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25 July 2020

A Study on the Impact of Socioeconomic Status on Emergency Electronic Learning during the Coronavirus Lockdown

Introduction

This research paper tackles the relationship of socioeconomic status (SES) to students' emergency electronic learning (e-Learning) during the Coronavirus (COVID-19) lockdown period in the Philippines. The study investigates the impact of accessibility to the students' performance in distance learning. By looking at these variables, the researchers seek to answer the research question, '*what is the impact of the students' family socioeconomic status on their accessibility to emergency e-Learning*'. This mini-study will be viewed in the lens of human capital theory guided by Gary Becker (1964).

As a consequence of COVID-19, schools worldwide resulted in shutting down, leaving over 1.2 billion students out of their classrooms (Li and Lalani, 2020). As a rapid response, home learning was suggested to close the educational gap that might occur. Many countries across the globe shifted to e-Learning as a means to continue education during this pandemic. In the United Kingdom, education providers with the support of their Department of Education developed *LendEd*, a website where schools and teachers can search for resources for effective home learning (GOV.UK, 2020). In France, the National Ministry of Education developed *Ma classe à la maison* (My classroom at home) site that provides learning opportunities for everyone (education.gouv.fr, 2020; The World Bank, 2020). Japan, on the other hand, came up with a centralized website developed by the Ministry of Education, Culture, Sports, Science and Technology (MEXT) which includes strategies that schools in the country have been using for their e-Learning (The World Bank, 2020).

Here in the Philippines, several institutions also resorted to online measures to keep classes running while the lockdown was implemented. Online platforms such as Google Classroom, Google Hangouts, Skype, Facebook groups, Messenger and Zoom were only some of the most used applications for conducting classes in the country (Abad, 2020). The Department of Education (DepEd) aims to continue distance learning in the next academic year; however, the marginalized will be at a disadvantage (Malindog-Uy, 2020).

Though the intention is good, many countries admit that they will face many struggles in implementing distance learning, and the most apparent among these issues will be access to technology. The problem lies in the larger social problem of digital inequality – only the privileged can continue their education without being compromised (Aldama, 2020). As an example, there is a term coined "*homework gap*" in the United States which describes the barriers students face in their education when there is no access to a high-speed connection at

their homes (Kelly, 2020). This has been a constant problem their country is trying to solve for many years even before COVID-19 and will be more prevalent during the pandemic. Even in the United Kingdom, another first-world country, around 1.9 million households do not have access to the internet and are relying on pay-as-you-go services (Kelly, 2020). This has also been the case even before COVID-19 struck their nation. If these well-developed countries are facing a digital divide, the least developed countries (LDCs) will become more susceptible to this issue. They will lag farthest behind in digital readiness and the education gap will keep expanding (UNCTAD, 2020). Just like in the Philippines, the availability of resources will have a significant impact on the students' distance learning journey and will widen the education gap. Some students from low-income households or remote areas do not have internet access and gadgets; and as per Albay Rep. Joey Salceda shared, only 17% of Filipino students have internet access at home and only 3.74% have mobile phones (Daguno-Bersamina & Relativo, 2020). Being in a third-world country, even middle-class citizens struggle with resources or may require extra support, depending on how near they are the poverty line (Albert, Santos, & Vizmanos, n.d.).

Historically, new technologies have always benefited those with financial capital, and those who do not will always be left behind. Unfortunately, accessibility is highly related to SES, and this is where the digital divide begins. Children who come from low-SES households develop academic skills slower than those who are from higher SES families (Morgan, Farkas, Hillemeier, & Maczuga, 2009); primarily because poor households have less access to learning materials which promote a positive literacy environment (Bradley, Corwyn, McAdoo, & García Coll, 2001). For an instance, a study conducted among three hundred and ninety-nine (399) students in California State University San Marcos concluded that those at an economic disadvantage are exposed to higher chances of experiencing difficulties accessing materials online (Añoover, Ng, & Pellicia, n.d.). Another research done by Institute for Fiscal Studies (IFS) and Institute of Education (IoE) from England reported that children from poorer families spend less time learning at home during the lockdown due to the lack of study spaces and online resources (Andrew, Cattan, Costa Dias et al., 2020). Both studies show that there is a relationship between socio-economic status and accessibility; the lower a household's social status is, the higher the possibility their accessibility to education will be affected negatively.

Such mechanisms affect students' academic achievement based on human capital theory. The success of children coming from disadvantaged backgrounds are usually limited due to their family's status; they are confined by the restricted financial resources their families possess. The human capital theory explains that education is a significant human capital investment, whereas the difference in children's educational achievement is predominantly caused by the difference of family educational investment (Li & Qiu, 2018). When family resources are bounded, parents cannot invest competently in their children's education, which in turn, affects their children's academic achievement (Becker, 1964).

Based on the studies discussed above, this mini-study aims to explore the relationship of SES in students' e-Learning experience during the COVID-19 lockdown. The researchers will only focus on accessibility's impact on the students' e-Learning journeys.

Methodology

The researchers conducted an online survey to collect the students' response. The respondents are senior high school (SHS) students from the Lyceum University of the Philippines Laguna. These are fifteen (15) Grade 11 students coming from the Humanities and Social Sciences strand with ages ranging from sixteen (16) to eighteen (18) years old, both males and females, purposively selected. The whole section classified themselves coming from middle-class families. The school shifted to emergency e-Learning during the lockdown period and lasted for only three (3) weeks.

Due to the nature of the study, the researchers chose to do descriptive statistics to analyze the relationship between SES and e-Learning.

Results and Discussion

The study aimed to know if the SES of the respondents impacted their access to resources needed for their e-Learning sessions during the lockdown period. In return, if accessibility was affected, the researchers wanted to know if this influenced the students' academic achievement. Ten (10) questions following a five-point Likert scale design that ranges from Strongly Agree, Agree, Neither Agree nor Disagree, Disagree and Strongly Disagree was conceptualized to measure the degree of students' responses. These points have assigned numerical values and will be discussed at a later point in this study.

In the following paragraphs, the researchers present the results from the online survey. The first question asked if students have gadgets or devices that can be used for their Zoom classes. Figure I shows that of all the students who participated, five (5) students (33%) strongly agreed they have gadgets to use during their e-Learning sessions; whereas the remaining ten (10) students (67%) agreed that they have gadgets for e-Learning. These results show that these students do not have problems with the accessibility of devices for online learning.

■ Strongly Agree (%) ■ Agree (%) ■ Neither Agree nor Disagree (%) ■ Disagree (%) ■ Strongly Disagree (%)

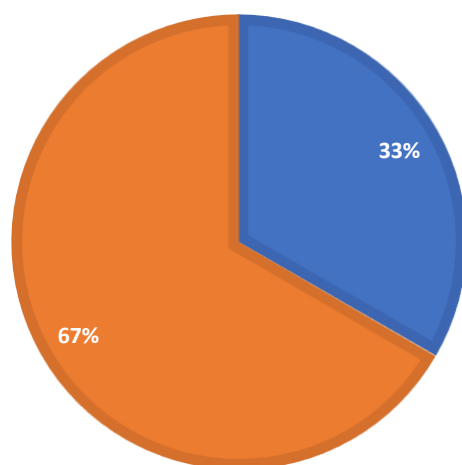


Fig I. Access to gadgets/devices

The next question in the survey asked if the students have an Internet connection at home. Despite the positive results from owning gadgets, the next question, on the other hand, yielded to a different direction. Among the respondents, one (1) student (6.5%) strongly agreed and (9) students (60%) agreed they have an Internet connection; whereas one (1) student (6.5%) disagreed and four (4) students (27%) highly disagreed they have Internet. This result still leaned on the positive side, however, proved there are inequalities with resources. See Figure II below

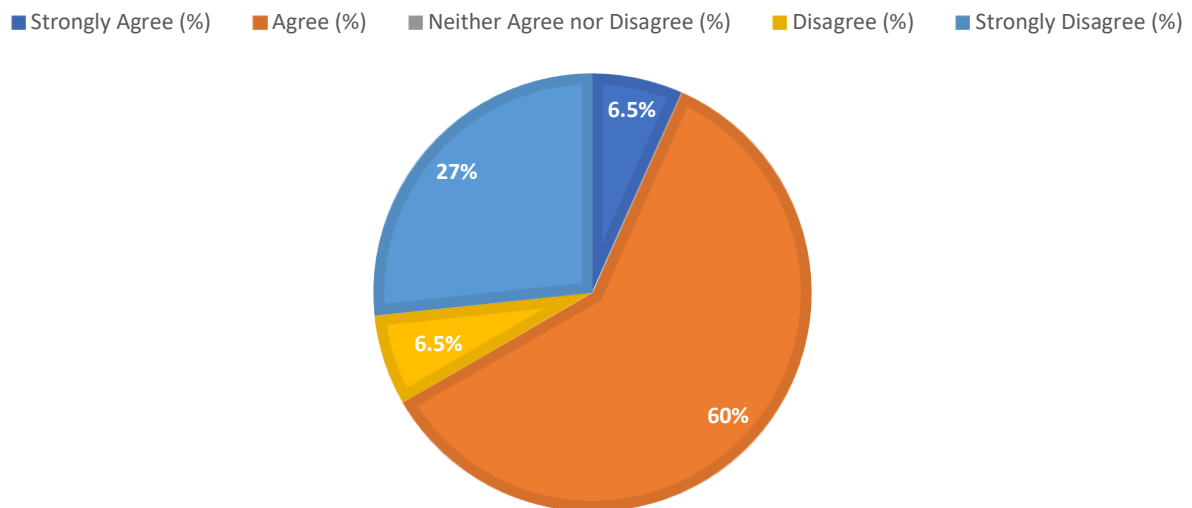


Fig II. Access to an Internet connection

The students were asked if learning resources and materials were easily accessible online. Among the respondents, one (1) strongly agreed (6.5%) and four (4) agreed (27%); whereas one (1) student (6.5%) was neutral and nine (9) students (60%) disagreed (see Figure III).

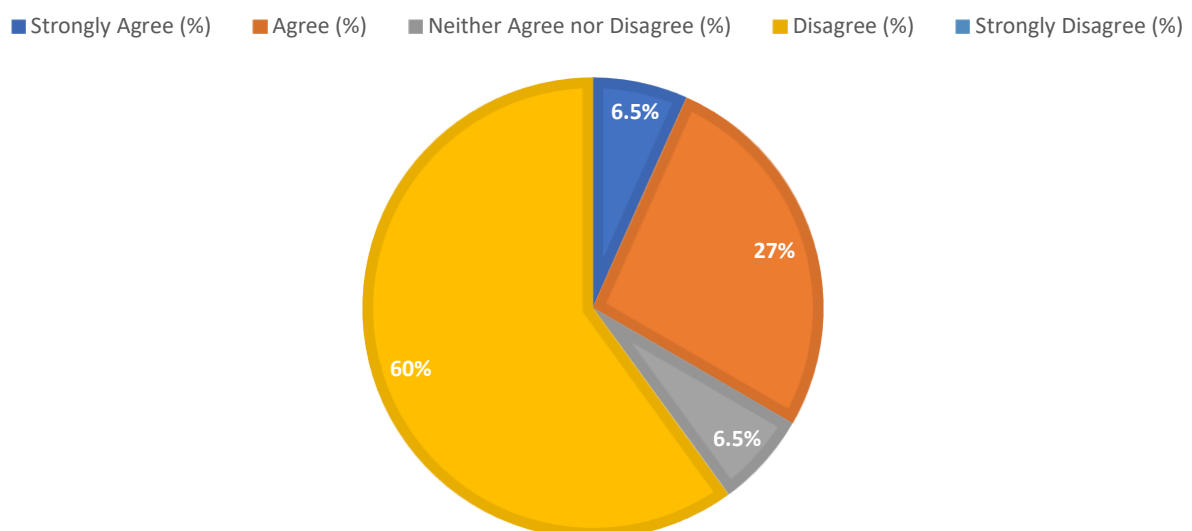


Fig III. Access to learning resources

They have been questioned if access to devices and the Internet is more expensive compared to using offline materials such as books and handouts. Seven (7) students (47%) strongly agreed while five (5) students agreed (33%); a small number of three (3) students disagreed (20%). See Figure IV below:

■ Strongly Agree (%) ■ Agree (%) ■ Neither Agree nor Disagree (%) ■ Disagree (%) ■ Strongly Disagree (%)

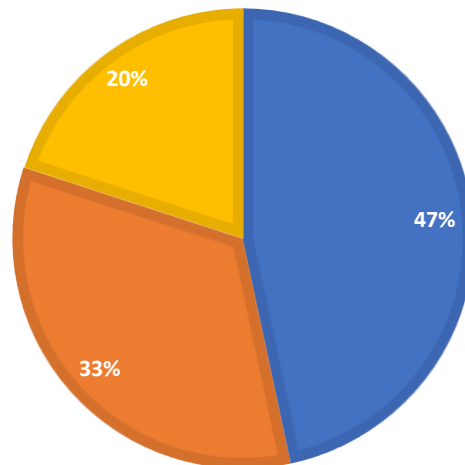


Fig IV. Cost of devices and connection for e-Learning versus offline materials

Next, students were queried if they encountered any connection issues during their e-Learning. Eleven (11) students strongly agreed, while one (1) student agreed; the remaining three (3) students strongly disagreed. Figure V shows the results below:

■ Strongly Agree (%) ■ Agree (%) ■ Neither Agree nor Disagree (%) ■ Disagree (%) ■ Strongly Disagree (%)

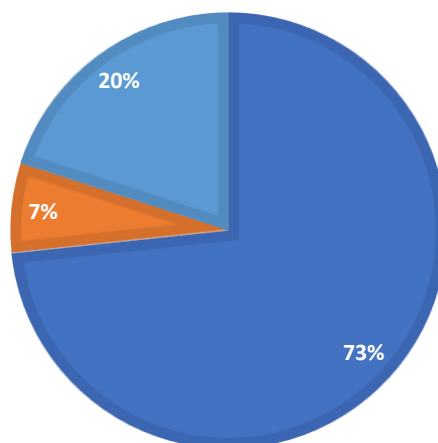


Fig V. Issues encountered during e-Learning

The respondents were also questioned if they were comfortable taking their lessons via Zoom (and other platforms they used during e-Learning). One (1) student (7%) was neutral,

four (4) students (27%) disagreed, and the remaining ten (10) students strongly disagreed (66%). See illustration below:

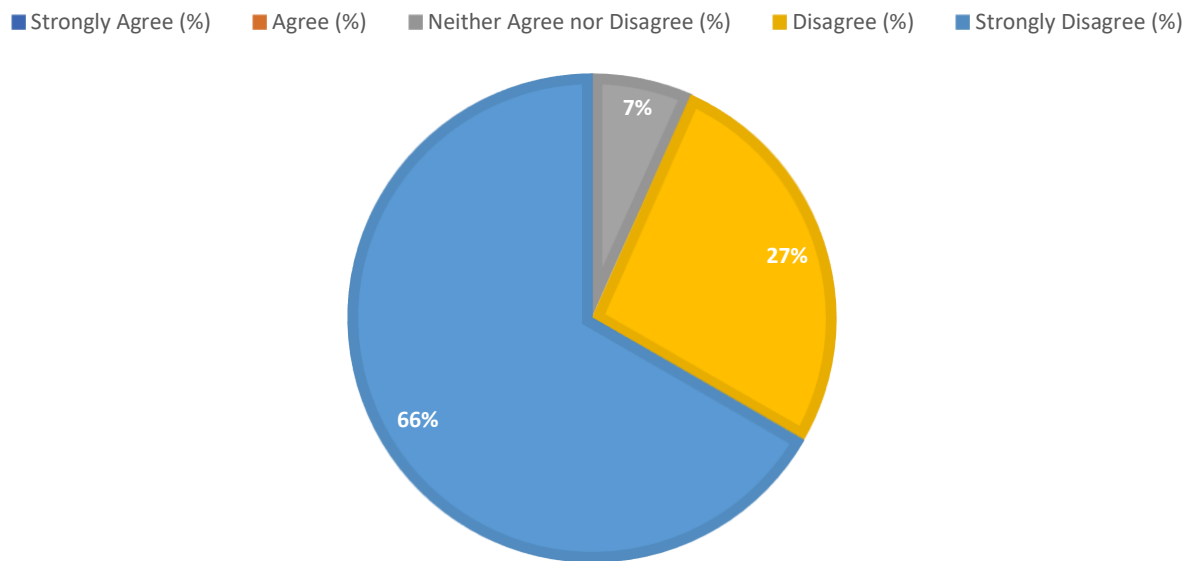


Fig VI. Comfort during e-Learning

Next, the students were asked if their teachers had a hard time addressing their concerns during their Zoom lessons. The responses leaned on one side whereas eleven (11) students (73%) strongly agreed and the remaining four (4) students (27%) agreed. See results below:

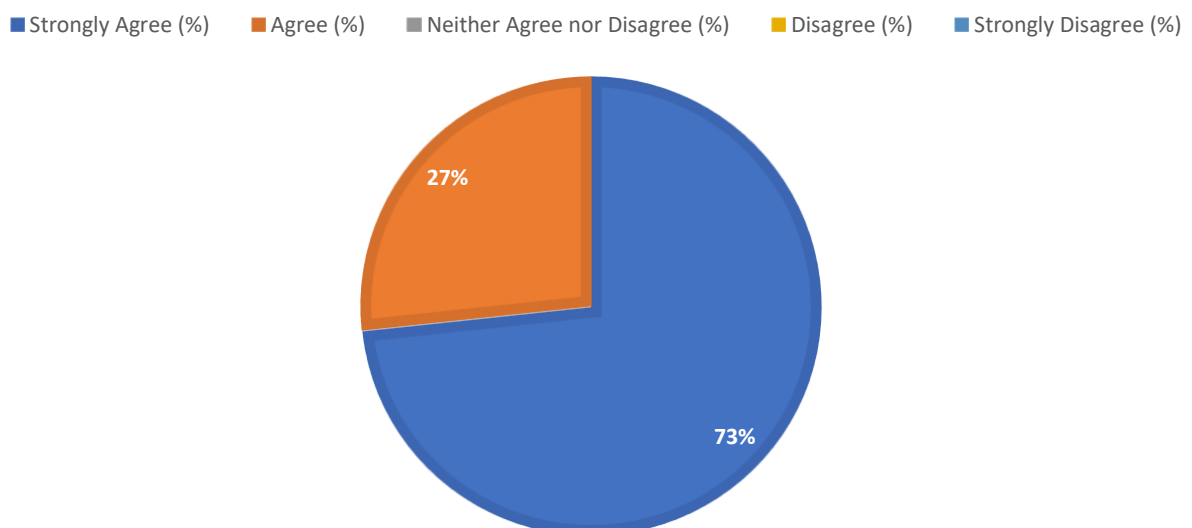


Fig VII. Students were asked if it is more difficult for their teachers to provide support/answer concerns during e-Learning

They were also asked if their families provided support during their e-Learning journey. Only one (1) student (6.5%) said s/he had support, one (1) student (6.5%) neither agreed nor

disagreed; while nine (9) students (60%) disagreed and four (4) strongly disagreed (27%). See Figure VIII below:

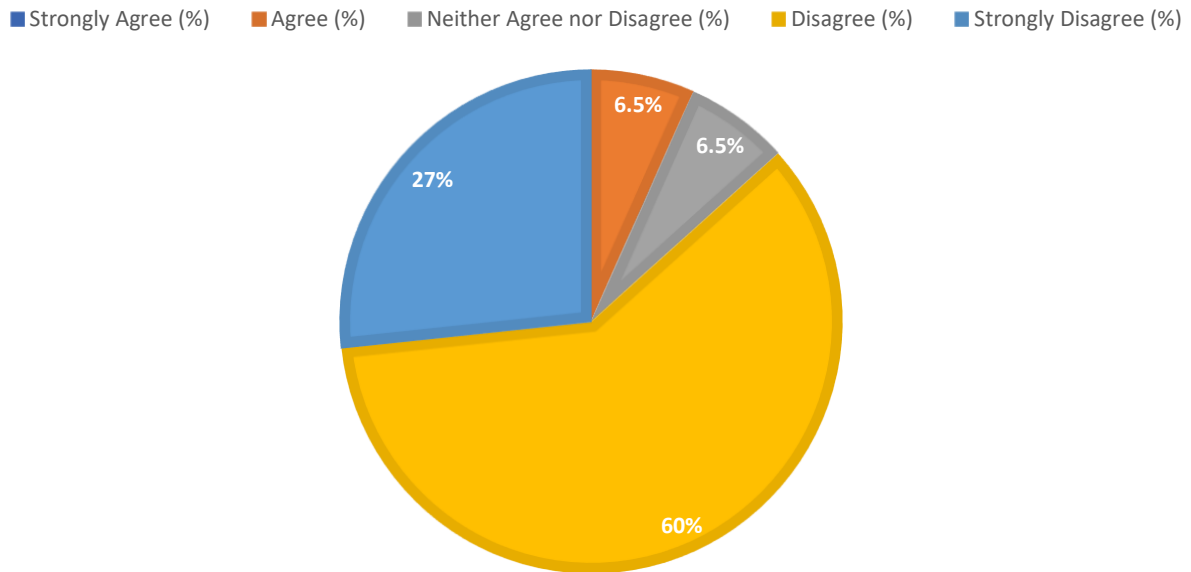


Fig VIII. Family support during emergency e-Learning

They were also asked if they understood all their lessons during the three weeks they shifted to Zoom classes. Among the fifteen (15) respondents, only two (2) students (13%) agreed while one (1) student neither agreed nor disagreed (7%); five (5) students (33%) disagreed and seven (7) students (47%) strongly disagreed. Figure IX shows the results:

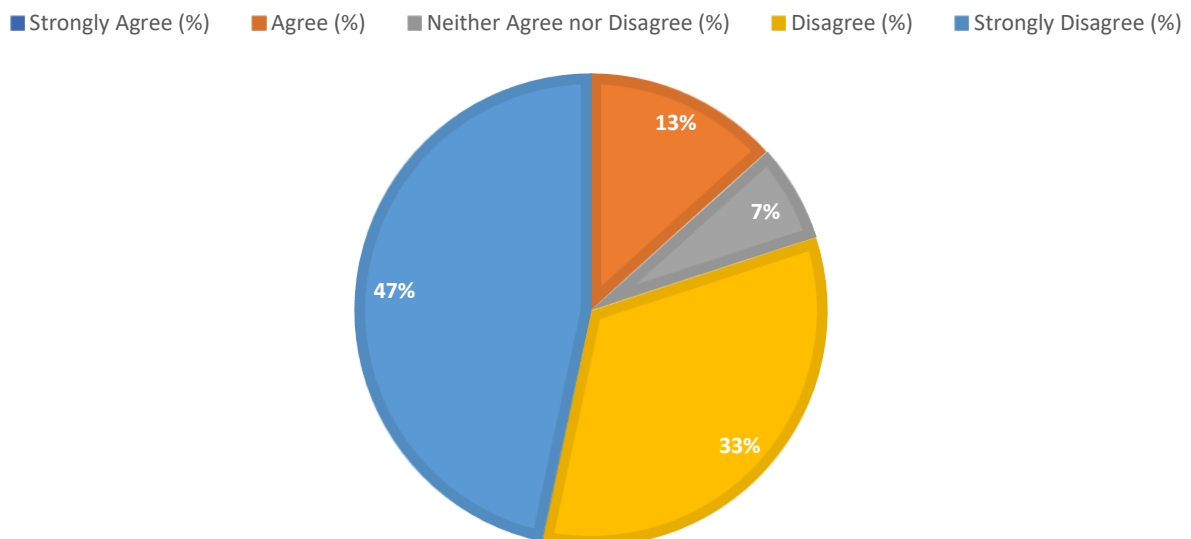


Fig IX. Students asked if they understood their Zoom lessons

Lastly, the students were asked if they had a positive experience throughout their e-Learning and if they were motivated as well. Only two (2) students (13.5%) remained neutral,

while two (2) students (13.5%) disagreed with the statement and the remaining eleven (11) students (73%) strongly disagreed. Figure X shows the results below:

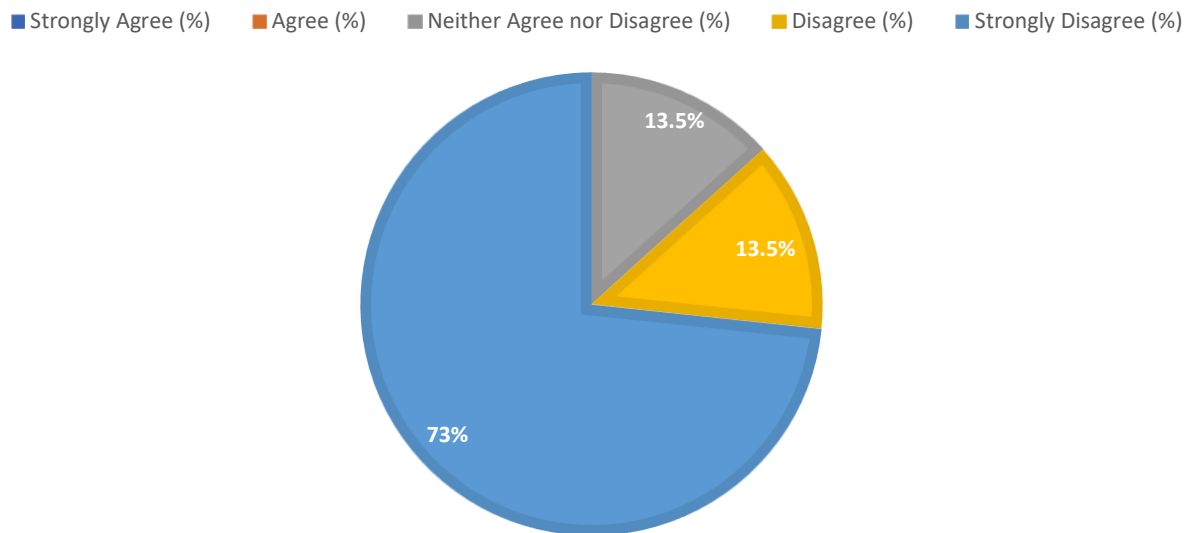


Fig X. Students asked if they had a positive e-Learning experience

As mentioned in the first few paragraphs, the researchers have assigned numerical values for the Likert-scale to be coded. The range of the numerical values are:

Strongly Agree = 5

Agree = 4

Neither Agree nor Disagree = 3

Disagree = 2

Strongly Disagree = 1

Since these are ordinal data, the researchers decided it is best to get the mode and median for analyzing the results (McLeod, 2019). This is to measure which is the most frequent response or where the responses are leaning onto. The table below shows a summary of the students' responses arranged in sequence coded with the assigned values of the Likert-scale.

Questions	Student 1	Student 2	Student 3	Student 4	Student 5	Student 6	Student 7	Student 8	Student 9	Student 10	Student 11	Student 12	Student 13	Student 14	Student 15	MODE	MEDIAN	RESULTS
Question 1	4	5	4	4	5	4	5	5	4	4	4	4	4	5	4	4	4	Agree
Question 2	2	4	4	4	5	4	4	4	1	4	4	1	4	1	1	4	4	Agree
Question 3	3	4	2	4	2	2	2	2	2	2	4	2	2	4	5	2	2	Disagree
Question 4	5	2	5	4	4	5	5	2	5	4	2	4	5	4	5	5	4	Agree
Question 5	4	5	5	5	5	5	5	5	5	5	5	1	1	5	5	5	5	Strongly Agree
Question 6	3	1	2	4	4	1	1	1	1	1	2	1	1	1	1	1	1	Strongly Disagree
Question 7	4	5	5	5	5	5	5	4	5	2	5	5	5	5	4	5	5	Strongly Agree
Question 8	3	2	2	2	2	2	1	2	1	2	2	1	1	2	2	2	2	Disagree
Question 9	3	1	1	2	2	1	2	2	1	4	2	4	1	1	1	1	2	Disagree
Question 10	3	1	1	1	2	1	1	1	1	3	2	1	1	1	1	1	1	Strongly Disagree

Table 1. Descriptive statistics summary regarding students' experience during their three-week e-Learning sessions.

On the first part of the online survey, the researchers asked questions concerning accessibility of resources needed for online learning. While the results yielded to a confirmed ownership of devices, the survey showed that these students do not have equal access with an Internet connection. Though thriving, there is unequal and asymmetrical access to information communication technology (ICT) across different socioeconomic classes in the Philippines (Malindog-Uy, 2020). Concerning this, students also confirmed having issues accessing learning materials online. This result is somehow the same with a study done in California State University San Marcos, whereas the researchers found a connection between household income and problems accessing materials for online courses. The result of their study concluded that students at disadvantaged backgrounds higher chances of experiencing difficulties accessing online course materials (Añoover, Ng, & Pellicia, n.d.). The respondents from Lyceum University of the Philippines Laguna were also asked if they find it costly to access the devices and Internet connection needed for online learning. A big percentage confirmed that it is more expensive for them to acquire these, and only very few disagreed. Still, the students were able to have access with these resources since they are from middle-class families. The impact of SES can be seen here through the family's financial support. And as the human capital theory stresses, the economic resources of a family has an impact in students' academic achievements (Li & Qiu, 2018).

The second part of the online survey tackled questions relating to students' wellbeing while e-Learning at home. They were asked if they encountered issues and only three (3) disagreed while the rest agreed. When asked if they were comfortable having Zoom lessons, only one remained neutral and the rest responded negatively. This study does not seek why, but there is a possibility that this might be related to lack of personal spaces at home. Teacher support was also questioned, and majority of the students confirmed that their teachers had a hard time addressing their concerns during e-Learning. This proved that the students needed extra assistance during those sessions. Concerning this, the students were asked if they received any kind of support from their families regarding their e-Learning. Majority responded negatively; this was inevitable as for some parents or guardians, homeschooling children are a burden due to other obligations at home (Daguno-Bersamina & Relativo, 2020). The students were also queried if they understood all their lessons online and a high-percentage responded negatively. Though resources are present, if the support from the family is absent this will still impact the student's academic achievement. If there is a high degree of parent participation, the student's academic performance will also be better (Li & Qiu, 2018). The last question asked if the students had a positive e-Learning experience and the results yielded more on the negative response. Considering the results shown above, it is expected that the students did not have a pleasant encounter during the three weeks their school shifted to Zoom classes due to different elements that affected their e-Learning.

Conclusion

Many studies are explaining different agents that affect students' e-Learning experiences and one of these is the family's SES. Several researchers have already made significant contributions to determining how SES relates to student performance (Lee and Burkam, 2002). Though there may be many factors affecting a student's performance, the

family's SES has the greatest impact (Li & Qiu, 2018). Through this study, the researchers found out that though it is indirect, socioeconomic factors such as accessibility to resources and parental support both affected the students' e-Learning experience. Guided by the lens of human capital theory, the study showed two ways a family can invest in their child to have a better educational experience: 1) through financial support such as resources and; 2) through parent participation/involvement. In return, these two factors will influence the child's academic performance. In this case where the students suddenly shifted to Zoom classes, the researchers saw a link between their SES and e-Learning experience. The results from the statistics proved that despite the availability of resources, other agents also affected the students' e-Learning; it can be comfort (having stable Internet connection, the right amount of devices, personal study space) or through parental involvement as suggested by the theory.

Given the amount of time to conduct the research, there are still underlying issues needed for future research. First, even if the students classified themselves coming from middle-class families, there are insufficient data to prove the accuracy of their SES. Second, it is highly-suggested to do another quantitative study with a larger amount of respondents from other schools to test different hypotheses (especially when the Philippines starts the educational shift this academic year 2020-2021 via blended or distance learning due to the pandemic). Lastly, it is also recommended to do a qualitative approach to view this case in a different perspective.

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APPENDIX A: Online Survey

Good day,

We are students from the Master of Distance Education program from the University of the Philippines Open University researching the impact of socioeconomic status (SES) on electronic learning (e-Learning) during the COVID-19 lockdown. We would like to assure you that all data collected from this survey will be used strictly for research purposes only. We are very much grateful for your time taking part in this online survey.

*Sincerely,
Marie Camille Cuisia-Villanueva
Jayrome Núñez*

Name:

Age:

Strand:

Family's Social Status/Socioeconomic status:

Please choose to which extent you agree to the questions provided below. Strongly Agree (5) being the highest, and Strongly Disagree (1) being the lowest.

Question	Strongly Agree (5)	Agree (4)	Neither Agree nor Disagree (3)	Disagree (2)	Strongly Disagree (1)
1. I own a gadget or device (e.g. computer/laptop/smartphone/tablet) that can be used for electronic learning (e-Learning).					
2. I have an Internet connection that can be accessed regularly to attend online classes or do schoolwork.					
3. Information and learning materials are accessible and easier to find online.					
4. It is more expensive to access equipment/devices and an Internet connection compared to using books or other offline learning materials.					
5. I encountered issues with my Internet connection or equipment during my e-Learning experience.					

6. It is more comfortable to understand lessons and cope up with topics via e-Learning platforms (e.g. Zoom class sessions, through other social media platforms, or through Moodle).					
7. It is more difficult for my teacher/s to address questions or concerns during the e-Learning sessions.					
8. I get enough support from my family in regards to e-Learning journey during the lockdown.					
9. I understood all lessons during my e-Learning experience.					
10. I had a positive e-Learning experience during the lockdown and was motivated all throughout the learning process.					

Note: This is only a template. Online survey was done through Google Forms.