

Struggles of Senior High School Students in Doing Science-related Tasks

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Abstract — This study was conducted to determine the struggles of the Senior High School students in performing science-related tasks, their coping mechanisms, and their insights gained. This study employed a qualitative-narrative approach in gathering the data of 10 senior high school students of the school year 2017 to 2019 in one of the secondary public schools under Cluster 7 of Davao City. The results were analyzed using thematic analysis of the data gathered from focus group discussion and in-depth interview. The struggles of the senior high school students in performing science-related tasks include struggle when searching for better internet access, difficulty in searching for appropriate learning resources, and struggle associated to additional financial burden. The major findings for their coping mechanisms include finding a safer mode of transportation when searching for a better internet access, seeking alternative learning resources and looking for ways to lessen the expenses used to pay their internet. The perspectives of the students after overcoming these struggles include the importance of being resourceful, how browsing the internet for learning can be expensive, the poor learning experience offered by makeshift rooms, and the need for better transportation when searching for better internet access. It is implied in this study the need to provide additional learning resources for the students and the need of stakeholders' support to alleviate the struggles experienced by the students in doing science-related task.

Keywords — *Struggles in science-related tasks, science education, senior high school, student perspective, narrative study*

I. Introduction

Students undeniably face several struggles on the course of their academic career. In the case of my senior high school students, some of these struggles are beyond what the school could offer to solve the problem such as no internet access and lack of availability of learning materials in learning a subject. The interplay of these factors have a significant effect on their learning especially towards the science subject (as science is objective in nature and requires factual information obtained from various sources). Consequently, this serves as a dilemma on how a teacher can improve the quality of learning of the students while considering their perspective in relation to these existing problems.

The factor that plays an important role under this dilemma is the increasing gap between students who have readily access to information and those who do not. Students who have very low accessibility to information and technology are at disadvantage that creates an adverse effect

in their learning (Musni-Tagaytay, Panganiban, & Jayson, 2017). In relation to the problem, Blaauw (2016) argued that it is important for the teachers to listen to the perspectives of the students to find out what may be behind their frustration and their subsequent struggles to achieve academically.

Similar problem is also reported in other countries such as in United States. One example of the gap that exists between those who have readily access to the information and those who do not occurs in the assignments or homework of the students. Several researches have pointed out the existence of “homework gap” (including in science subject) between those students with easy access to information at their homes and to those who do not. Students who do not have access to these information (whether at school or at home) are forced to forgo the safety of their homes to venture out areas with access to the internet signal (Mclaughlin, 2016). The study of Vigdor, Ladd, and Martinez (2014) noted that previous studies in concern for this existing gap emphasized that there is a need for policy makers to broaden the access to home computers to narrow these achievement gaps.

In the Philippines, with the latest 2018 result of the Program for International Student Assessment or PISA, the country ranked very low among the 79 countries which participated in the said assessment (Businessmirror, 2019). Imam, Mastura, Jamil, and Ismail (2014) have already suggested that students should be given in-depth instruction and opportunities such as hands-on activities on science concepts. However, these opportunities are sometimes reduced as a result of lack of access to technology and information (de Dios, 2012).

In Davao City, where I am currently teaching, I am also facing the dilemma of how to improve the quality of education of my senior high school students in performing science tasks knowing that these gap exist. The interest of the students in learning science is mostly affected due to this lack of availability of learning materials. A person most likely performs the task if he possesses the knowledge and the skills to do so and there is no environmental constraint in performing the task (Montano, 2015).

Other existing literatures were also based on the perspective of educators. In other words, the majority of the identified struggles are based on the perspective of the teachers and not of the students. It is important to consider the perspective of the students as they are the one who are experiencing the phenomenon, they are the ones who experience the struggles of doing the science tasks despite the existing environmental constraints. Blauuw, Rudduck and Fieding (2016) supported this idea of hearing the perspective of the students, as the current popularity of this type of research can lead to quick compliance – to a quick response that focuses on “how to do it” rather than a reflective review of “why we might want to do it”.

The related studies presented construct a picture of how several factors contribute to the struggles of the senior high school students in their science tasks. By understanding the phenomenon, we are shedding light on their struggles that could limit their knowledge and skills

(Musni-Tagaytay et al., 2017). Furthermore, by exploring the phenomenon, educators who face similar problems can formulate solutions without spoon-feeding the students with information as to their final resort to alleviate the situation. The goal of the educational process is to produce self-directed, lifelong learners who are in charge of their own learning rather than to perpetuate dependency on their teachers (Grow, 1991 as cited in Al-Saadi, 2011).

De Borja and Marasigan (2020) have noted that there exists a notable research gap regarding the challenges faced by the students in performing science-related tasks (such as laboratory learning sessions) that should be done encompassing other remote areas. The present study could render more information on this matter. In similar manner, it is also important to consider the perspectives of the students (Blauuw, 2016).

Hence there is a need to bridge this existing gap in the students' perspective in performing science-related tasks. Hearing the perspective of the students would allow us to gain insight into the struggles that they face concerning science research tasks. I believe that the information that they will provide goes beyond what the teacher already knows, going beyond what is obvious and providing us with newly-discovered information according to the perspective of the students.

This research study aimed to identify the struggles of the senior high school students of one of the secondary public schools in cluster seven of Davao City in doing their science-related tasks under the school year 2017 to 2019 before the Covid19 Pandemic. It specifically aimed:

- to describe the struggles of the senior high school students in doing their science-related tasks;
- to discover the coping mechanisms of the senior high school students in relation to their academic struggles; and,
- to explore the perspectives gained by the senior high school students based on the struggles in doing science-related tasks

II. Methodology

Design - The study conducted was in the form of qualitative research, specifically a narrative study. In this research, the students were given the opportunity to narrate their experiences in doing their science-related tasks, their struggles, coping mechanisms, and perspectives gained through an in-depth interview and focus group discussion conducted through an online communication platform.

Sampling - There were a total of ten grade 11 students interviewed in this study and were chosen through a purposive sampling technique that thus, met the selection criteria. The study only

chose the grade 11 students as the grade 12 curriculum does not currently offer science subjects unless they belong to the STEM strand for senior high school.

Research Procedure – Before the conduct of the study, a formal letter asking permission to conduct the study was submitted to the Schools Division Superintendent of Davao City, upon approval of the permit, another approval was obtained from the school principal of the students that will be participating in the research. Informed consent and Assent were then obtained from the participants of the study. After all legal permits were obtained, the interview was conducted through an online communication platform in which the schedule was convenient for the students and did not disrupt their schedule allotted in their studies.

Ethical Issues – This research strictly followed the guidelines by the Research Ethics Committee of Holy Cross of Davao College as well as the guidelines mandated by the Division Office of Davao City.

Data Analysis - In this research, the senior high school students that participated belong to the general academic strand. Their result was analyzed through thematic analysis based on the frequency of their responses.

III. Results and Discussion

This study aimed to explore the struggles of senior high school students in doing science-related tasks, their coping mechanisms to these struggles and perspectives gained. The major themes for the study conducted are discussed in details below.

Struggles of Senior High School Students in Doing Science-related Tasks

The results of the interviewed grade eleven students show three major themes in their struggles in performing science-related tasks. The first major theme is the struggle when searching for better internet access with two subthemes, hardships of travelling unsafe road terrain and the hardships caused by bad weather condition. The second major theme is the difficulty in searching for appropriate learning resources with three subthemes which are struggle looking for books fitting their grade level, yearning for more science equipment and looking for science laboratory. The third major theme is the struggle for additional financial burden with two subthemes, struggle paying for internet load and the struggle paying for transportation.

Struggle when Searching for Better Internet Access

The interviewed students argued that they struggle on looking for appropriate learning materials to complete their science-related tasks and so, they consider searching over the internet as they believe that it can provide them a quicker solution in order to complete their science-related

tasks. Subthemes revealed that students encounter hardships of travelling unsafe road terrain and hardships caused by bad weather condition in order to reach the area with better internet access.

Hardships of travelling unsafe road terrain. The students argued that they use the internet in order to find for alternative learning resources to complete their science related tasks, they encounter the struggle related to the hardships of travelling unsafe road terrain as the location of the Barangay has no internet access. Students need to travel few kilometers away from their home in search for an internet signal, encountering unsafe road terrain specially as not all roads are well-developed and becomes muddy during the rainy season.

Hardships caused by bad weather condition. Other than the unsafe road terrain which the students need to travel in search for internet access to complete their science tasks, they are also complaining that there are sometimes that the weather is not good when they venture outside in search for a better internet connection. The interviewed students argued that there are times that they are soaked wet because of the heavy rain. This rain does not only increase the risk of vehicular accident as not all roads they travel are cemented but can also affect their health. This is a problem that seems to be unrelated to performing science-tasks but are experienced by these students as they venture out in search for internet connection as an alternative learning resource.

Difficulty in Searching for Appropriate Learning Resources

Most of the relevant literature argued that the Philippines is not yet ready for the K12 curriculum as most of the schools need books, facilities, and other equipment (Mallorca, 2017). Because of this dilemma, students are complaining on how they search for appropriate learning materials that fits to their grade level. Based on the claim of the interviewed students, the subthemes revealed that students' difficulty in searching for appropriate leaning material include struggle for looking for books fitting their grade, yearning for more science equipment and looking for science laboratory.

Struggle looking for books fitting their grade level. Based on the interviewed grade 11 Senior High School students, they argued that they need to look for books that fits to their grade level as majority of the books provided by the school library are for college level as they have only been donated by several stakeholders. Furthermore, the students also added that their opportunity to supplement their learning experience is being compromised as they struggle for looking for grade-level appropriate materials including the opportunity to validate the lessons taught by the teacher and to reinforce the understanding of the lesson. This struggle could result to the poor achievement of the students in the science curriculum. The poor quality of the science education can be a reflection of the inadequate instructional materials such as textbooks (Rogayan & Dollete, 2019).

Yearning for more science equipment. Other than searching for books that are appropriate to the grade level of the students, it was also found out that they also yearn for more science equipment to be used during laboratory experiments. The students argued that they need more

science equipment as there are some that are not functional resulting to the need to share with their fellow classmates such as microscopes and other science apparatus to be used during an experiment. Furthermore, the students also added that it is not only the laboratory apparatus that seems to be lacking but other safety gears such as laboratory gowns safety goggles and others.

Looking for a science laboratory. Science is a systematic body knowledge based on facts, this means that it is important to reinforce our understanding with evidence in search for objective truth. This can be achieved by performing laboratory experiments in order to reinforce the understanding of the students with regards to science concepts. The problem however is that some students are deprived by this opportunity to be fully equipped by the experience provided by laboratory experiments. These students argued that they would like to perform more experiments in science however they are derived by this opportunity due to the unavailability of science laboratory.

Struggle for Additional Financial Burden.

As internet seems to be a better alternative for the students looking for appropriate learning materials, another struggle that the students encounter in additional financial burden. Based on the interview of the students, subthemes revealed that they struggle for paying for internet load and as well as paying for the transportation fees.

Struggle paying for internet load. The interviewed grade 11 students did not only explain how they struggle on travelling the unsafe road terrain on order to look for better internet access, they also added that browsing the internet can also be expensive. According to the students, they need to spend their pocket money amounting to 30 to 50 pesos which is supposedly intended for their recess and lunch. These experiences of the students paying expensive fees just to browse the internet is also commonly experienced by the students of our country and this could lead to achievement gap. Those who have lesser economic means to pay the fees for internet load may lead to poor educational outcomes (Cleofas & Rocha, 2021).

Struggle paying for transportation. Other than the internet fees, the interviewed students also explained that they also struggle for paying the transportation fees. According to the students, walking the destination where the internet signal is better is almost impossible as it is several kilometers away from their residence. With this, they need to ride the “Habal-Habal” or the motorcycle to reach the destination and so they need to pay the fees for the gasoline. Furthermore, the students also added that they are obliged to pay for the gasoline to be used for the gasoline as it would be unfair for the driver just to ride without splitting the expenses.

Coping Mechanisms of Senior High School Students In Relation to their Academic Struggles

To answer the second objective, the first major theme on the coping mechanisms of the senior high school students is to find a safer mode of transportation with subthemes, ride a motorcycle with an experienced driver and hitching a privately owned vehicle. The second major theme for the second objective is seek alternative learning resources with three subthemes, browse information from the internet, seek aid from teachers, and look for available room to conduct experiments. The last major theme on the coping mechanism of the senior high school students is look for ways to lessen the expenses with two subthemes which are by sharing expenses with classmates and ask money from parents

Find a Safer Mode of Transportation

As the students need to search for Internet in order to look for information online, they need to deal with the problems associated with the terrain. As there are some parts of the road that were not cemented and some parts are too steep making it riskier to travel. The students however, have a means to coping with the problem and by riding the motorcycle with an experienced driver who knows how to maneuver the vehicle well and by hitching a privately owned vehicle

Ride a motorcycle with an experienced driver. According to the interviewed Senior High School Students, in order to avoid accidents associated with riding the motorcycle, they are making sure that they make sure that driver who will maneuver the vehicle is a veteran with years of experience in travelling the area in order to for them to reach the area with a better internet access to complete their science-related tasks safely.

Hitching a privately owned vehicle. Other than riding a motorcycle with an experienced driver, the interviewed senior high school students also shared that they also hitchhike a privately owned vehicle which is actually safer for them than riding a motorcycle. Furthermore, the interviewed students argued that they hitchhike privately owned vehicle in order to reach their destination with a better internet connection. According to them this is much safer as they are riding a four-wheel vehicle which is safer according to them compared to a motorcycle.

Seek Alternative Learning Resources

As the learning resources found in the library are not fitted to the Senior High School students, they argued that they have no choice but to seek alternatives in order to complete their science-related tasks. The subthemes revealed that these students browse the internet in order to search for information, seek aid from teachers, and look for available room to conduct experiments.

Browse Information from the Internet. Undeniably, Internet is one of the alternatives of the students in searching information to complete their science tasks. Based on the in-depth interview, the students travel few kilometers in order to search for internet access so they can browse the internet in order to complete their science-related tasks. Furthermore, the students also added that

the local library is not enough in order to perform these science tasks and so they venture outside the safety of their homes in order to search for better internet access.

Seek aid from teachers. Other than the internet, the students also seek help from their teachers in order to complete their science-related tasks. According the interviewed Senior High School students, the teachers are willing to answer their questions related to science.

Look for available room to conduct the experiments. The interviewed grade eleven students explained that since there is no available science room for them to conduct experiments, they find vacant room to set up the science equipment to perform the science activities. They claimed that their own classroom is not spacious enough and so conducting the experiments in the hall way just in front of their room is a better alternative option. However, they also added that this creates another problem as setting the equipment for the science experiment is time consuming and the curious onlookers are also making them uncomfortable.

Look for Ways to Lessen the Expenses.

Majority of the interviewed senior high school students admitted that the use of the internet is an effective source of reference in order to complete their science related tasks such as their PowerPoint presentation. However, the use of internet also leads to another dilemma concerning additional expenses for the students. The students presented a unique coping mechanism to deal with the problem. It turns out that it also takes to a cooperative effort in order to lessen the amount of additional expense they need to pay.

Ask money from parents. The coping mechanism shared by the students is the idea that they ask for additional money from their parents other than what is allotted for their snacks. The students shared that they ask for additional money from their parents as they need to pay 30 to 50 pesos just to browse the internet in order to complete their science-related tasks. As there are limited learning resources provided by the school, students are forced to find other means of solving the problem such as browsing the internet which costs additional money for them.

Share expenses with classmates. Other than asking money from their parents, the interviewed senior high school students also claimed that they share the total cost of expenses together with their classmates in which the money is needed for their internet. The Majority of the interviewed students argued that the best way to cope with such problem is by “Chipping in” or by equal contribution of the group members with a fair amount of money to the total expenses.

Perspectives Gained by the Senior High School Students Based on the Struggles in Doing Science-Related Tasks

Despite all the struggles experienced by the interviewed senior high school students, the results showed that they are still eager to learn the science subject but they also emphasized the need for a better learning resources. Figure three shows the themes based on the conducted

interview. The themes were presented separately as they could not be grouped to a larger and more encompassing major themes. The themes are as follows: (a) Have a better mode of transportation when searching for better Internet connection. (b) Be resourceful in finding alternative learning resources, (c) Browsing the Internet is Effective but also Expensive, (d) Using Makeshift Rooms as Laboratory Offers Poor Learning Experience.

Have a better mode of transportation when searching for better internet connection.

According to the interviewed grade 11 students, one insight that they have gained after facing the struggles in performing science-related tasks is to have a better mode of transportation when searching for a better internet connection to complete their science-related tasks. The students believe that a better mode of transportation other than a motorcycle will be a safer means for them in order to reach their destination as they argued that not all roads within the barangay is well developed and even becomes risky especially during the rainy season.

This insight of the students should be taken in to consideration so the teachers can formulate solutions such as seeking help from stakeholders such as the barangay where they can provide scheduled transportation for the students to help them reach the area with a better internet access. This experiences shared by the students is a proof that they need to risk their safety, venturing outside their home just to complete their science-related tasks. Furthermore, this risks also include their health as there are times they are soaked wet due to rain.

Be resourceful in finding alternative learning resources.

When the senior high school students faced problems regarding the inadequate learning materials which served as a hindrance to their learning the science subject, majority of them believed that they should also find ways in order to search for these lacking information and should not only settle to what is given by the teacher. According to them ways of becoming resourceful includes asking their neighbors who have already undergone the science related tasks during the previous year and searching over the internet as the school library cannot provide all the information needed in their science tasks.

What the students shared about becoming resourceful is indeed heartwarming as it is only important not only for the students to fully grasp the

Rooms as Laboratory Offers Poor Learning Experience. lessons taught by the teacher but also to maximize the use of available resources for their learning. The students who claimed that it is important for a student to search for information that is not available is a clear manifestation of Identity-congruence motivation as described by Oyserman (2015). These students believed that they can pursue their goal to perform the science-related tasks in relation to how they view their identity (who can complete the tasks despite the challenges). This also means that these students will not be hindered to perform the science-related tasks even though there are lack of learning

resources in the school since they believe that they can still accomplish their task despite these challenges.

Using makeshift rooms as laboratory offers poor learning experience.

Another insight gained by the students is that using makeshift rooms as an alternative for a laboratory offers a poor learning experience. Since there are no available rooms present for the students to conduct their lessons, they are making use of other vacant rooms since it is much comfortable compared to conducting in their homeroom where there is not enough space.

According to the students interviewed, makeshift classrooms offers a poor learning experience for several reasons. First, there are curious onlookers from the Junior High School that can disrupt the classes due to noise. Second, since there are no facilities from an actual laboratory room, they need to fetch water from other building to be used in their experiments. Third, they need to bring the science materials to the makeshift room and set them up which also consumes time which is supposedly allotted for the students' experiment period. Furthermore, the students also added that they would feel comfortable if there is an actual science laboratory room where they can conduct experiments further for those who wish. This insight of the students should be taken in to consideration as the use of makeshift rooms can hinder the learning experiences of the students in the science subject.

Browsing the internet is effective but also expensive.

Another perspective gained by the students in performing their science related task is that as they need to become resourceful in finding alternative learning resources to complete their science related task and internet is a good option but it can also expensive at the same time. According to the students, they need to spend around 30 pesos to 50 pesos for their pocket Wi-Fi just to search the internet and this adds additional financial burden to them. Furthermore, the students also added that browsing the internet is not the same to what is being offered by social messaging applications where it can be done for free.

Related literatures also argued that the economic status with regards to access to the internet plays a major role to the achievement of the students such as in specific demographic rural areas. The students who cannot afford the burden of paying the expensive the internet browsing may lead to poor academic achievement (Cleofas & Rocha,2021). This is an issue that needs to be addressed as there is an increasing gap in academic achievement in terms of socioeconomic status of the students.

IV. Conclusion

Based on the result of the study, the major implications to be addressed are presented below.

It is implied that the appropriate learning materials are very important for the students in doing their science related tasks. Unavailability of science laboratory, printed books, and internet may hinder the students in completing their science related tasks such as how the students argued how makeshift laboratory rooms offers poor learning experience. As a result, students are finding alternatives in order to alleviate their problem. However, the struggles encountered by the interviewed students served as an avenue becoming resourceful in finding alternative learning resources and they take it as a positive outlook to be more eager to learn despite the struggles.

It is also implied in this study the importance of a better means of transportations as the students argued that in order to complete their science-related tasks, they need to search for a better internet access. They argued that their safety is being compromised due to bad terrain as they venture outside the safety of their home just to search for internet signal to complete their science related tasks.

Another implication of the study is that the results revealed that the students face another struggle concerning additional financial burden as they perform their science-related tasks. They argued that browsing information related to these science-related tasks online can also be expensive. As a result, students find ways to alleviate the financial burden with the help of their classmates and their parents.

Future directions may be forwarded to the school and the stakeholders to assess the quality of learning materials as the students argued that the learning resources such as books are not appropriate to their grade level. The school head and the teachers could also work hand-in-hand in order to mobilize the budget for the construction of science laboratory for the students.

As this research is conducted in one of the secondary public school of Davao City, similar research may be conducted to neighboring the clusters in order to determine if other senior high school students also face similar problems. Future research may also be conducted in quantitative design in order to quantify the extend of the struggles of the senior highs school students in performing science related tasks.:

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