherings of persons constitute a serious risk to safeguarding public health during a pandemic (CDC, 2020). HEIs and indeed all educational institutions tend to close their doors in situations where some form of confinement or quarantine has been legislated. The school being a social institution where teaching and learning takes place with the different actors interacting with one another it was essential for schools to close to observe the spread of the disease.

Resumption of activities in schools is gradual and phased based on local public health conditions as well as institutional capacity. Return to an active on-campus environment in Cameroon has resulted to temperature of staff and students and all personnel on campus. Students are required to maintain social distance in lecture halls and mandatory wearing of face masks by all. Again, students and staff are required to regularly wash hands and sanitizers. Again, in the campus of the University of Buea there is a COVID-19 testing centre in the epidemiology laboratory where students and staff in the University of Buea are recommended to go for voluntary testing in the centre. These measures are taken to prevent a local rebound of infections that may result in a return to more restrictive mitigation measures and physical distancing for periods of time (Erfani, Shahriarirad, Ranjbar, Mirahmadizadeh, Moghadami, 2020).

Furthermore, the high touch, highly interactive, mobile, densely populated living and learning environment typical of most campuses is the exemplar of a congregate setting with multiple risk factors for ready transmission of COVID-19. With the knowledge of mode of transmission of COVID-19 students are required to respect social distancing in their interaction as well as they have to respect personal hygiene to prevent being infected by the disease (WHO, 2020).

Meticulous adherence to public health practices including hand hygiene, physical distancing, proper cough/sneeze etiquette, frequent disinfection of common and high traffic areas, symptom assessment, temperature checks, and face covering in public is the campus' new normal. This is observed clearly as students and staff are not allow to enter the campus of the University of Buea without wearing face masks and social

distance measures are respected in lecture halls as students are taught in small groups with the lecturers repeating lessons since the resumption of studies on the 1<sup>st</sup> of June 2020 on campus (Alzoubi, Alnawaiseh, Al-Mnayyis, Abu-Lubada, Aqel & Al-Shagahin, 2020).

International organizations have paid particular attention to the issue of “Education Response in Crises and Emergencies”. UNESCO stated in the Education 2030 Incheon Declaration and Framework for Action that countries should “provide alternative modes of learning and education for children and adolescents who are not in school at both the primary and secondary levels, and put in place equivalency and bridging programmes, recognized and accredited by the state, to ensure flexible learning in both formal and non-formal settings, including in emergency situations”.

Flexible learning describes several implemented flexible online learning strategies during the COVID-19 outbreak. These strategies are presented based on six dimensions, namely (a) infrastructure, (b) learning tools, (c) learning resources, (d) teaching and learning methods, (e) services for teachers and students, and (f) cooperation between enterprise, government, and schools. During this COVID-19 period students have been expected to learn through online platforms and equally through face-to-face interactions. The pandemic has affected the attitude, learning styles and behaviour of the students generally towards learning.

### **Theorising Learning during COVID-19 at the University of Buea**

Learning activities after the lockdown of schools in Cameroon on the 18<sup>th</sup> of March automatically shifted as recommended to be online learning. Moreover, face-to-face teaching and learning activities resumed in all institutions of higher learning in Cameroon on the 1<sup>st</sup> of June 2020. However, the classes had to respect social distancing measures and measures put in place by the WHO to reduce the spread of COVID-19. Thus, the teaching and learning process which is an interactive process had to use the blended teaching and learning methods. This was achieved as online learning and face-to-face interactions with learners and the teachers. Learning activities in online arenas and with the use of digital technology, and teaching that facilitates such learning, take place in highly varying forms and are identified under different names (e-learning, digital learning, online learning, technology-based learning, distance learning, etc.). These are variations of teaching and learning where activities are combined in different ways to achieve a meaningful and effective learning process, with blended learning combining both online and traditional methods. Educational theories vary on how learning takes place with digital technology and the role of technology in teaching and learning processes. The most used and pertinent are ideas that digital technology is a medium or tool that helps facilitate the communication of structure and content, and to organise and communicate teaching and learning activities (Laurillard, 2002; Säljö, 2010). In this context, the technology should be actively and meaningfully used by those who develop teaching plans.

A survey review by Boelens, De Wever and Voet (2017) identified four key challenges related to blended learning: how to: (1) incorporate flexibility; (2) stimulate interaction; (3) facilitate students' learning processes; and (4) foster an affective learning climate. These challenges require significant focus in a full online learning environment. When teaching and learning are developed that (only) take place in digital arenas, it is important to create opportunities for the transfer of new knowledge and concepts, but also a clear and accessible infrastructure that facilitates development, organisation and coordination of teaching and learning activities; and not least good dissemination and guidance in the use of technologies (Graham & Wendy, 2013).

Good designs and digital teaching are focused on interactivity and student-driven learning (Boelens, De Wever & Voet, 2017; Jonassen & Land, 2012). Interaction has both a cognitive and social function. It is not just a matter of offering students' information about and participation in new activities and technology. Jeong and Hmelo-Silver (2015) indicate how digital technology can encourage collaboration, by supporting engagement with joint tasks, communication, sharing resources, engagement in productive collaborative learning processes (joint writing, for example), monitoring and regulating collaborative learning, and finding and building groups and communities. Sharing of information and ideas, discussion and negotiation, and good structures for coordination of activities become even more important in digital teaching than when students are in the classroom. Using various strategies to help students to participate, discuss, contribute, share etc. is much more important at times when they do not have physical contact (Borge & Mercier, 2019; Damsa, 2014).

Furthermore, the possibility to choose activities, resources, and ways of participating (in lectures, seminars, study groups or group work) increases the likelihood of students understanding abstract material and engaging in work that contributes to increased competence and knowledge (Kearn, 2017). Online designs should be offering the students the means and support to build their own 'learning space' (Damsa, Nerland & Andreadakis, 2019) (especially when teaching takes place exclusively online). This involves flexibility in the way the curriculum and activities are organized and performed and has potential to stimulate participation and engagement, opening up for student organizing their learning activities according to their own needs and pace. It also opens up for feedback from students about their experiences with types of activity, support, or guidance provided. Not least, teachers must be aware of the necessity of differentiating among learning needs and

abilities, especially in online environments. Therefore, following principles of universal design are of major importance (Holingshead & Chellman, 2019).

The digital literacy (or digital competence) of educators (teachers, academics) and others involved in the process of implementing online education is paramount. This “involves the confident and critical use of Information Society Technology (IST) for work, leisure and communication. It is underpinned by basic skills in ICT: the use of computers to retrieve, assess, store, produce, present and exchange information, and to communicate and participate in collaborative networks via the Internet” (EU, 2006,p16). Digital competences are envisioned as including: technical competence; the ability to use digital technologies in a meaningful way for working, studying and in everyday life; the ability to evaluate digital technologies critically, and motivation to participate and commit in the digital culture (Ilomaki et al., 2016; Janssen et al., 2017). And other studies indicate that teachers’ digital competence is can be to some extent underdeveloped, as the technology evolves very fast and teachers may not be able to keep the pace, or underestimate the value of such competence in comparison to other academic competences. It is not uncommon for studies to find that academics also has shown diversified attitudes towards use of digital technology and teaching online, which has an impact on both on the frequency and quality of use, and success of innovations involving technology (Buchanan, Sainter & Saunders, 2013; Littlejohn et al., 2011).

The teaching and learning process in the University of Buea during this COVID-19 period has experienced a shift in the learning styles of students, the attitudes of students towards learning as well as students have sought to adjust to the current situation both at home and in school such that they would acquire the necessary skills needed in an interactive process like the teaching and learning transaction. Thus, teaching and learning that takes places in a social context requires that students and the teachers interact effectively with the learning materials through specific teaching strategies such that the learners can acquire the necessary skills and competence as outlined.

### **Psychological dimensions of COVID-19 Pandemic on Students**

The most immediate impact has obviously been that the temporary cessation of classroom activity at HEIs has left students, particularly undergraduates and those on the verge of finishing high school and aspiring to begin tertiary education, in a completely new situation and without a clear idea of how long the impact will last, the immediate effect it will have on their daily life, costs and other financial burdens and, naturally, on the continuation of their studies. The situation is particularly worrying for those higher education students who are more vulnerable on account of their more fragile condition. A disruption of their space brought on by a crisis such as this one, can exacerbate their fragile condition and force them to drop out, thereby yet again, perpetuating a situation of exclusion as a result of the inequity which is characteristic of the higher education system in the region. This inequity is reflected in the high dropout and non-completion rates in higher education: in Latin America, on average, only half of the people between 25 and 29 years who were enrolled did not complete their studies, either due to abandonment or because they are still studying. Of those who drop out, half do so in the first year of their career (Ferreya, Avitabile, Botero Álvarez, Haimovich Paz, & Urzúa, 2017). Moreover, it is difficult to have a sense of the multiple and different effects on students with different profiles, irrespective of their socioeconomic background, starting with gender.

### **Personal adjustment to daily life**

Students have had to rearrange their daily lives to adjust to a situation of confinement. Most of the students who were displaced far from their families, but within the same country, have returned home. However, in the case of students abroad, the situation remains highly variable, with tens of thousands stranded in destination countries waiting for on-site activities to resume or because they are unable to return to their countries due to closure of airports and borders.

Inevitably, the loss of social contact and socialization routines that are part of the daily experience of a higher education student will take its toll. The isolation that is inevitably associated with confinement will have effects in terms of socioemotional balance that will leave their mark, particularly on those students with pre-existing problems of this nature. The more vulnerable students participating in qualifying and remedial programs will be more hardly hit by isolation. A survey conducted during the last week of March among higher education students in the United States shows, for example, that 75% have said that they have experienced anxiety and depression as a result of the crisis.

### **Financial costs and burdens**

Students and, in many cases, their families will have to continue to bear the costs associated with their higher education. Except in the very few countries where there are no fees, students must continue to face the associated costs, particularly when, in order to pursue their higher education, they have had to seek temporary

residence, whether individual or shared, in a place other than their domicile, at a cost they must continue to bear, even if they decide to return to their family home. More than 260,000 students have signed a formal petition to the English government for a significant part of their tuition amount to be returned to them. Students consider that the online teaching that is being proposed to them is not worth the cost of the regular annual tuition, which is, on average, 9,250 pounds per year (USD 11,500).

A similar situation is the one experienced in South Korea, where the annual fees are much higher as is the case of large HEIs in the United States, and more so for postgraduate studies. There are requests by students who paid USD 60,000 or more for an academic year and whose face-to-face classes have been suspended, for their tuition fees to be returned.

A recent survey shows that 43% 2 of MBA students from the 20 most prestigious business schools in the country are convinced that, with the change to online classes, they should get back at least a third of what they paid, largely because the adopted modality includes exchanges of knowledge and perspectives among participants for the creation of a professional network. What is more, Forbes estimates that the investment 3 required for a year of study in one of these business schools can reach a quarter of a million dollars, including the opportunity cost. Part of the reason for the request is the fact that many students have loans that they have to continue to pay and, in many cases, the rental of the room at the campus residence, which they must continue to pay, regardless of whether they continue to live there or not. There are some HEIs, like the one in Glasgow, however, which have already announced that they will not charge those students who have returned their keys, beyond the first month. Some English HEIs have proposed that instead of returning the fees already paid, they will credit them to the next academic year.

At this time, there is no country in the region where a moratorium or a suspension of fees has been offered, largely based on the double assumption that this is only a short-term temporary situation and that, in any case, the continuity of the classes is guaranteed by alternative modalities. In many public universities, fees are paid in full at the beginning of the academic year, but in the case of private universities, particularly those with high fees, the payments are distributed throughout the course. There is no record, at the moment, of the suspension of these payments anywhere. Similarly, no measures have been taken to favor the moratorium or temporary suspension of payments on students' loans and credit installments.

However, the two assumptions mentioned above, that of short - term and the continuation of teaching activities with a non-face-to-face modality, may be questioned if the duration of the cessation of face-to-face activities is prolonged to the equivalent of one academic term or even longer. In this eventuality, it is possible that voices will be raised, justifiably or not, in favor of suspending the academic year assessment, which is particularly dramatic in the case of students in final year high school, who are aspiring to enter higher education. If so, the implications in terms of financial burdens for those students who have loans or credits would ultimately mean that they will be required to extend their program for the equivalent of one more year. We do not know that this is equally feasible for all students and families. For the moment, only delays have been announced because the long period of suspension of face-to-face classes is not yet anticipated, so it will be necessary to closely monitor the evolution of this situation, which is, for now, extremely fluid. Finally, it is important to anticipate the situation in which the cohorts of students who will graduate in 2020 or even 2021 will find themselves having to face the payment of their loans and university credits, in a depressed labor market because of the crisis. Moreover, OEI estimates anticipate considerable declines in the income of new graduates due to the crisis (Sanz, Sáinz, & Capilla, 2020).

### **Theoretical underpinning of the study**

Theoretically the social cognitive theory of Albert Bandura (1989) explains how students or people observe, pay attention to behaviours of peers and eventually imitate or model the behaviours. Also, peers learn behaviours through their interactions with peers and they internalise the behaviours which are accepted within the peer group. Equally, people generally acquire new knowledge, behaviours and attitudes by paying attention, observing, and construct knowledge of the behaviour or tasks. Therefore, students learn by paying attention to the different tasks, rehearsing the materials in order store the information for reproduction subsequently. Attitudes and behaviours in relation to COVID-19 as well as preventive measures are acquired through the processes of attention, observation, rehearsal and reproduction by the students. Also, the learning task of the students in the University of Buea presented to them in the different learning platforms are equally processed by the students through the processes of observation, attention, interest, rehearsal and reproduction of the information. The theory is relevant for this study because it explains how learners learn by constructing meaningful knowledge from their learning environment.

### Statement of The Problem

The most immediate impact has obviously been that the temporary cessation of classroom activity at HEIs has left students, particularly undergraduates and those on the verge of finishing high school and aspiring to begin tertiary education, in a completely new situation and without a clear idea of how long the impact will last, the immediate effect it will have on their daily life, costs and other financial burdens and, naturally, on the continuation of their studies. The situation is particularly worrying for those higher education students who are more vulnerable on account of their more fragile condition. A disruption of their space brought on by a crisis such as this one, can exacerbate their fragile condition and force them to drop out, thereby yet again, perpetuating a situation of exclusion as a result of the inequity which is characteristic of the higher education system in the region. Students have had to rearrange their daily lives to adjust to a situation of confinement. Most of the students, who were displaced far from their families, but within the same country, have returned home. Inevitably, the loss of social contact and socialization routines that are part of the daily experience of a higher education student will take its toll.

The isolation that is inevitably associated with confinement will have effects in terms of socio-emotional balance that will leave their mark, particularly on those students with pre-existing problems of this nature. The more vulnerable students participating in qualifying and remedial programs will be more hardly hit by isolation. Similarly, students in higher education in Cameroon needed to switch to online learning for at least one and a half month. Students faced challenges using the online learning platforms as they complained of poor internet, no technological tools such as lap tops and mobile telephone devices as well as little financial resources to buy internet data for their lessons. This intend influenced students' attitude towards learning in the University of Buea particularly. During the COVID-19 crisis students find it difficult to adjust to the different health rules prescribed by WHO and equally to adjust to the teaching and learning transaction which has witnessed a great shift. It is against this backdrop that the researchers sought to investigate the psychological implications of COVID-19 on students learning outcome in the University of Buea.

### Purpose of the study

The study was set out to investigate the psychological implications of COVID-19 on student learning outcome in the University of Buea of the South West Region of Cameroon.

Specifically, the study sought:

- a) To find out the attitude of students towards COVID-19 and its effect on their learning outcome.
- b) To determine the effect of learning styles on students learning outcome during the COVID-19 crisis period.
- c) To examine the effect of student's adjustment on their learning outcome during the COVID-19 crisis.

## II. METHODS

The study employed a quantitative research design to obtain the opinion of respondents on the issues under investigation (Kumar, 2005). A descriptive survey research design was adopted. The questionnaire survey was used to obtain quantitative data. The sample population for the study consisted of 90 (60 (66.7%) females and 30 (33.3%) males) undergraduate final year students of the Department of Educational Psychology, Faculty of Education, University of Buea. The purposive sampling technique was used to recruit respondents who gave consent for the study. The questionnaire was structured into sections based on the objectives of the study. It consisted of statements rated on a modified four point Likert scale (Strongly agreed = 4, agreed = 3, disagreed = 2 and strongly disagreed = 1). The questionnaire were given to four lecturers in the Faculty to ensure face validity and the lecturers equally judged the content of the questionnaire and content validity index (CVI) was appreciated mathematically at CVI = 0.92. A pilot study was carried out on ten students from the Department of History in the Faculty of Arts from the University of Buea to check the reliability and suitability of the instruments used. The reliability of the questionnaire was then calculated using Cronbach's alpha coefficient ( $\alpha = 0.78$ ) for the questionnaire. Data was analysed descriptively by calculating frequencies and percentages of each indicator on a theme and inferential statistics was computed by using Pearson Product Moment Correlation coefficient to ascertain the relationship between variables.

## III. FINDINGS

The findings are presented with respect to the objectives of the study. The first part starts with the learning outcome of students in the University of Buea as indicated in the sections below.

### Students learning outcome

The findings here provide information on the learning outcome of students during the COVID-19 period in the University of Buea.

**Table 1: Distribution of respondents according to sexual language and sexual behaviour**

Indicators	Agreed		Disagreed	
	n	%	n	%
I did perform well in all my assignments during this period	46	51.1	44	48.9
I finish my assignment on time	38	42.2	52	57.8
It was easy completing group tasks during this period	40	44.4	50	55.6
I have attended all my lectures	32	35.6	58	64.4
I understand lessons better when I discuss it with friends	54	60.0	36	40.0
I have all my notes sent online	76	84.4	14	15.6
I am studying hard to understand all my courses alone	86	95.6	04	04.4
Multiple response set (MRS)	372	59.1	258	40.9

The findings on table 1 above, indicate that slightly above half (51.1%) respondents indicated that they performed very well in all their assignments during this period while some (48%) disagreed. Also, some (42.2%) respondents agreed that they completed their assignments on time while majority (57.8%) respondents disagreed. Again, some (44.4%) respondents agreed that it was easy completing group task during this period while majority (55.9%) rejected. Furthermore, some (35.6%) respondents indicated that they have attended all their lectures while majority (64.4%) rejected. Similarly, majority (60%) respondents agreed that when they discuss lectures with friends, they understand better while some (40%) disagreed. Likewise, majority (84.4%) respondents agreed that they have all their notes sent to them online while few (15.6%) disagreed. Additionally, majority (95.6%) respondents accepted that they are studying hard to understand all their courses alone while very few (04.4%) rejected. In addition, the findings on the multiple response set indicated that majority (59.1%) respondents agreed that they have positive learning outcome while some (40.9%) indicated that they do not have positive learning outcome. This shows that majority respondents have positive learning outcome during the COVID-19 period whereas a good proportion of them reported poor learning outcome.

#### Attitude of students towards COVID-19 and its effects on learning outcome

Findings here reveal the attitude of students towards COVID-19 and its effects on the learning outcome of the students as indicated on table 2 below.

**Table 2: Distribution of respondents to attitudes towards COVID-19**

Indicators	Agreed		Disagreed	
	n	%	n	%
I always move with my face masks on	50	55.6	40	44.4
I feel free to study in groups with my friends	70	77.8	20	22.2
I wash my hands regularly with soap on campus	61	67.8	29	32.2
I feel free to shake hands with my friends	38	42.2	52	57.8
We maintain social distancing in lecture halls	53	58.9	37	41.1
I avoid touching my face (eyes, nose or mouth) with my hands	44	48.9	46	51.1
I respect social distancing rules when am chatting with friends	55	61.1	25	38.9
Multiple response set (MRS)	371	58.9	249	41.1

Table 2 above, indicate that majority (55.6%) respondents agreed that they always move with their face masks on while some (44.4%) disagreed. Also, majority (77.8%) respondents agreed that they feel free to study in groups with their friends while some (22.2%) disagreed. Likewise, majority (67.8%) respondents agreed that they wash their hands regularly with soap on campus while some (32.2%) disagreed. Again, some (42.2%) respondents agreed that they feel free to shake hands with their friends while majority (57.8%) respondents disagreed. Still, majority (58.9%) respondents agreed that they maintain social distancing in lecture halls while some (41.1%) respondents disagreed. Similarly, almost half (48.9%) respondents agreed that they avoid touching their face (eyes, nose or mouth) with their hands while above half (51.1%) disagreed. In addition, majority (61.1%) respondents agreed that they respect social distancing rules when they are chatting with their friends while some (41.1%) respondents disagreed.



To further ascertain the effect of students' attitude towards COVID-19 on the learning outcome of the students in the University of Buea the Pearson product moment correlation coefficient was computed as on table 3.

**Table 3: Predicted effect of students' attitude towards COVID-19 on students learning outcome**

		Attitudes of students towards COVID-19	Learning outcome of students
Attitudes of students towards COVID-19	Pearson Correlation	1	.561**
	Sig. (2-tailed)		.000
	N	90	90
Learning outcome of students	Pearson Correlation	.561**	1
	Sig. (2-tailed)	.000	
	N	90	90

\*\* . Correlation is significant at the 0.05 level (2-tailed).

Table 3 above indicated that students' attitudes towards COVID-19 has a strong correlation ( $r = 0.561$ ,  $p = 0.05$ ) and influence on students learning outcome in the University of Buea during the COVID-19 crisis. The strong positive correlation revealed that students learning outcome increases with an increase in change in their attitudes as a result of the COVID-19 pandemic. Thus, the change in attitude of students towards COVID-19 has a significant influence on the learning outcome of students in the University of Buea during the pandemic.

#### Students learning styles and the effect on students learning outcome

The findings below provide information on the learning styles of students and the effect on students learning outcome.

**Table 4: Distribution of respondents according to learning styles**

Indicators	Agreed		Disagreed	
	n	%	n	%
I spend more time studying at home alone	78	86.7	12	13.3
I discuss my courses freely with my course mates when we meet	68	75.6	22	24.4
I faced difficulties participating in all the online lessons	70	77.8	20	22.2
The online lessons were difficult to understand	70	77.8	20	22.2
I understand better when the teacher is teaching face-to-face	81	90.0	09	10.0
I used the online learning platform with ease	29	32.2	61	67.8
I come very early for lectures to have a sitting space	65	72.2	25	27.8
Multiple response set (MRS)	461	73.2	169	26.8

Table 4 above revealed that majority (86.7%) respondents spent more time studying at home alone while few (13.3%) disagreed. Also, majority (75.6%) respondents agreed that they discuss their courses freely with their course mates when they meet while some (24.4%) disagreed. Again, majority (77.8%) respondents agreed that they faced difficulties participating in all the online lessons while some (22.2%) disagreed. Likewise, majority (77.8%) respondents agreed that the online lessons were difficult to understand while some (22.2%) respondents disagreed. Similarly, majority (90%) respondents agreed that they understand better when the teacher is teaching face-to-face while few (10%) disagreed. More so, some (32.2%) respondents agreed that they used the online learning platform with ease while majority (67.8%) respondents disagreed. Alike, majority respondents (72.2%) respondents agreed that they come very early for lectures to have a sitting space while some (27.8%) respondents disagreed. Additionally the findings on the multiple responses set indicate that majority (73.2%) respondents agreed that their learning styles influences their learning outcomes while some (26.8%) disagreed. This shows that the learning styles of students in the University of Buea during the COVID-19 period influence their learning outcomes.

To further ascertain the effect of students' learning styles on the learning outcome of students in the University of Buea, the Pearson product moment correlation coefficient was computed as on table 5.

**Table 5: Predicted effect of students learning styles on students learning outcome**

		Learning styles	Learning outcome of students
Learning styles	Pearson Correlation	1	.498**
	Sig. (2-tailed)		.000
	N	90	90
Learning outcome of students	Pearson Correlation	.498**	1
	Sig. (2-tailed)	.000	
	N	90	90

**\*\*.** Correlation is significant at the 0.05 level (2-tailed).

Table 5 above indicated that students learning styles have a strong correlation ( $r = 0.498$ ,  $p = 0.05$ ) and influence on students learning outcome in the University of Buea during the COVID-19 period. The strong positive correlation revealed that students learning outcome increases with an increase in change in their leaning styles as a result of the COVID-19 pandemic. Thus, the change in learning styles of students due to the COVID-19 has a significant influence on the learning outcome of students in the University of Buea during the pandemic. Again, the findings indicate that if the students adopt positive learning styles during the COVID-19 pandemic their learning outcomes will greatly be improved as they would spend more time doing personal studies and research. Whereas if the students adopt negative learning styles their learning outcomes would be negative.

#### Lifestyle adjustment of students and influence on learning outcome of students

The findings below bring out the lifestyle adjustment of students during the COVID-19 period and the influence on the learning outcome of students.as indicated on the following section below.

**Table 6 Distribution of respondents according to lifestyle adjustment to COVID-19**

Indicators	Agreed		Disagreed	
	n	%	n	%
I spend most of the time at home just watching television	83	91.1	07	08.9
I am scared to interact with other students now due to the disease	76	84.4	14	15.6
I missed visiting my friends and course mates a lot	84	93.3	06	06.7
I am comfortable with the preventive measures prescribed for COVID-19	86	95.6	04	04.4
I have learnt to spend more time studying as an individual	76	84.4	14	15.6
Washing of hands constantly is nice	54	60.0	36	40.0
I liked the quarantined or staying at home life	32	35.6	58	64.4
Multiple response set (MRS)	<b>615</b>	<b>68.3</b>	<b>285</b>	<b>31.7</b>

Table 5 above indicate that majority (91.1%) respondents agreed that they spend most of the time at home just watching television while very few (8.9%) disagreed. Again, majority (84.4%) respondents agreed that they are scared to interact with other students due to the diseases while few (15.6%) disagreed. More so, majority (93.3%) respondents agreed that they missed visiting their friends and course mates a lot while very few (06.7%) disagreed. Likewise, majority (95.6%) respondents agreed that they were comfortable with the preventive measures prescribed while very few (4.4%) respondents disagreed. Similarly, majority (84.4%) respondents agreed that they have learnt to spend more time studying as an individual while few (15.6%) disagreed. Correspondingly, majority (60%) respondents agreed that washing of hands constantly is nice while some (40%) disagreed. However, some (35.6%) respondents agreed that they liked the quarantined or staying at home life while majority (64.4%) respondents disagreed. The findings on the multiple responses set indicate that majority (68.3%) respondents agreed that there is a lifestyle change during the COVID-19 period while some (31.7%) respondents disagreed. The findings show that the change in lifestyle influences students learning outcomes.

To further ascertain the effect of students' lifestyle adjustment on the learning outcome of students in the University of Buea, the Pearson product moment correlation coefficient was computed as on table 7.

**Table 7: Predicted effect of lifestyle adjustment on students learning outcome**

		Lifestyles adjustment	Learning outcome of students
Lifestyles adjustment	Pearson Correlation	1	.702**
	Sig. (2-tailed)		.000
	N	90	90
Learning outcome of students	Pearson Correlation	.702**	1
	Sig. (2-tailed)	.000	
	N	90	90
<b>** . Correlation is significant at the 0.05 level (2-tailed).</b>			

Table 7 above indicated that students lifestyle adjustment have a very strong correlation ( $r = 0.702$ ,  $p = 0.05$ ) and influence on students learning outcome in the University of Buea during the COVID-19 period. The very strong positive correlation revealed that students learning outcome increases with an increase in change in their lifestyles as a result of the COVID-19 pandemic. Thus, the change in lifestyles of students due to the COVID-19 has a significant influence on the learning outcome of students in the University of Buea during the pandemic. Again, the findings indicate that if the students adopt positive lifestyles during the COVID-19 pandemic their learning outcomes will greatly be improved as they would spend more time doing personal studies and research while if the students adopt lifestyles without studying their learning outcomes would be negative.

#### IV. DISCUSSIONS

The findings revealed that the psychological implications of COVID-19 have an influence on students learning outcome in the University of Buea. This is evident as students' attitude towards COVID-19, students learning styles and student's lifestyle adjustment all indicated a strong positive correlation with students learning outcome in the University of Buea. Students' attitudes towards COVID-19 have positively influence the students learning outcome in the University of Buea during the COVID-19 crisis. Students have changed their attitudes as they always move with their facemasks on, feel free studying regularly with their friends, wash their hands regularly with soap on campus, do not shake hands freely with friends, maintain social distancing in lecture halls, avoid touching their faces with their hands and they respect social distancing rules when chatting with their friends. The findings show that students attitude change with respect to awareness of the transmission mode of the diseases and the methods of prevention as they maintained social distance and equally wear masks as well as wash their hands regularly with soap as indicated. This is in line with WHO (2020) and CDC (2020) measures to control the spread of the disease. Furthermore, the findings on change in attitude of students influencing their learning outcome are similar to the prescriptions of Huang, Liu, Tlili, Yang, Wang, et al. (2020) on learning during disruptions which showed that students can effectively study individually or by using online learning resources.

Furthermore, the findings revealed that students learning styles significantly influenced their learning outcome in the University of Buea. The students indicated they use a variety of learning styles and abilities during the COVID-19 pandemic This is evident as the students spend more time studying at home alone; discuss courses freely with their course mates when they meet. Some students indicated that they discuss lessons freely with their course mates when meet, faced difficulties participating in online lessons, face difficulties understanding online lessons, understand better when the teacher is teaching face-to-face. Some use online learning platforms with ease and some go to school very early to attend lectures such that they can occupy comfortable seats in lecture halls. The findings are in line with Bandura social cognitive theory which emphasised that people learn differently as they interact in the learning environment or with the learning material by paying attention, observing and imitating the behaviours they have learnt through rehearsals and motivation the students actively construct and reproduce the knowledge they construct. Similarly, the findings are in line with Quacquarelli (2020) who revealed that online learning and alternative teaching and learning strategies are adopted by teachers and students to continue learning during the crisis period.

Similarly, the findings revealed that the lifestyle adjustment of students has a very strong positive influence on the learning outcome of students in the University of Buea. The changes in lifestyle witnessed by students during the COVID-19 pandemic in higher education included: students spend most of their time at home just watching television, students are scared to interact with other students due to the disease, students missed visiting their friends and course mates. However, students indicated they were comfortable with the preventive measures prescribed for COVID-19 prevention. Equally students indicated they have learnt to spend more time studying as an individual at home and the constant washing of hands is nice. Also students revealed that they liked the quarantined or staying at home life. Thus the findings showed that students have adopted the measures prescribed by the WHO (2020), CDC (2020), Rewar, Mirdha & Rewar, (2015) and Pappaioanou &

Gramer, (2010) findings who reiterated that transmission among humans is greatly reduced by promoting good hygienic practices among people to include enhancement of hand washing, use of personal protective equipment and minimization of hand-to-face contact. Furthermore, the findings are similar to the findings of Killan (2020) who pointed out that quarantining at home during COVID-19, and the closure of educational institutions were reported as major reasons for students feeling disconnected from society and their social circles. In some cases, students reported negative experiences while returning home during the pandemic owing to unpleasant family environments. Moreover, through lifestyle adjustment students in the University of Buea develop positive attitude towards learning which significantly influence their learning outcome as they indicated that they performed well in their assignments during the COVID-19 period, they finished assignments on time, they completed group tasks with ease, they understood lessons better when they discuss with friends though majority have not attended all their lectures during the period. However, the students revealed that they have all the notes sent online to them and they were studying hard in all their courses individually.

### THE WAY FORWARD

We must remember that; spring always ends winter. To this end, here are some basic principles that should guide national and institutional policies;

- 1) Ensuring the right to higher education of all persons within a framework of equal opportunities and non-discrimination is the first priority and, therefore, all political decisions that affect, directly or indirectly, the education sector superior should be governed by this right. The primary responsibility for ensuring that this right is exercised in practice rests with the States that must generate adequate regulatory, financing and incentive frameworks, as well as promoting and supporting inclusive, relevant, adequate and quality programs and initiatives.
- 2) Leave no student behind, in line with the main purpose of the United Nations Sustainable Development Goals. The crisis has a different impact on different student profiles, but it is undeniable that it deepens existing inequalities and generates new ones. It is imperative to attend, as a priority, to the pedagogical, economic and also socio-emotional needs of those students who, due to their personal or socio-economic characteristics, may have had or have greater difficulties in continuing their training in non-traditional modalities.
- 3) Review current regulatory frameworks and policies, to ensure structural measures that see education as a continuum where educational trajectories must be strengthened from early childhood to higher education and beyond, thus minimizing the fragility of the most vulnerable students in reaching higher education.
- 4) Prepare in time for the resumption of face-to-face classes, avoiding having to rush and offering, from the beginning, clarity in communication to the entire academic community and administrative and academic security, so that teachers, administrative and service personnel, and students can place themselves in the new context knowing in advance the provisions, processes and mechanisms designed to resume teaching activities.
- 5) The resumption of face-to-face activities of HEIs should be seen as an opportunity to rethink and, to the extent possible, redesign the teaching and learning processes, taking advantage of the lessons that the intensive use of technology may have entailed, paying special attention to equity and inclusion.
- 6) Governments and HEIs should create coordination mechanisms that allow joint progress to be made in generating greater resilience in the higher education sector in the face of future crises, whatever their nature. It is absolutely essential to involve students, teaching and non-teaching staff in designing the responses that emergency situations demand.

### V. CONCLUSION AND RECOMMENDATIONS

The findings from this study have revealed that the psychological implications of COVID-19 have a strong influence on students learning outcome in the University of Buea. This is evident as the students change attitudes towards the disease. The change in students attitudes towards the disease as a result of knowledge and awareness of the transmission mode of the disease enable the students to respect preventive measures by staying at home, respecting social distance rules, wearing faced masks and maintaining social distancing in lecture halls as well as regular cleaning and washing of hands. This has prompted many students to develop positive attitudes towards learning and it has positively influenced the learning outcome of the students as they performed better in their assignments and completed their assignments on time. Furthermore, the learning styles of students during the COVID-19 period has change with students adopting new learning styles and learning habits as there was a fast switch to online teaching in higher institutions of learning.

This has equally prompted students to develop individual learning and studying habits which prompt them to read the notes sent to them online by their teachers and equally students seek for more clarifications from peers in order to best understand the content of courses taught. Similarly, the findings revealed that students have developed and adjusted to new lifestyles due to the COVID-19 pandemic preventive measures. The lifestyle adjustment seems to pay off students with respect to their learning outcomes as the students

indicated that they spend more time studying as individuals, they stay at home and they respect social distancing measures which limit unnecessary interactions with peers.

The COVID-19 pandemic which is an on-going public health has a lot of influence in the economy, health care and psychological wellbeing of individuals as individuals and governments are worried about how to fight the invisible enemy. The psychological implications of COVID-19 on students learning outcome are both positive and negative depending on the attitudes, lifestyle adjustment and learning styles adopted by the students. However, it strongly recommended that technological and flexible online learning techniques as well as information and communication technology to enhance online teaching or blended teaching techniques be developed within the University system in Cameroon such that such a pandemic that is life threatening and require people to be quarantined rather than coming to school in the heart of the crisis should be used. It therefore recommended that internet facilities and fast internet services be installed in the country and teachers as well as students trained effectively on the use of online resources in the teaching and learning process that would still enable effective participation of students as if they were experiencing face-to-face teaching and learning in the classroom.

Since students learning depend on social interactions in the University environment students tend to learn better when they interact with peers and with their teachers in the learning environment whether through face-to-face interactions or through online platforms. It is therefore important for the government of Cameroon through the Ministry of Higher Education of Cameroon and with the ministry of telecommunications of Cameroon as well as communication companies in Cameroon to develop infrastructures and provide good internet facilities that would promote online learning with good internet in the face of a global pandemic as such. This would in turn enable students to study at home and respect social distancing measures outlined to control the pandemic without fear of missing an academic year.

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