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Examining Environmental Challenges in Relation to Online Distance Learning

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ABSTRACT

The study focuses on the environmental challenges encountered by grade 11 STEM students at Lopez National Comprehensive High School in online distance learning (ODL). This determines the significant relationship between the demographic profile and the environmental challenges in terms of ICT technical issues and concerns; environmental problems; and physical and digital distractions. The researcher utilized quantitative correlational research with the use of a simple random sampling technique to determine the 90 STEM students at Lopez National Comprehensive High School, Philippines. The data revealed that the students' demographic profile is significantly related to environmental issues. Based on the results of the study, power outages cause stress and affect students' performance. The power interruptions reduced the willingness of students to develop presentations and prepare for online classes. It also shows that a suffocating environment can make it difficult to stay motivated to complete the tasks assigned in online classes. And lastly, distractions such as Facebook, Twitter, YouTube, Instagram, and TikTok make the students lose their eagerness to do the activities that are given in online classes. The new normal e-learning modality calls for an intervention that includes setting aside a specific space or device for online classes, offering thorough training on how to use the platforms, keeping lines of communication open between students and teachers, implementing flipped classroom instruction, strengthening parent-teacher partnerships to ensure support for students learning from home, and offering advice and counseling to stakeholders.

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INTRODUCTION

Education is the best way to overcome everyone's fears by interacting with their classmates and friends and demonstrating their knowledge by performing various activities in front of large crowds, but something has happened, and the traditional way of learning has come to an end and changed. One of those new ways of learning is to interact virtually with the instructors and classmates in different environments.

Most educational systems around the world have been switched to remote learning to combat the spread of the coronavirus. This situation caused a slew of issues, particularly in developing countries (Rotas & Cahapay, 2020).

According to prior studies, university students' academic performance may be impacted by the environmental conditions they are exposed to at home during the COVID-19 epidemic. Similar to this, it is recommended that each student have a quiet area at home when taking lessons online to help protect them from loud, distracting noises. All of these factors can lead to university students not attaining high levels of learning, which can limit their long-term progress as human resources (Vargas et al., 2020). Students also reported certain difficulties they encountered when taking online classes. Students that are marginalized and come from far-off regions are more likely to experience anxiety, depression, poor Internet connectivity, and an unsatisfactory home learning environment (Barrot et al., 2021).

Online distance learning is a type of education wherein students and faculty are physically separated, and it involves various technologies that are used to function or to begin with classes each session. Online distance learning involves no physical contact; students only need to stay at home, and the faculties are the same. It is one of three types of distance learning, along with modular distance learning (MDL) and television/radio-based instruction (Jamisal & Nuñez, 2022). In online distance learning, students face a variety of environmental challenges. These difficulties will have an impact on the student's ability to learn. When the barriers begin, not all the students may adopt learning strategies; some students can easily divert their attention to various obstacles that they may face. Noise, temperature, and lighting all have a negative effect on pupils' academic performance. The students may become demotivated as a result of the unpleasant temperature that emanates from their home and also the camera's exposure of the students during online classes will be affected by poor lighting, and noise from their environment and it will affect their performance in online classes. The students are unable to comprehend the lesson that their instructors are discussing, which will almost certainly result in a misunderstanding between the students and the instructor (Vargas et al., 2020).

In the current digital era, the physical setting is crucial to online distance learning in higher education. The learner's physical environment, which comprises physical infrastructure and space, as well as environmental features and social factors, can help or hinder the learner's performance of learning activities using different computer and mobile devices (Barri, 2020). At the same time, the virtual learning environment is all-encompassing, engaging with the student's specific learning area in a physical setting. As the learner goes from one physical location to the next, new support and barriers will be encountered. Accessibility, interactivity, and connection are all aided by the utilization of mobile technology and gadgets (Ng, 2021).

Online distance learning institutions should think about putting in place measures for continuously monitoring their students' progress. They are gathering and evaluating information about their pupils' willingness to continue their studies. With well-designed dropout management programs, online distance learning institutions may make informed decisions about planning and policymaking, as well as provide effective future student support services targeted at increasing return on investment for both the institutions and the learners. Although the limitations of this study include the fact that it is only a preliminary observation, it does show that in the online distance education environment, learners require additional learner- supporting services that focus on "at-risk" learners in order to support their learning

continuity and reduce dropouts (Tung, 2012).

Koh and Lim (2012) investigated the impact on academic performance of using an online collaborative work tool in a university computer science course. This study lends support to the hypothesis that when web-based tools are used in a course, older students outperform younger students on measures of academic performance. Koh and Lim (2012) also linked between age, academic performance, and the level of social interaction provided by various web-based collaborative tools. As the student's age decreased, so did his or her preference for tools that enabled more online communication. When younger students could chat online, post pictures, share biographical information, and leave comments, they performed better on the assignment.

In the study of Machebe (2017) parental income level impacts the students' academic achievement. Additionally, providing parents with moral, financial, and material support can encourage their children to perform academically in school. Students who have low economic status may have lower academic standards than those who have a higher income level (Cuisia-Villanueva & Nuñez, 2021). Students' academic progress in the study location was hampered by their parents limited financial means, as well as the state of physical and instructional resources. Parents who cannot afford to pay for their children's education are likely to leave them without many academic necessities, affecting their performance. Students' academic success and attainment in the study area were hampered by parental occupation, parents' inadequate ability to finance schooling, and a lack of physical and instructional resources (Gabriel, 2016).

Parental socioeconomic status is an important factor that influences students' academic ability. A student's academic achievement is closely proportionate to his or her parents' income, education, and career. Pupils from low socioeconomic backgrounds exhibit worse academic achievement than students from higher socioeconomic backgrounds (Qaiser, 2013). The majority of pupils from low socioeconomic backgrounds perform poorly in school. Research indicates that parents who earn less money are less engaged in their kids' schooling. Students from low socioeconomic backgrounds placed a greater emphasis on employment. In addition, education after secondary school, these students were discovered to be pursuing low-wage employment in the labor market (Pant, 2020).

This study aims to determine the environmental challenges encountered by Grade 11 STEM students at Lopez National Comprehensive High School in online distance learning. The study tests the null hypothesis to wit; there is no significant relationship between the demographic profile and environmental challenges encountered by the Grade 11 STEM students during online distance learning at Lopez National Comprehensive High School.

METHODOLOGY

This study utilized descriptive correlational research to analyze the data collected. In quantitative research, problems are answered by analyzing numerical data using statistical tools. It also describes the procedure of gathering numerical data to comprehend an issue or event (Apuke, 2017).

This study was carried out at Lopez National Comprehensive High School, which provides a variety of senior high school strands, including STEM (Science, Technology, Engineering, and Mathematics), HUMSS (Humanities and Social Sciences), ABM (Accountancy and Business Management), and GAS (General Academic Strand). Aside from that, the school also offers TVL (Technical- Vocational-Livelihood). The location of the Lopez National Comprehensive High School is Brgy. Magsaysay in the Province of Quezon's Municipality of Lopez. This location was chosen for its efficiency and for its unique research aimed at improving people's quality of life. In this study, the researcher focuses on the population that includes the selected Grade 11 STEM students at Lopez National Comprehensive High School.

This study used simple random sampling of 90 STEM students. A simple random sample represents the complete data set by selecting a small, random portion of the entire population, with each

member having an equal chance of being chosen. The goal of a simple random sample is to objectively reflect a group (Hayes, 2021). The researcher also used an online questionnaire to the random Grade 11 STEM students. The researcher formulated 15 questions to complete the online questionnaire. The first phase of the process involves communicating with the respondents, the second phase includes the validation stage, the third phase includes the conducting stage, and the fourth phase includes the analysis of data. This includes the collected data by the researcher regarding the environmental challenges encountered by Grade 11 STEM students at Lopez National Comprehensive High School during Online Distance Learning. The Pearson R statistical tool was used by the researcher to determine the relationship between the demographic profile of the respondents and environmental challenges and to analyze the results based on the gathered data.

RESULTS AND DISCUSSION

The information obtained from the respondents is shown in this section. Tables are used throughout the presentation. The tabular presentation was used to analyze and interpret the data.

Table 1. Summary of environmental challenges encountered by grade 11 STEM students at Lopez National Comprehensive High School in online distance learning

Environmental Challenges	MS	QD	R
ICT Technical Issues and Concerns	2.90	SE	1
Environment Problem	2.20	RE	3
Physical and Digital Distractions	2.77	SE	2
TOTAL	2.62	SE	---

Legend: Never Experience (NE) - 1.0-1.50 Sometimes Experience (SE) - 2.51-3.50 Rarely Experience (RE) - 1.51-2.50 Always Experience (AE) - 3.51-4.50 Mean Score (MS) Qualitative Description (QR) Rank (R)

Table 1 presents the summary of the environmental challenges encountered in online distance learning, showing that ICT technical issues and concerns got the highest rank with a mean score of 2.90, interpreted as Sometimes Experienced. The result means that among the three environmental challenges most of the respondents encountered environmental challenges in terms of ICT Technical Issues and Concerns they are students who are experiencing struggles in using different gadgets for their educational purposes. It is followed by Physical and Digital Distractions with a mean score of 2.77, interpreted as Sometimes Experienced. The result means that some of the students are affected because of the physical and digital distractions. There are students who are using gadgets while taking online classes and the result is their learning ability will be diverted to surfing social media platforms. The lowest rank is Environment Safety with a mean score of 2.20, interpreted as Rarely Experienced. The result means that environmental safety does not too much affect students while engaging in online classes.

Therefore, ICT Technical issues and concerns have a big impact on online distance learning. Every time the students encounter ICT technical issues and concerns, it affects their performance. According to the results of Mobi's (2015) study, ICT can be overused, disrupt important learning time, and turn educational experiences into games for students, which can improve their poor academic performance. It can also expose students to porn websites and divert their attention during class.

Students feel lazy in attending the class when the students easily get the study materials from the web. In school or college, pupils may not appreciate ICT if they spend too much time on copying and presenting without reading or comprehending. Students will look for the information online and use "cutting and pasting" for copying it. This kind of behavior will have an impact on the kids' reliability. Students can waste time by using ICT more effectively than researching for their assignments (Keerthika, 2017).

The majority of students (56%) communicate on social networks using the Internet. Just 13% of

pupils utilize the Internet for learning. These students are clearly more successful academically. Students who use the Internet mostly to play online games and view videos have the lowest educational activity results (59%) (Lavrinenko, 2019).

The result shows that ICT Technical issues and concerns affect the students' performance. In the twenty-first century, new ways of learning use technology, most of the time, students are more engaged in using technology for their personal interests, like gaming, making poor skills in PowerPoint presentations and social media, and it leads to poor skills in using technology.

Significant Relationship between the demographic profile and environmental challenges encountered by Grade 11 STEM students at Lopez National Comprehensive High School in online distance learning

Table 2. Pearson R correlation on the age profile of the respondents to the environmental problem

Variables	Correlation	Decision	P-value	Conclusion
ICT Technical Issues	0.72	Reject Ho	<.00001	Significant and Concerns
Environment Problem	0.76	Reject Ho	<.00001	Significantly
Physical and Digital	0.25	Reject Ho	<.00001	Significantly Distractions

Table 2 shows that among the Grade 11 STEM students, the age profile of the respondents is mostly affected by environmental problems. Using the Pearson R correlation on the age profile of the respondents, the Environment Problem got a 0.76 correlation coefficient with a p-value of <.00001, therefore the hypothesis is rejected, and the conclusion is significantly correlated. Followed by ICT Technical Issues and Concern got 0.72 correlation coefficient with a p-value of <.00001, therefore the hypothesis is rejected, and the conclusion is significantly correlated. And the last one is Physical and Digital Distractions got 0.25 correlation coefficient with a p-value of <.042921, therefore the hypothesis is rejected, and the conclusion is significantly correlated.

It demonstrates that the age of Grade 11 STEM students is strongly related to environmental problems. Therefore, there is a possibility that when the students are older, there is a tendency to encounter the environment problem because they choose to stay in the environment that they have and not to find a different environment that makes them comfortable, on the other hand, when the students are younger, they always choose to find a suitable environment that helps them to understand the lesson easily. The more convenient your environment is, the more the students are motivated to study hard.

The choice of pupils for particular online learning activities may be predicted by age. Younger students, on the other hand, have shown a preference for more engaged learning strategies. For instance, older students have shown a high preference for watching recordings of the professor lecturing (Simonds & Brock, 2014).

It illustrates that the age of Grade 11 STEM students is strongly related to ICT technical issues and concerns. Therefore, there is a possibility that when the students are older, they will have a hard time using the technology because there is a gap in experience when it comes to ICT, on the other hand, when the students are younger, they will easily adapt to the different techniques in using the gadgets when it comes to ICT because the younger students are more explorable than the older students.

It shows that the age of Grade 11 STEM students is strongly related to Physical and Digital Distractions. Therefore, there is a possibility that when the students are older, they will choose to listen to the teacher's discussion in online classes for them to understand the lesson, on the other hand, when the students are younger, there is always a tendency that they will engage in different social media platforms while attending online classes. The younger students are more distracted by the situations in their surroundings.

Table 3. Pearson R correlation on the location profile of the respondents to the environmental problem

Variables	Correlation	Decision	P-value	Conclusion
ICT Technical Issues	0.86	Reject Ho	<.00001	Significantly and Concerns
Environment Problem	0.27	Reject Ho	<.028345	Significantly
Physical and Digital	0.25	Reject Ho	<.028345	Significantly Distractions

Table 3 shows that among the Grade 11 STEM students, the location profile of the respondents is mostly affected by the ICT Technical Issues and Concerns. Using the Pearson R correlation on the location profile of the respondents, the ICT Technical Issues and Concerns got a 0.86 correlation coefficient with a p-value of <.00001, therefore the hypothesis is rejected, and the conclusion is significantly correlated. Followed by Environment Problem got 0.27 correlation coefficient with a p-value of <.028345, therefore the hypothesis is rejected, and the conclusion is significantly correlated. And the last one is Physical and Digital Distractions got 0.27 correlation coefficient with a p-value of <.028345, therefore the hypothesis is rejected and the conclusion is significantly correlated.

Sub-urban students reported much greater environmental issues, but all students, regardless of location, reported only mild difficulties with economics, instruction, and learning results. Students worry about how learning outcomes can be fully attained through flexible learning methods when laboratory-intensive classes are not available due to the epidemic, as well as about their difficulties in the delivery of instruction and in communicating with the professors (Laguador, 2021).

Table 4. Pearson R correlation on the financial status of the family in a month to the environmental problem

Variables	Correlation	Decision	P-value	Conclusion
ICT Technical Issues	0.28	Reject Ho	<.022785	Significantly and Concerns
Environment Problem	0.89	Reject Ho	<.00001	Significantly
Physical and Digital	0.27	Reject Ho	<.028345	Significantly Distractions

Table 4 shows that among the Grade 11 STEM students, the financial status of the family in a month is mostly affected by the Environment Problem. Using the Pearson R correlation on the financial status of the family in a month, the Environment Problem got a 0.89 correlation coefficient with a p-value of <.00001, therefore the hypothesis is rejected and the conclusion is significantly correlated. Followed by ICT Technical Issues and Concerns got 0.28 correlation coefficient with a p-value of <.022785, therefore the hypothesis is rejected and the conclusion is significantly correlated. And the last one is Physical and Digital Distractions got 0.27 correlation coefficient with a p-value of <.028345, therefore the hypothesis is rejected and the conclusion is significantly correlated.

It demonstrates that the financial situation of a Grade 11 STEM student in a month is strongly related to Environment Problem. As a result, when the students' family status is at least in the average class, their parents will find a suitable environment for their child so that the students can be hundred percent engaged in their class, such as providing a table that makes the students more comfortable doing the given tasks; on the other hand, when the students are in the lower class, there is a chance that they will accept their situation and settle on it, which leads to a difference.

It illustrates that the financial situation of a Grade 11 STEM student's family in a month is strongly related to ICT technical issues and concerns. Therefore, there is a possibility that the financial status of the family can be one factor for the students to settle for less. When the students' family financial status is in the lower class, there is a possibility that they will not perform very well in their online classes because they will be experiencing many difficulties because of the gadgets that they use in attending online classes. On the other hand, when the financial status of the family is at least on the average level, there will be a possibility that the students can be more engaged in online classes because they will understand the

lessons easily and they will experience fewer difficulties.

This study demonstrates a significant correlation between the environmental issues and the respondents' demographic profile. Furthermore, the students' performance during online learning can be affected by environmental challenges like ICT technical issues and concerns, environment problems, and physical and digital distractions. It's hard for the students to be motivated if there are different challenges that they encounter during their online classes. A misunderstanding between the teacher and the pupils will result from the students' distraction. Essam (2014) found that power outages have a significant impact on academic performance and that participants perceive that there are no benefits. The findings contradict the research hypothesis, as the majority of participants acknowledged ignoring their task during a power outage.

In addition, unstable internet connections, a lack of training, a lack of assistance from the school, and a lack of time were among the key problems faced while utilizing ICT. A more successful integration of ICT in education can be achieved by providing appropriate training on its use in the classroom. Aside from that, suitable ICT resources for instructors must be made available. This research could be valuable to educators, researchers, and school administrators in developing guidelines to help teachers overcome the problems of integrating ICT into teaching and learning (Vien et al., 2019).

CONCLUSION

Based on the findings in the environmental challenges encountered by grade 11 STEM students at Lopez National Comprehensive High School in online distance learning (ODL), the researcher concludes that power outages cause stress and affect students' performance in online classes while a suffocating environment can make it difficult to stay motivated in doing academic tasks and on the other hand, social media distractions will lose the eagerness to do the given activities.

The environmental difficulties faced by grade 11 STEM students at Lopez National Comprehensive High School participating in online distance learning are significantly correlated with the respondents' demographic profile. Therefore, the hypothesis is rejected.

The researchers analyzed the data to identify the different difficulties that the students encounter during pandemic in terms of physical and digital distractions, and ICT technical issues and concerns. This study concluded that social media distractions are one of the problems of grade 11 STEM students. In order to address the new normal e-learning modality, it is advised to implement an intervention. This includes setting aside a specific space or device for online classes, offering comprehensive training on how to use the online learning platforms, keeping lines of communication open between students and teachers, implementing flipped classroom instruction, strengthening parent-teacher partnerships to ensure guidance for students learning from home, and offering advice and counselling to stakeholders.

A suitable study environment for students can make a big difference in their learning performance; the less distractions, the better their attention and knowledge retention will be. A calm study environment aids focus and sharpens the mind. A dedicated study space establishes a boundary for other family members to avoid disturbing the learner while he or she is studying. As a result, it will create an atmosphere in which students will feel as though they are learning in a classroom environment.

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