THE STABILITY OF THE INTERNET CONNECTION OF STEM 12 STUDENTS PRIOR TO THEIR ACADEMIC PERFORMANCE TO THE SYNCHRONOUS LEARNING METHOD OF SAINT BENILDE INTERNATIONAL SCHOOL, (CALAMBA), INC.

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Abstract. *Due to this pandemic, the internet became very useful for education purposes, since everyone is still experiencing quarantine. Teaching and learning through the internet are the most efficient way to avoid contact between the learners and the teachers. The downside of using the internet is its stability, without a stable internet, it can affect the academic performance of learners. This study explored the stability of internet connection of students, their relationship, and the recommendations that can improve the use of internet as a learning medium. A total of 200 STEM 12 students of Saint Benilde International School were selected through stratified sampling and in the end, the following results was sought. The researchers used frequency and percentage distribution on gathering amount of data of the respondents' responses. Moreover, Slovin Formula was also used on their study to calculate an appropriate sample size from a population. In addition to the methods that's used to gather data, Likert scale was also used on this study to serve as rating scale used to assess opinions, attitudes, or behaviors. A lot of students was struggling because of the problem that was caused by the unstable internet connection. This student stated that lagging and disconnection are the most common problem that they're facing. With this happening while having their discussions worsen their academic performance because of the inability to participate in class. The students with weak internet connection leads to be always late on passing their requirements before the due date that was given. The researchers make sures that on this study, we could recommend some activities that can help to improve the online synchronous learning method in Saint Benilde International School.*

Keywords: *Stability of Internet connection, Academic performance, synchronous learning method, Activities, STEM*

INTRODUCTION

Due to changes in ways of living, most people now rely on machines and the internet to make life easier. The internet is one of the most important tools in communication and education, especially in how schools are being handled today. But the Philippines has a rather slow and unreliable internet speeds, making the country one of the countries that has the slowest internet speeds, and this situation badly affects most learning students and teachers. An interview with four (4) teachers and four (4) students was conducted as a primary source of data and were analyzed and categorized using thematic analysis. This data showed the benefits and disadvantages of using this method of learning despite having slow internet connection (Af'Idatul Husniya, 2018). With this interview, it is concluded that all students and teachers deserve high-quality internet connection in order to have satisfactory academic performance in online classes, especially the Grade 12 students, who are still to have to demand good performance in order to get into universities. Network connection is the students' lifeline, and without it, students might fail. Learners and teachers are required to have at least 1.5 mbps minimum of internet speed (both upload and download speeds), but most internet service providers do not satisfy this requirement. Without this stable internet speeds, learners might not be able to pass their homework on time or at all. The purpose of this research is to know if the internet connection of Grade 12 STEM students of Saint Benilde International School (SBIS) is stable enough to satisfy their school needs.

As for the goals of the study, it aimed to determine whether the stability of internet connections of STEM 12 students was enough for their academic performance to the synchronous learning by seeking answers to the following questions:

- How stable was the network connection of students as observed by the students themselves?
- What were the problems they faced with their internet connection?
- What was the relation with the internet connection prior to their academic performance?
- Which activities could be proposed to better improve the learning of the students?

These questions were successfully answered via survey questionnaires given to 90 students of the Grade 12 STEM strand, 18 students per section of Saint Benilde International School in order to hypothesis that students with the most stable internet collect, analyze and interpret the objectives about research.

connection perform better than those who do not.

METHODOLOGY

This part consists of the description of the research design and procedures utilized by the researchers. The descriptive method of research was used in this study for the purpose of attaining goals and objectives set for the study, particularly on the research method opted, the respondents of the study, their selection and description; the sources of data, the different instruments used to generate information and the statistical methods and techniques used for in-depth interpretation of data. The researchers used the stratified sampling so we can group the population into 5 and lessen the number of respondents that we needed. The researchers grouped the whole population into 5 groups based on their section. Sections A-E has a total of 40 students each while section F has a total of 22 students only, so with accordance to stratified sampling, the researchers exclude the section F as a part of the respondents and only focus on the remaining 5 sections as the whole population. The researchers used the Slovin formula to solve the number of respondents that will represent as the whole population. With a number of 200 students as the whole population, the researchers used 0.08 or 8% as their margin of error with a confidence level of 92% to lessen the amount of the respondents the they will be needed. After conducting the Slovin formula, the researchers come up with a number of 90 respondents as their new whole population.The respondents of the study are selected students of Grade 12 STEM students of Saint Benilde International School. They are the main subjects of this study. The researchers aim to get the different internet connections of the students. The study also funnels the common problems the students have, in which the students themselves will have to clarify their common problems. The researchers selected ninety (90) STEM students, which are the eighteen (18) students from each of the five (5) sections of the STEM strand.

The researchers used a survey questionnaire in conducting the research. A survey questionnaire is a type of gathering method that has a set of questions and the respondents would check their answers about the said topic. A multiple choice, yes-no questions, Likert scale, and a checklist type of questionnaire was used which have 5 categories: never, rarely, sometimes, often, very often and always. Through this survey, the researchers will able to

The researchers included the profile of the respondents on research questionnaires in terms of the respondents age and gender. Specifically, gender choices are labeled with a male or female. Age choices range from 16 to 18 years old and 19 to 22 years old.

After the approval of the research title and its format indicator, the researchers sought permission to confirm their instrument to the professor and administrators of Saint Benilde International School Inc. After the confirmation of the instrument, researchers stated the purpose of the study and proper instructions in the instrument used to get the needed response of the selected respondents. The total respondents of this study are 90, 18(STEM A), 18 (STEM B), 18 (STEM C), 18 (STEM D), and 18 (STEM E) that will be the source of data collection of the researchers. The selected respondents can only use their respective SBIS account to access the survey-questionnaire given by researchers through Google forms. After the submission of answers of the selected respondents, researchers gathered the data for the analyzation, interpretation and sum of the collected data.

RESULTS

90 students from Saint Benilde International School were surveyed to cite their insights about the stability of their internet connection prior to their academic performance. The result of the analysis of the data from all respondents is presented. The stability of the internet connection of students is enough to sustain online classes. The speed of the internet connection of most of the students in SBIS is fast, with 72.1 percent (3-indicating fast,4-indicating very fast). Compared to the students with poor internet connection consisting of 27.8 percent (1-indicating very poor,2-indicating poor). (Table 2)

Table 2. What responses of grade 12 STEM students that find it hard on using the internet or data connection as a learning medium?

Table 2

Respondents	Frequency	Percentage
Not likely	25	25.8%
Somewhat likely	65	67%
Very likely	7	7.2%

The students of SBIS infrequently experience unstable internet connection.

With 53.6 percent(sometimes),23.7 percent (rarely), with 3.1 percent (Never) with a total mean of 80.4 percent. Compared to the students who experienced it always (4.1 percent) and very often (15.5 percent). (Table 3)

Table 3. How often STEM 12 students is experiencing unstable internet.

Table 3

Unstable Internet	Frequency	Percentage	Rank
Always	4	4.1%	4
Very Often	15	15.5%	3
Sometimes	52	53.6%	1
Rarely	23	23.%	2
Never	3	3.1%	5

The network access of most of the students is Wi-Fi.

79.4 students use Wi-Fi to sustain their online class compared to the 20.6 percent students who use mobile data. (Table 4)

Table 4. From which internet connection does STEM 12 students have access with.

Table 4

Internet connection access	Frequency	Percentage	Rank
Mobile Data	20	20.6%	2
Wi-Fi	77	79.4%	1

The speed range that most students have accessed with is 10-50 mbps.

With a mean of 80.5 percent, with the most accessed speed range which is 10-15 mbps with 35.1 percent, and 22.7 percent for both 15-25 mbps and 25-50 mbps. Compared to the students who only have access to 5-6 mbps with only 4.1 percent. (Table 5)

Table 5. The speed range of the internet that STEM 12 students are using.

Table 5

Internet Speed Range	Frequency	Percentage	Rank
10-15mbps	34	35.1%	1
15-25mbps	22	22.7%	2
25-50mbs	22	22.7%	3
50-100mbps	9	9.3%	4
100mbps above	4	4.1%	5
30 mbps	1	1%	7.5
5 mbps	3	3.1%	6
6mbps	1	1%	7.5
Lower than 10mbps	1	1%	7.5

The problems that the students frequently face or encounter are the following: internet connection stability affects the learning of the students, Unstable internet connection can exacerbate/worsen the outcome of students' academic performance in school, Unstable internet connection leads to inability to participate in the class discussion with a total mean of 97 percent. While problems like "Due to an unstable internet connection, I was not able to pass all my requirements before the deadline." and "Weak internet connection resulted to unmotivated to do the learning tasks given." has a total mean of 79 percent, still high and considered as problems that students can still encounter.

These problems can affect the student's academic performance, with a total mean of 88 percent. Implying that instability of internet connection can significantly affect one's academic performance. (Table 7)

Table 7. Most of the problems that students are facing prior to the stability of their internet connection & Relationship between stable network connection and academic performance of STEM 12 students.

Table 7

Problems	Strongly agree		Agree		Disagree		Strongly disagree	
	F	P	F	P	F	P	F	P
Unstable internet connection leads to inability to participate in the class distribution.	33	34 %	61	62.9 %	3	3.1 %	0	0%
Due to an unstable internet connection, I was not able to pass all my requirements before the deadline.	12	12.4%	65	67 %	19	19.6%	1	1%
Unstable internet connection can exacerbate /worsen the outcome of student's academic performance in school.	31	32 %	63	64.9 %	3	3.1 %	0	0%
Weak internet connection resulted to unmotivated to do the learning tasks given.	21	21.6%	56	57.7 %	19	19.6%	1	1%
Internet connection 's stability affects the learning of the students.	28	28.9%	67	69.1 %	2	2.1 %	0	0%

Giving the ppt's or the materials that were used in the lecture is the activity that is to be proposed to enhance and improve the asynchronous learning method of SBIS.

Compared to "Reviewing of last discussions", "Utilizing Facebook and

Messenger as a venue for communication even using mobile data only", "Utilize Asynchronous Classes, Uploading of Video recordings of previous lesson", and others. (Table 8)

Table 8: Enhancement activities that can be proposed to improve the Synchronous Learning Method of Saint Benilde International School.

Table 8

Activities	Frequency	Percentage	Rank
Giving the ppt's or the materials that was used in the lecture.	87	89.7%	1
Reviewing of last discussions.	43	44.3%	4
Utilizing Facebook and messenger as a venue for communication even using mobile data only	47	48.5%	3
Utilize Asynchronous Classes	29	29.9%	5
Uploading of Video recordings of previous lessons.	53	54.6%	2
Other	3	3.1%	6

DISCUSSION

The researchers concluded that many students use Wi-Fi that has a stable internet connection with lowest and affordable price. In this pandemic, the internet is very useful for education purposes, since everyone is still experiencing quarantine. Teaching and learning through the internet are the most efficient way to avoid contact between the learners and the teachers. This study explored the stability of internet connection of students, their relationship, and the recommendations that can improve the use of internet as a learning medium. Survey results shows that there was a significant relationship between the stability of internet connection and the academic performance of the students. The results in survey questionnaires stated that unstable internet connection can worsen the academic performance of the students. A lot of students was struggling because of the problem that was caused by the unstable internet connection. That's why the researchers explore and did this study. A study from Niger State, Nigeria by Jibrin, Musa and Shittu (2017) concluded that the problems faced in the use of internet, they found out that the problem that most people had was power failure and slow internet speed. The researcher's study and the study from Nigeria had a same problem of slow internet speed resulting to shuttering or misunderstanding. The researchers had limited time and out of focus, because of pressure from different subjects. The researchers recommend the future researches to focus more on studying by making their own way to be productive like self-teaching, have a simple yet broad topic, don't pressure yourselves and always remember that the most important thing is your doing your best. Also, the researchers include to this topic that most of their recommendations is pertaining to the teachers. The researchers want the teachers to improve their way of teaching and treating the students, and they have to make sure that the students have clear understanding about everything that they taught and on their activities.

CONCLUSIONS AND RECOMMENDATIONS

Many STEM 12 students from SBIS uses Wi-Fi that has a stable internet connection with a speed range of 10-15mbps which is the lowest and the most affordable price in purchasing an internet plan. Unstable internet connection causes a lot of problems for the students like lagging, disconnection, etc. that can lead to inability to participate in the class or being late in passing requirements before deadlines. Survey results shows that there was a significant relationship between the stability of internet connection and the academic performance of the students. The results in survey questionnaires stated that unstable internet connection can worsen the academic performance of the students. It is also stated that weak internet connection resulted to unmotivated the students in making their assigned works which is bad for the learning of the students. Effectiveness of the online synchronous learning method was more less effective than the traditional one which is why the researchers proposed some of the Activities that can help improve the online synchronous learning method like giving the ppt's or the materials that was used in the lecture and reviewing of the last discussions.

1. Uploading of video recordings of previous lesson to let other students have a chance to study what part of the lesson they left behind while they're experiencing any internet connection problems like lagging or disconnection.

2. Sending instructional procedure to every student about the new system management in using technology and internet as a learning medium to educate and help them move on faster from the struggles of on how to use internet and technology as a learning medium.

3. Reviewing of the last discussions before starting a new lesson so everyone can be reminded of the last discussion they had, and to assure that anyone who did not understand some parts of the last discussions will be given the chance to be answered by their teacher.

4. Giving the ppt's or the materials that was used in the lectures so anyone can have access to the materials or the ppt's that was used and the students can review or study the discussed lesson for more clear understanding.

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