EXPLORING THE FACTORS BEHIND TEACHERS' AND STUDENTS' BIOLOGY PERFORMANCE IN RURAL AREAS

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Abstract

This study explored the experiences of Grade 7-10 Biology students and teachers in the three school districts of the entire Municipality of Polanco, Zamboanga del Norte, SY 2019-2020 to identify factors behind their performance in Biology utilizing the descriptive-qualitative method of research. It was found that the academic performance of Biology students was satisfactory while Biology teachers performed very satisfactorily. Furthermore, emerging students' academic performance factors included social, personal and financial and learning resources. As regards the teachers' performance, school- related and teacher-related factors were found. Conclusively, the performance of students and teachers in Biology is the interface of multitude of factors ranging from the individual, colleague or peers and school level. There is a need to consider the range of factors to improve social, personal and financial among students and school and personal- related factors among teachers. With these results, this study recommends that DepEd may consider fully establishing Biology laboratories and plan for effective laboratory schedules. Teachers may consider attending training and seminars on teaching strategies in Biology. Finally, the guidance counselor office may initiate programs toward students' awareness on some personal challenges they face during their academic endeavors. Meanwhile, teachers may review the requirements of making projects and offer other alternative requirements.

Keywords: *biology performance, teachers, students, rural areas, science education*

Introduction

Science is very useful in different aspects of one's life. The development of scientific literacy provides students the inquiry skills, values and attitudes necessary in looking at the world systematically. This literacy is also significant in the development of the country's economic and cultural dimensions (SEI-DOST & UP NISMED, 2011). With this, there is a need to strengthen scientific literacy among students whether they are studying in urban or rural schools.

The Philippine Basic Education has recently been transformed through the enactment of the Enhanced Basic Education Act of 2013 – An Act Enhancing the Philippine Basic Education System by Strengthening Its Curriculum and Increasing the Number of Years for Basic Education, Appropriating Funds Therefor and for Other Purposes (Official Gazette, 2013), in order to equip Filipino learners with skills and competencies that address the demands of the 21st Century (Sarvi et al., 2015; Department of Education, 2019).

However, SEI-DOST and UP NISMED (2011) has noted the consistent low performance of many Filipino students in the international and national assessments. In

the 2018 Programme for International Student Assessment (PISA) result, Philippines got low mastery level in scientific literacy and the lowest in overall scores among participating ASEAN countries (Department of Education, 2019) while the performance of Filipino students in the National Achievement Test (NAT) "gravitates towards the low proficiency levels" according to DepEd Secretary Leonor M. Briones (Manila Bulletin, 2019).

The current curriculum holds the vision of developing students scientifically, technologically, environmentally-literate, and productive members of the society. However, the standards identified in the curriculum guide are far from the context of students' experiences which make learning less meaningful and achievable and affect student performance. There are cases when the learning activities in Junior High School Biology in particular do not readily match with the context of students in rural areas. The disparity in the school performance of students in urban and rural areas has already been noted in various studies. For instance, in the study of Bianchi et al. (2021) they argued that the 15-year-olds in urban schools in 37 countries performed better than students in rural areas. Similarly, Litheko (2012) had already seen the difference in the performance of both groups where students in rural areas were outperformed by their urban counterparts. When the attitude towards science was investigated, Susulawati and Hsiung (2013) revealed that students in urban areas had more positive attitude towards science compared to students in rural areas. It was for this reason that performances of teachers and students in biology in particular in rural areas in Polanco, Zamboanga del Norte were determined to describe their current scenario further, the factors behind such performances were discovered based on their experiences. A plan was also crafted based on the results of the study.

Methods

The study utilized the multi-method design. The survey design was used to determine the level of performance of Grade 7-10 students in Biology and the level of performance of the Grade 7-10 teachers in Biology during the SY 2019-2020. Survey design was appropriate as it is used to describe the characteristics of the respondents in terms of their performance and statistically analyzed the data for trends (Creswell, 2012). Alongside, the qualitative descriptive design of research was used using in-depth interview on the perception of teachers and students on their own level of performance in the field of Biology and the factors that lead to their performances. The interview was conducted among three (3) students who got the lowest, average and highest grades from each grade level and one (1) teacher who had the most number of teaching loads from each of the representative school to determine how they perceive d their performance in Biology. Documentary analysis was also done to determine the performance of the students in Biology by utilizing their grades in this subject during the SY 2019-2020 and teachers‟ performance was determined through their ratings in the Classroom Observation Tool – Results-based Performance Management System COT-RPMS during the SY 2019-2020.

In data analysis of qualitative part, the study was guided by Braun and Clarke (as cited in Maguire & Delahunt, 2017) steps in the thematic analysis. Thematic analysis is a way of identifying and allowing the data to reveal themes from the experiences of the

participants but it is more than simply making summary of ideas. The thematic analysis of Braun and Clarke provided a six-phase guide such as become familiar with the data, generate initial codes, and search for themes, review themes, define themes and writing up. Table 1 below presents the distribution of the respondents.

Table 1

Distribution of the Student Population in Polanco District during SY 2019-2020

Grade Level	District 1	District 2	District 3	Grand Total
	Polanco NHS Main	San Pedro NHS	Polanco NHS Ext.-Isis	
7	300	111	99	510
8	389	129	108	626
9	346	94	80	520
10	286	91	69	446
Total	**1321**	**425**	**356**	**2102**

The COT-RPMS rating was based on the scores given to proficient teachers since the participants were holding the position title ranging from Teacher 1 to Teacher 3. The COT rating and its RPMS 5-point scale was shown below:

5	Applying	3	2.500-3.499	Satisfactory
4	Developing	3	1.500- 2.499	Unsatisfactory
3	Organizing	1	below 1.499	Poor

The raw scores from the COT rating of the participants were given the RPMS 5-point scale equivalent and were interpreted using the prescribed adjectival rating based from the Results-based Performance Management System (RPMS) Manual for Teachers and School Heads of the Department of Education. Before the data gathering, the researcher sought the approval from the Schools Division Superintendent and an informed consent was presented and explained to the participants' parents or guardians. The presence of the parents or guardians was also sought during the interview. It was also emphasized that their participation was voluntary and all their responses were kept confidential. This study also used pseudonyms to conceal the identity of the participants.

Results and Discussions

Level of Performance of Grade 7-10 students in Biology

Table 2 shows that the overall level of performance of Grade 7-10 students in Biology is described as satisfactory as it belongs to grade scale 80-84 (83). All grade

levels have satisfactory level of performance except Grade 9 which is very satisfactory.

Specifically, most of the respondents in Grades 7 and 10 have grades within the range of 75-79 which are described as Fairly Satisfactory. On the other hand, most of the Grade 8 students have grades within the range of 85-89 which are described as Very Satisfactory while most of the Grade 9 students have grades within the range of 90-100 which are described as Outstanding making Grade 9 students to have the relatively highest average grade among the grade levels. The general performance of these respondents in a rural area in Zamboanga del Norte is relatively lower when compared to the collective Very Satisfactory science performance of grades 7-10 students in selected schools in Central Philippines (Babaylo, 2020). This suggests the need to improve their performance to fully achieve the intended learning outcomes.

Table 2

Level of Performance of Grades 7-10 Students in Biology

Grade 7							
***Descriptors**	***Grading Scale**	**f**	**%**	**Average Grade**	**Description**	**Overall Average Grade**	**Overall Description**
O	90-100	49	54.8039	81	Satisfactory	**83**	**Satisfactory**
VS	85-89	94	59.2157				
S	80-84	150	64.7059				
FS	75-79	175	67.1569				
DNME	Below 75	42	54.1176				
Total		**510**	**100.0000**				
Grade 8							
Descriptors	**Grading Scale**	**f**	**%**	**Average Grade**	**Description**		
O	90-100	108	58.6262	83	Satisfactory		
VS	85-89	167	63.3387				
S	80-84	154	62.3003				
FS	75-79	140	61.1821				
DNME	Below 75	57	54.5527				
Total		**626**	**100.0000**				
Grade 9							
Descriptors	**Grading Scale**	**f**	**%**	**Average Grade**	**Description**		
O	90-100	146	64.0385	85	Very Satisfactory		
VS	85-89	120	61.5385				
S	80-84	138	63.2692				
FS	75-79	101	59.7115				
DNME	Below 75	15	51.4423				
Total		**520**	**100.0000**				
Grade 10							
Descriptors	**Grading Scale**	**f**	**%**	**Average Grade**	**Description**		
O	90-100	64	57.1749	82	Satisfactory		
VS	85-89	115	62.8924				
S	80-84	108	62.1076				
FS	75-79	127	64.2377				
DNME	Below 75	32	53.5874				
Total		**446**	**100.0000**				

Legend:
O – Outstanding (90-100)

**Descriptors and Grading scale are based on DO No.8, s. 2015 (Please refer to Appendix B)*

VS – Very Satisfactory (85-89)
S – Satisfactory (80-84)
FS – Fairly Satisfactory (75-79)
DNME – Did not meet expectations (below 75)

Level of Performance of Grade 7-10 teachers in Biology

As clearly presented in Table 3, most of the Grades 7-10 teachers in Biology have a level of performance described as satisfactory followed by those having an outstanding level of performance. In general, these teachers have reached the very satisfactory level of performance (3.7335). This performance implies that teachers were able to connect well the pedagogical aspects of their teaching to their students‟ level of development. It means that teachers understood the developmental stage where their students belong and able to apply appropriate teaching strategies.

Table 3

Level of Performance of Grades 7-10 Teachers in Biology

Range	Adjectival Rating	Frequency	Ave. Rating	Adjectival Rating
4.500-5.000	Outstanding	2	3.7335	Very Satisfactory
3.500-4.499	Very Satisfactory	1		
2.500-3.499	Satisfactory	3		
1.500- 2.499	Unsatisfactory	0		
below 1.499	Poor	0		
	Total	6		

Note: the above rating was taken from the converted raw score in the COT-RPMS rating for proficient teacher (see also the discussion on research instrument)

Background of the Student-Participants

Table 4 shows the background of the student-participants with low, average, and high performance. As shown in the table, the student-participants came from various socio-economic backgrounds. Most of them resided within 1-5 km distance from school where the usual transportation is motorcycle while others walked just to reach school. All of them lived together with their parents and siblings except for Shiela and Mark who resided with their guardian and mother respectively. It can also be noted that Jay has the highest number of siblings (9). In terms of their parents' educational attainment, only two of the fathers are college graduate compared to three of the mothers while the rest either completed or only reached basic education. As such, majority of the family monthly income was within the PhP. 5,000.00 and below. It can be attributed to only few of them finished college degree and whose primary occupation are considered as low paying with only one family whose both parents mainly earned through their salaries. Despite their socio-economic situations, more than half of them spent their vacant time studying/reading and had access to potential educational resources such TV and cellphones. However, in terms of their interest, almost all of them are not into

Biology subject. The result on the educational attainment of parents living in a rural area is supported by Zamora and Dorado (2015) who concluded that in terms of educational attainment, rural areas in the Philippines continue to lag behind in their counterparts in urban areas. This situation according to them requires giving of importance of educational improvement in rural areas.

Moreover, the educational attainment and occupations of the participants' parents were well supported by the 2015 census conducted by the Philippine Statistics Authority [PSA] (2017). From the 14,227 population of 35 years old and over in the Municipality of Polanco, 2.31% had no grade completed, 0.06 reached preschool, 23.75% attended elementary, 21.65% completed elementary, 13.80% attended high school, 16.66% completed high school, 12.84% completed baccalaureate degrees and 0.16% attended post baccalaureate. Clearly, majority of those 35 years old and over either attended or completed basic education.

In the same census, the occupation of the participants' parents is also supported by PSA (2017) where it also found out that from the 15, 548 gainful workers in Polanco, only 14.32% were employed as managers, professionals and associate professionals while 42.10% were skilled agricultural, forestry and fishery workers and 24.32% were involved in elementary occupations. This distribution of the occupations in the census is also reflected in the data given by the participants.

Participants of the study

Table 4

Background of the Student-Participants

Name	Students with low performance				Students with average performance				Students with high performance			
	Shiela	**Mark**	**Jay**	**Nover**	**Adrian**	**Jade**	**Wilson**	**Mae**	**Joy**	**Shen**	**Ivane**	**April**
Age	15	15	15	19	14	15	16	17	14	15	16	17
Sex	Female	Male	Male	Female	Male	Female	Male	Female	Female	Female	Female	Female
Grade Level	7	8	9	10	7	8	9	10	7	8	9	10
Distance of the student's residence from school	1-5km	1-5km	6-10km			1-5km	less than a kilometer	1-5km	1-5km	1-5km	less than 1km	less than 1km
Mode of Transportation	motorcycle	motorcycle/ walking	motorcyle	walking	motorcycle	walking	walking	motorcycle	motorcycle	motorcycle	walking	walking
Living with whom	guardian	mother	parents/ family	parents/ family	parent/family	parent/family	parent/family	parents/family	parents/ family	Parents /family	parents/ family/ grandparents	parent/ family
Number of Siblings	2	6	9	3	2	3	5	0	2	2	2	2
Father-EA			HL	HL	EG	EG	CG	EL	HG	HG	HG	CG
Mother-EA	HL	HG	HL	EL	CL	EL	CG	EG	HL	HG	CG	CG
Family Monthly Income	5,000 and below	5,000 and below	5,000 and below	5,000 and below	5,001-10,000	5,000 and below		5,000 and below	10,001-15,000	5,000 and below	5,000 and below	15,001-20,000
Parents' Occupation												
Father			driver	farming	farming	farming	Business	farming	salary	farming	construction	salary
Mother	Farming	Sari2x store		housekeeper	housekeeper	housekeeper	Business	deceased	housekeeper		business	salary
Vacant Time	study/ reading notes	study/ reading notes	work	study/ reading notes	talk with friends	study/reading notes	talk with friends	study/reading notes	study/ reading notes	study/reading notes	study/reading notes, play	study/reading notes
Household Amenities	electricity/radio	electricity, cellphone, laptop, radio, wifi, TV	electricity, cellphone, radio, wifi, TV	electricity, radio, TV	electricity, cellphone, radio, TV	electricity, radio	electricity, cellphone, TV	electricity, cellphone, radio, TV	electricity, cellphone, laptop, wifi	electricity, cellphone, laptop, TV	electricy, cellphone, radio, wifi, TV	electricity, cellphone, laptop, radio, wifi
Hobbies	reading	playing sports	playing instrument		reading	drawing/painting	mobile games	reading, cooking	playing sports	reading	reading	playing sports
Science domain interested	none	none	Earth Science	Physics	None	None	None	Biology	Biology	Chemistry	None	Biology

Legend:
Father-EA – Father's Educational Attainment
Mother-EA – Mother's Educational Attainment
EL – Elementary Level
EG – Elementary Graduate
HL – High School Level
HG – High School Graduate
CL – College Level
CG – College Graduate

Background of Teacher-Participants

Table 5 presents the background of the teacher-participants. It can be seen in the table that only one teacher has a bachelor's degree in education related to Biology while the rest are second-coursers. They have earned units in master's degree; two of them with specialization in Biology while the other one is in Educational Management. All of them are Teacher 1 with more than 5 years teaching experience.

Table 5

Background of Teacher-Participants

Name	Rose	Ruby	Richard
Age	27	39	32
Sex	Female	Female	Male
Baccalaureate Degree	BSEd-Biological Science	BS Commerce with Prof. Ed. units	BS Nursing with Prof. Ed. units
Highest Educational Attainment	MA Biology - CAR	MA Biology - 27 units	MAEd-CAR
Position	Teacher 1	Teacher 1	Teacher 1
No. of years teaching science	5	8	6

Teachers' and students' perception on their performance in Biology

Tables 2 and 3 present the measured performance of both teachers and students in Biology class. However, there are aspects in their performance which cannot be captured totally by numerical values but can be effectively described through their actual experiences. Hence, the following are the experiences of both the teachers and students describing their performance in Biology classes.

Teacher-Participants' Perspective

Average: Knowledgeable. When asked about their performance in Biology class, Richard, one of the teacher-participants did not express his excellence in teaching the subject but he emphasized that he is knowledgeable and have no difficulty in the class. He said, "In my part, I didn‟t struggle really, then I feel that they [students] understood…The subject is related in Nursing. We have Biology subject in Nursing, so I used my previous knowledge. For me I am able, I am knowledgeable." Clearly, his

experience supported the teachers‟ general performance which is very satisfactory which means that a teacher was able to understand the context of the teaching-learning process having the background.

Poor: Needs Improvement. The experiences of the other two teacher-participants are different from the first one. They confessed that their performance still needs improvement in terms of their knowledge in laboratory activities, connecting the lesson to students and the deepening of the discussion. These descriptions are clearly expressed in the experiences of Teacher Rose and Teacher Ruby. Teacher Rose said, *"*need improvement Ma'am in terms of conducting laboratory activities where students can do hands-on, I don't have that, seldom only…I still need improvement Ma'am in grammar and knowledge to discuss deeper." Similarly, Teacher Ruby also expressed, "still lacking since I struggle…what should I do? Maybe the connection between me and my students?"

The experience of Teacher Rose and Teacher Ruby opens other aspect of the measured performance. Although they were rated in general as *very satisfactory but* the other aspect of their performance which is more internal in nature proves that they still need improvement as to how they can deepen and connect the subject to their students, which, for them, is really more relevant.

"Superior", Competencies are met. In Table 3, the general performance of the students is satisfactory yet; their measured performance can be further explained by their experiences in the subject. For instance, from all the student-participants, only Shen when asked about her performance in Biology and whether competencies are met expressed: "Achieved, Ma'am."

"Promising", difficult but can be surpassed. From the participants, two of them pointed out that even though the subject is not easy, but they can still do better. For instance, April said, "I feel that I can still do better." Similarly, Ivane related, "It's not easy but it can be learned, it can be handled."

"Poor", it is difficult. Despite of the positive side of their performance, still majority of the participants revealed that they have difficulty in the subject especially in mastering all the intended learning competencies. This is true in the experience of Jay, Nover, Wilson, Shiela, Danna, Mark, Mae and Ivane. For instance, when Wilson was asked about his performance and competencies, he said, "I really have difficulty on it…it‟s difficult to understand." Shiela and Danna both denoted that they only understood few topics. Shiela said, "for the topics I can only understand few." This is also true when Danna also said, "I can understand, few." Further, Mae's experiences added to this condition when asked whether she mastered the competencies in Biology, she said, "not well…since not all topics can be covered by our teachers." Even Ivanes shared a related experience when she also answered, "honestly Ma'am, not…for me not because there is still lacking, I still have [topics] which I did not understand."

Factors in Biology Performance: Experiences in the lens of the students

There are 49 codes composing 12 subthemes which in turn grouped into three themes created out of the experiences of the student-respondents presented in Table 6. These codes, subthemes and themes representing the factors were analyzed based on

their experiences. The themes revealed factors such as social factors, personal factors, and financial and learning resources factors. These factors are considered to be affecting their performance in Biology class. Among the social factors, teachers' teaching skills followed by access to laboratory equipment or model were seen to be the dominant factors in the performance of the student-participants based on their experiences. In terms of personal factors, doing further research and class interest came out to be mostly present among the student-participants. On the other hand, costs of project and internet connectivity were seen as main factors in terms of financial and learning resources in the performance of student-participants.

Table 6

Factors in Biology Performance as Experienced by the Students

Codes	f	%	Subthemes	Themes
Disturbance	3	25.00	Classroom Environment	Social Factors: *Social Environment Matters in Learning*
Sense of cooperation	2	16.67		
Project demands	1	8.33		
Access to laboratory equipment or model	5	41.67		
Class adviser's support	1	8.33		
Teachers' Teaching Skills	7	58.33		
Teachers' Attendance and Focus	1	8.33		
Support from parents	3	25.00	Network of social support	
support from classmates	1	8.33		
support from siblings	1	8.33		
support from relatives	2	16.67		
Peer pressure	4	33.33	Influence from Other people	
influenced by classmates	1	8.33		
Parental supervision	2	16.67	Family Factors	
Household chores	1	8.33		
Selflessness	1	8.33		
Doing Further study = did further study through research/web browsing and	9	75.00	Study Habits	Personal Factors: *One's Characteristics*

Codes	f	%	Subthemes	Themes
reading analysis				*Matters in Learning*
Focus in discussion	2	16.67	Discipline and Control	
Spending night roaming	1	8.33		
Not listening	1	8.33		
Being hard headed	1	8.33		
Talking to seatmates	2	16.67		
Tardiness	1	8.33		
Language Proficiency	1	8.33	Comprehension	
Retention	2	16.67		
Reservation	1	8.33	Confidence	
Shyness	2	16.67		
Courage to ask questions	2	16.67		
Class interest	5	41.67	Commitment	
Class attendance	2	16.67		
Project submission	3	25.00		
Time management	2	16.67		
Support from parents	1	8.33	Financial Requirement	Financial and Learning Resources Factors: *Financial and Educational Support Matters in Learning*
Cost of Projects	3	25.00		
Classroom reading materials	2	16.67	Availability of Educational Resources	
Educational resources at home	2	16.67		
internet connectivity	3	25.00		

Social factors: social environment matters in learning

There are five subthemes that support this theme such as: classroom environment, network of social support, influence from other people, family factors, and applicability or relevance of Biology. These factors point to the environment created by people surrounding the students.

Classroom environment. The experiences of the participants well described the classroom environment they have which is characterized by the disturbance, sense of cooperation, project demands, access to laboratory equipment or model, class advisers‟

support, teachers‟ teaching skills, teachers‟ attendance, class attention and teachers‟ fairness.

Disturbance. The students revealed that they experienced disturbance in the classroom such as noise from their talking classmates during discussions. This disturbance affects their class attention during discussion which resulted for them not being able to hear and understand their teachers‟ discussion. For instance Shiela said, “my gay classmate at the back is always laughing. At the back they are talkative and have loud voice…at the back, beside the boys, there’s a girl who keeps on talking about her boyfriend. That is when I was called by my teacher I cannot answer since I’m sitting there at the back with talkative seatmates.”

Sense of cooperation. Despite classroom disturbance, the sense of cooperation is still present in their classroom. The participants relayed that their classmates helped them in the class. For example Ivane said, “my classmates are okay since we helped each other.” Even Shen supported this experience when she said, “they will help”.

Project demands. The nature of school projects was also seen as a factor in the performance of the participants. Not only is the financial aspect of the project seen as an important factor in their performance but as well as the breadth of the project. This is true when Shen expressed, “There are a lot of projects, Ma’am, then I cannot deal with them all since there are priorities.”

Access to laboratory equipment or model. It is known that experiential learning especially in science subjects is important. Hands-on activities are required for students to apply theoretical concepts in science. However, the participants revealed that they either seldom or never have access to laboratory equipment as what is said by Shen, Jay, Joy, April and Mae. When Jay was asked whether he accessed laboratory equipment, he said, “Never Ma’am even once.” Similarly, Joy related, “No, Ma’am…I think we did not use the laboratory Ma’am…we were not able to use the microscope…only the parts of a microscope were taught.” Further, April said, “we did not do laboratory Ma’am, we did not experiment.”

Class advisers’ support. The class adviser’s support also became a significant factor in the performance of students especially when lessons are not properly delivered by the other teachers. Jay clearly expressed their experience about a teacher who is not performing well, “He was already being monitored by our adviser, since we told our adviser that he is not serious [in the class]. He was monitored by our adviser…if it is time for his class, our adviser will come and observe him.” Further, he also said that their adviser supports them.

Pedagogical skills. Just like other social factors, the skills in teaching were also found as a factor in the students’‟ performance in biology. This is confirmed in the experiences of Mae, Jay, Ivane, April, Danna, Joy, and Shen when majority of them expressed that they could not understand the way their teachers deliver the lesson. For instance, when Jay was asked about his experience in Biology class he said, “it’s the teacher’s teaching, Ma’am…still we cannot really understand, Ma’am.” Added to this, Mae also related, “then the teacher’s voice is soft… the next day the lesson will not be repeated, only a short discussion then will proceed to another lesson.” Further, the way her teacher delivered the lesson is a factor in Ivane when she discussed, “we are okay with my teacher, Ma’am but the way she teaches, I have a different view…since if you like her teaching, you can understand easily.” Similarly, Shen and

Ivane expressed that they cannot fully understand the lesson. Shen revealed, "During lesson, Ma'am, sometimes it is difficult since I cannot fully understand, it lacks explanation." Likewise, Ivane said, "there are topics I don't understand, Ma'am…but she's good in teaching, I just don't get much of her teaching." On the other hand, April commended her teacher, "He is very okay Ma'am, I can really understand Sir, he teaches nicely… he has some trivia Ma'am... it looks like he gave us another learning about the topic but it can't be found in the book… he will ask if we understand. Then he would repeat (the lesson) and explain the topic which is difficult for us)."

Teachers' attendance and focus. Teachers‟ ability to teach would be less significant if they are not attending classes. Hence, teachers‟ attendance is a factor in the performance of students. This is confirmed by Jay when he said, "he conducts class sometimes Ma'am… and gives us topics just sometimes during class…" Further, he said, "our science teacher Ma'am will not focus in our topic, he will just go there in my classmates who were boys…he will not discuss, he will just talk to the boys…that is why I don't want to attend his class, it's just the same, I will not learn."

Classroom environment hosts different personality types of students with unique characteristics. This environment includes the concepts of physical setting, psychological environment due to social contexts and instructional components (Miller & Cunningham as cited in Ezike, 2018). In similar context in the study, Ezike (2018) found out that there is a significant relationship between classroom environment and academic achievement in Chemistry. It implies that classroom environment as a predictor of academic achievement. This supports the participants experiences that classroom environment is a factor in their academic life. Furthermore, in the study of Malik and Rizvi (2018), they measured classroom learning environment in terms of student cohesiveness, teacher support, involvement or negotiation, investigation, autonomy, cooperation, equity, emphasis on understanding, and personal relevance. These measures of classroom learning environment are nearly the same with the experiences of the participants. Their study also revealed that the classroom learning environment in terms of teacher support, cooperation, student cohesiveness, involvement, personal relevance and emphasis on understanding were positively and significantly related with the academic achievement of students. The findings of the studies above entail that the participants were on similar vein of identifying classroom environment as a factor in their Biology performance.

Network of support. The support that the participants get from their parents, classmates, siblings and relatives also came out as factor in their performance. During difficult tasks or assignments, the participants reached out to the network of knowledgeable persons present in their social environment. The support of parents is apparent from the experiences of April, Adrian and Mark. April related, "My father will help me, Ma'am." Similarly, Mark said, "If I don't know, I will ask them [parents]." On the other hand, Joy asked the help of her sibling when she said, "I will search Ma'am then asked the help of my brother" while Adrian asked the support of his relatives especially when there is something he could not understand. Unlike all of them, Nover has no one to help her for her school work, she only rely on herself. When she was asked whether her parents helped her, she said, "only myself."

Parents who are supportive of their children's education are most likely to expect academic success. This is what makes network of support from adults a significant factor

in any academic endeavor. In the experiences of the participants, this network of support offers their financial needs and guidance. However, this support if absent can also detrimental in the academic life of the participants. The experience of the participan ts is supported by Chinweuba-eze (2021) who found out that there is a significant impact of parental support on student‟s‟ achievement in Biology. The involvement of parents is considered as a significant factor. Even the study of Shute *et al.* (2011) discussed that parents‟ involved in terms of school involvement, parent-teacher communication, parents checking child's homework, home supervision and rules, and reading at home have fairly consistent association with academic achievement.

Influence from other people. The influence of peers is also crucial in the performance of the participants. Their peers could either influence them positively or negatively. The experiences of Jay, Mark and Shiela illustrated how their peers influenced them to cut classes except April who was positively influenced by Froilan, "Froilan also liked biology, Ma'am. He influenced me since when we talk, we mostly talk about it." On the other hand Jay said regarding his peer, "my peers in Grade 9 provoked me since they also don‟t like Sir ---, they say we won't go in [the class] since it's the same, we cannot learn there, we will just go to the next class." Similarly, Mark said, "it would have been easy [Biology], just influenced by peers…when we arrived in school, we then proceeded at the back, at the basketball court…we will then be caught up by our teacher early in the morning." Further, Shiela related, "we are cutting classes together with my peers, since they will see me at my room even though I don't want to go out."

The experiences of the participants pointing to the influence of other people such as their peers on their academic performance corroborated with the study of Filade et al. (2019). Their study concluded that peer group has an important role in the students‟ lives. With the influence of peer, students have a tendency to be involved in risky decision - making. Students also are more likely to associate with peers of similar interest and are influenced even on the choice of clothes to wear and behaviors (Zimring, 1998; Iandau 2002; Ryan, 2002 as cited in Filade et al., 2019). Moreover, Moldes et al. (2019) divulged that a correlation between peer pressure and academic performance exist and suggested that students should face peer pressure optimistically to cope with its negative impact. Truly, the participants are affected negatively by their peers.

Family factors. Family related factors as well came out as factors in the participants‟ performance. These factors which include parental supervision, household chores and selflessness interfere in their time to focus in their study. For example due to parental supervision, Adriam was able to give time to study as he was being monitored by his parents. On the other hand, Shiela was overwhelmed by household chores that affected her time to study. She said, "I like to try hard to get it all [lessons in Biology] but I cannot do it since I have lots of chores in the house…I babysit. I'm absent everytime I have something to do in the house." Because of her selflessness, she thinks of her siblings over her study and could not pay attention during classes. She added, "I also think of my siblings having no food."

The connection of family factors in the academic performance of the participants is backed by the studies of Wang et al. (2022) and Jumasseitova et al. (2017). Wang et al. (2022) disclosed that the involvement of students in primary school

in housework has a greater positive impact compared to those in the Junior High School. Despite this difference it can still be deduced that housework or having household chores and other responsibilities is related to academic performance. It as well points that excessive housework is a burden to students. However, in the study of Jumasseitova et al. (2017), they revealed an opposite reality. They affirmed that most of their respondents having high academic performance were actually involved in housework at about two hours every day. Being involved in housework helped them understand time management to cope with the tasks they were in.

Personal Factors: One's Characteristics Matters in Learning

Aside from social factors in the performance of the participants, factors that are inherent within the individual are evident as well among the participants. These factors are considered as personal factors such as study habits, discipline and control, comprehension, confidence, and commitment.

Study habits. As part of the participants study habits to help improve their performance, they did further study through research/web browsing and reading analysis. Most of the participants who manifested having these study habits are those with average and high grade performance in Biology. For instance, Mae said, "I just researched in the internet, Ma'am since we don't have a book." Likewise, Ivane related, "When we did not understand [the lesson], I just let it go and browse the internet…reading articles in Google." Aside from searching in the internet, April downloaded videos in Youtube. She discussed, "I will browse then watch videos, I will also download videos from Youtube." Shen, Adriam and Danna gave time to study Biology. Aside from this, Nover did reading analysis to help her in the subject. When asked what she did in the subject, she said, "I will read it and analyze Ma'am." With good study habits, students can be successful in their academic life. This habit refers to how they study Biology. Ebele and Olofu (2017) found out there is a significant relationship that exists between study habits and academic performance of students in biology. It implies that a good study habit can result to better performance. According to Marc (2011), effective study habits can yield more efficiency academic environment. These studies reinforced the experiences of the participants that portrayed how study habit is considered as a factor in their performance in biology.

Discipline and control. The participants described how they showed discipline and control in their experiences. These two things are important factors in their performance which include focus in discussion, spending night roaming, not listening, being hard headed, talking to seatmates and tardiness. Among the participants who described having discipline and control, only one expressed having focus in discussion. April, having a high performance in Biology expressed, "I really focus Ma'am and listen to the discussion." On the other hand, two of the low performer participants described differently their discipline and control. For example, Shiela said that she spent the night roaming. Further, Nover said, "Sometimes Ma'am we don't listen since we just keep chatting…we will be reprimanded but we are hardheaded Ma'am." In the experience of Shiela, she also showed the lack of discipline for being tardy, she said, "I will be absent. If I will be late, I will not go to school anymore."

Having self-control can be advantageous to one's academic achievement especially when he/she faces alternatives whether to go to school or not. Duckworth et al. (2019) defined self-control to be the alignment of thoughts, feelings, and actions with enduringly valued goals in the face of momentarily more alluring alternatives. Clearly, if students have a clear goal in their studies, they will not be tempted to do activities that can fail such goal. With regard to self-discipline, the study of Jung et al. (2017) found that academic self-discipline mediated the connection between academic performance and self-efficacy. In other words, self-discipline has a profound role in the academic performance of students which the participants acknowledged in their experiences.

Comprehension. Problem on understanding and proficiency in English language was apparent in one of the participants. Joy relayed that sometimes she experienced difficulty in Biology due to the language, she said, "there were times Ma'am that I cannot understand English." Furthermore, Nover expressed that she has difficulty in retention, "maybe Ma'am, it really doesn't get into my mind, I cannot fully understand."

The experiences of the students above gave picture on the need for language proficiency in teaching-learning process. If students lack enough proficiency in grasping the ideas of the second language which is English in the case of teaching science, then a communication gap and confusion surely ensues. This contention is corroborated by Rahman et al. (2010) who found out in their study that there is a significant relationship between efficacy in second language and academic motivation with achievement in science. Further, they revealed the need to address the influence of socio-economic status on students' efficacy in language. Considering that most of the participants have low socio-economic status, their language efficacy can be affected. Hence, their performance in the subject is affected.

Confidence. As part of the personal factors, the participants' confidence also matters in terms when clarifying or asking further discussions during difficult lessons and when answering in oral recitation. The lack of confidence characterized as having reservation proved detrimental to the performance of the participants. Usually, from the experiences of the participants, those having low performance manifested this shyness and reservation. In the experience of Wilson, his reservation during class discussions is described in his words, "…when I don't understand Ma'am, I'm ashamed to talk to the teacher Ma'am." Likewise, Shiela's shyness affected her class performance as it prevented her to give her ideas during oral recitation or for clarification purposes. She shared, "when our teacher asked (oral recitation), I'm ashamed to answer…When I was called to stand, I will not stand as I am shy." She further said that she is already shy since childhood. Conversely, Joy and Nover noted that they both have the courage to ask questions especially when did not understand the discussion of their teacher. Joy uttered, "we asked [our teacher] Ma'am if our teacher can still explain it to us." Moreover, Nover expressed, "then when the teacher discusses, I also ask questions."

The expression of the participants' ideas and abilities are truly hampered by the lack of confidence in the many of them. This is consistent with the finding of Akbari & Sahibzada (2020) that students' self-confidence influenced various learning areas such as participation, goal seeking, and lesson interest and also their anxiety in the class.

Commitment. Another personal factor that can explain the performance of the participants is their commitment to Biology. Their commitment is described in terms class interest, class attendance, project submission and time management.

Class interest. Half of the participants talked about class interest as part of their commitment. However, among these participants, almost all of them who have low and average performance were disinterested in Biology which can contribute to some having low performance. For instance, Danna, Nover, Mark, Wilson and Jay pronounced their lack of interest in the subject. What worse is the case of Mark who eventually stopped studying. When talking about interest he said, "oh, not at all, then the next afternoon I went out, eventually I just stopped… still nothing, still stop [studying]." Moreover, when talking about his interest in Biology Wilson uttered, "there is [interest] Ma'am…but if I have a hard time, I did not listen for a while, it seemed like I was listening but I just passed it to the other ear." Jay also said having not so much interest in Biology. On the contrary, those having a high performance in Biology declared their interest in the subject. For example when sharing about her interest April stated, "*really like Ma'am… study of life, will you be amazed Ma'am ... how they live, how they are made… hence, I am amazed*."

Class attendance. Attendance to classes although is not given equal weight with other grade components, it can influence class performance. Those who were present can either participate in class activities or gain knowledge of the subject. Those participants having low performance in Biology revealed having absences in the class. In the case of Mark he said, "*I was no longer studying at that time, it seems I was until 3rd grading period*." Conversely, Jay did not stop but admitted not attending classes in the subject. He mentioned, "*then it's because of him [my teacher] I did not attend the class, only in his class*."

Project submission. Aside from class interest and class attendance, project submission also form part of their performance in Biology. Some participants mentioned that sometimes they were not able to submit projects, and if they did, it was after the deadline. Danna, Wilson, Shen and April were some of them who pronounced such experience. Wilson said, "*for example in making projects, it's very difficult for me... I'm too lazy... I can't do it right away... I can pass projects, but it's late*." For Shenn she was not able to submit projects on time. April expressed that she was able to do the projects only if she has time, "*at home Ma'am only if I have time*." Moreover, Wilson narrated, "*when I had the time, it would have been time to make a project, at that time I just used my cellphone*."

The commitment of the participants as manifested by their class attendance, class interest and submission of projects can yield significant influence on their academic performance or any academic achievement. Rezaei Gazki *et al.* (2019) is consistent with the participants' experiences when they also revealed a significant relationship between academic commitment and academic achievement. Hatos & Pop (2019) said that students' intention to drop in which in this study can be linked to the participants' commitment for class attendance is connected with their perceived relationship with teachers.

Financial and Learning Resources Factors: Financial and Educational Support Matters in Learning

The third theme that emerged from the experiences of the participants is related to financial and learning resources. The participants narrated that financial requirement of

education and the availability of educational resources also explain their performance in Biology. The sociodemographic profile of most participants proved their financial challenges which affected their access to significant educational resources. The low income of their families made a limitation on their capacity to purchase and access to educational equipment and resources to supposedly help their studies.

Financial requirement. Despite individuals' intellectual ability in the class, their performance can still be influenced by their capacity to provide the financial requirement of the subject. Based on the experiences of the participants, this requirement can be attributed to how much support they can get from their parents and the cost of projects. One of the participants Shiela mentioned about the financial support she gained, "*it's okay because I can also ask my mother*." In her case, she is fortunate as she has the support of her mother. But most of the participants who narrated related to the financial requirement in the subject said that they can submit the projects depending on whether they have money. Nover uttered, "*if I have money Ma'am, I can pass [project]… but without money, I have nothing to pass*." Even Shen remarked having no money sometimes ("*sometimes nothing Ma'am*"). In addition, Ivane declared financial difficulty, "*If there is a project then I have nothing financially, that's really difficult Ma'am since some materials run out at the store and I still have to go to Dipolog, then that is another expense for transportation.*"

It cannot be denied that students really experienced financial difficulty as it can be seen on their family monthly income where majority had an income of Php. 5,000.00 and below. Dang *et al.* (2015) acknowledge that education is an expensive social service that requires adequate financial provision. In their study, they revealed that there is a difference between the performance of students in the public and private senior secondary schools due to the socioeconomic backgrounds of their parents. Students having access to learning gadgets are more motivated compared to those students facing financial inadequacy which discouraged effective learning and teaching.

In addition, Nnamani *et al.* (2014) in their study on the impact of students' financial strength to academic performance showed that adequacy of finance affects academic performance. Specifically, they pointed out that improved academic performance relies on the source of finance such as those who self-supported their education were more satisfied of their performance. The findings of the studies corroborated the experiences of the participants that the financial requirement of the subject and their ability to meet it has a bearing in the academic performance.

Availability of educational resources. The availability of educational resources was mentioned by the participants especially when referring to the educational reources at home and their access to internet. These resources can aid and reinforce learning at school especially when educational resources are meager. One participant, Ivane claimed having no resources at home that can help her in Biology. She said, "*I have nothing here at home about Biology so I have to search*." Further, Mark, Ivane and Shen uttered about internet connectivity problem. Ivane observed, "*internet connection is very slow when I searched*." Shen confirmed this experience on internet connectivity when she also said, "*internet is very slow."*

Analyzing the sociodemographic profile of the student-participants, most of their fathers relied on farming and other low-paying jobs the reason that out of 12 participants, only 5 had access to wifi and laptop. These educational resources can supposedly help

them in their projects and other activities. Though educational resources became a significant factor in the experiences of the participants, Adebayo et al. (2020) emphasized in their study that despite affluent schools being provided with adequate educational resources, the impact of the latter is minute. Hence, educational resources are not necessarily a key tool but a combination of other factors when dealing with educational outcome such as "school management, accountability, and student self-determination (p. 368)." In contrary, Abubakar (2020) argued that students in Physics taught with instructional materials have an improved performance against those who were taught without instructional materials.

Factors in Biology Teaching Performance: Experiences in the lens of the Teachers

Twenty-two codes were found from the experiences of the teachers on factors related to their Biology performance. These 22 codes composed five subthemes categorized further into two themes namely, school-related factors and teacher-related factors. In other words, the factors in their performance are those inherent in the school those within themselves. These themes generally represent the factors that also explain their performance in Biology. The table below shows these codes, subthemes and themes.

Table 7

Factors in Biology Performance as Experienced by the Teachers

Codes	Subthemes	Themes
Access to Books	Availability of Educational Resources	School-related factors: Educational Resources
Insufficiency of Laboratory Materials		
Presence of Science Laboratory		
Weather Conditions	Environmental Conditions	
Class Drive	Teacher's Commitment	Teacher-related factors: Personal and Classroom Behavior Regulation
Encouragement among students		
Proper Grades Reporting		
Understanding Factors behind Students' Performance		
Emphasis on Character development		
Clear purpose		
Background Knowledge		
Application of Interactive Activities	Teaching Strategies	
Bridging of Biology subject to		

Real Life Situations		
Employment of multimedia and other aids		
Conduct of Remedial Classes		
Giving of Reference Materials		
Language Code switching		
Classroom agreement	Establishment of Classroom Behavior Regulation	
Ignoring off-task students		
Monitoring of class attendance		
Signal Interference		

School-related factors: educational resources

The school-related factors are described in terms of the availability of education resources and environmental factors. Often times, the teacher-participants revealed in their experiences that the availability of educational resources could supposedly help them improve their teaching performance in Biology. There were also instances in which one participant would use the physical environment in related topics in Biology. However, due to unpredictable weather conditions, he was not able to reinforce the topic.

Availability of educational resources. The availability of educational resources can help the participants reinforce lessons in Biology and facilitate learning. They expressed that this educational resources are in terms of access to books, laboratory materials, and presence of science laboratory.

Access to books. Books can help students review and follow lessons necessary for better performance. However, due to insufficiency of books, not all students were able to access such educational resource especially that some of them have no resources except books. This is true in the experience of Teacher Ruby when she said, "*at that time there were 89 books given to me then in a section I divided them, [students] will sit beside each other (with the book).*"

Insufficiency of laboratory materials. Aside from books, the insufficiency of laboratory materials is also crucial in the performance of the participants especially in delivering lessons that require experiments or activities. These laboratory materials can help concretize and confirm abstract lessons. However, this was not the case when Teacher Ruby uttered, "*We don't have any because we don't have at that time. If it was even there it is damaged. So we were just using picture and video*."

Presence of science laboratory. The insufficiency of laboratory materials can be explained by the lack of science laboratory itself. If there would be laboratory materials, the problem could be how these materials be protected and used properly without the laboratory. Sometimes due to the lack of classrooms, the school used the laboratory to serve as a classroom. The same participant in the previous paragraph confirmed this when she declared, "*the school is very big then the laboratory is there. The practice here is that the teacher will move from one room to the other, it is also difficult for students to go there and the laboratory set up there is not for classes because it was made a classroom because there is a lack of classrooms. So there was no science laboratory and the equipment provided by DepEd have just arrived so they are not usually used*."

Despite inadequacy of educational resources, the study of Mang'uu *et al.* (2021) established that the teaching resources are not significantly related to teachers'

performance. The finding points to the situation when teachers can still have the ability to impart learning even with insuffient educational resources. In the context of teachers in this study, they still tried their best to face the challenges and made use of alternatives in the absence of appropriate educational resources. In connection, Bukoye (2019) found that most teachers in her study were not fully aware on the importance instructional material and those who made use of them failed to use them appropriately. As a result, there was a high rate of students failed in examinations.

Environmental conditions. The subject Biology cannot only be taught within the four walls of the classroom. There are instances when teachers can manage to have outdoor activities where students can concretize and apply abstract concepts during the discussions. However, in some days, the environmental conditions, in particular the weather did not allow them to have outdoor activities.

Weather conditions. The weather condition was also a factor in the performance of the teachers as they could not make use of appropriate environment on certain topics in Biology when the weather is bad. This was confirmed by Teacher Richard when he said, "*the time when we will use it [referring to the materials for outdoor activities], the sky was getting dark. Then since I'm catching up with the topics, later I forget about it and move on to the next topic*."

Teacher-related factors: personal and classroom behavior regulation

Based from the experiences of the teacher-participants, this theme emerged from the subthemes such as teacher's commitment in the class, employment of teaching strategies, establishment of classroom management, and their background knowledge. These subthemes represent every teacher's ways in the teaching-learning process. In addition, these are also considered as crucial since the way each teacher handle the teaching-learning process will always have consequences in their performance.

Teacher's commitment. Commitment among the teacher-participants was manifested in their class drive, encouragement among their students, report students' grades, understanding their students, emphasis on character development and clear purpose. ***Class drive*** in this study is described in the experience of Teacher Richard which referred to a teacher's ability to keep motivated in their intended class activities. He discussed, "*teacher factor really… As I can remember at that time, I felt tired/became lazy because the one who was assigned that day to bring an onion didn't bring it, so I felt lazy*." His experience suggested that the conduct of a useful activity can be interfered by one's class drive. Moreover, he also mentioned he himself was not able to follow up and ***encourage his students*** which surely can be reflected in their performance. He uttered, "*then the lack of follow up and encouragement*." However, Teacher Richard made clear that he computed his students' grades in Biology fairly or manifested ***proper grades reporting***. This can be understood in his words, "*honest to goodness, you can really see a performing student...just in the classroom, you can see who will participate actively then in the exam you can also see who is leading... so when computing the grade you always have to record to get the exact score... so in giving of grades, there was really fairness*."

Sympathizing with the students can lead to better ***understanding of the factors behind their performance***. The same participant, Teacher Richard recognized it as a teacher. He stated, "*if you are like that with your student, you will not sympathize, they're*

pitiful… so you can't base your grade on the student's performance alone especially if he is a low performer, because they have a lot of reason, and as a teacher you should know that." In addition, the commitment of Teacher Richard was evident on the emphasis on character development among his students such as having self-autonomy not just the cognitive aspect of the subject. He uttered, "*as a student, just teach them on how to lead their lives independently*." Similarly, Teacher Ruby showed this commitment by having a clear being a teacher. She mentioned, "*you must think at that day there should be a class. Because for what purpose they came to go to school, not to clean... ahh just don't worry if my floor isn't shiny [she told her students], I'll just sweep in the afternoon ...*"

Lack of background knowledge in Biology is also a factor in the performance of the teacher participants. This is true when they shared that sometimes they have difficulty following topics in Biology and even identify appropriate tools and equipment to concrete abstract concepts in the subject. They also admitted that a lack of experiences in teaching the subject proved to be difficult in delivering the lessons. Despite this situation, they still tried their best to help students attain the necessary competencies in the subject. These experiences were evident the words of Teacher Rose. She mentioned, "*there is a topic that is really difficult ma'am and then the interaction, catching up the topic is difficult for them .. so sometimes you will reteach/repeat the topic for a few days because when you assess they still have not got it*." Moreover, Teacher Ruby admitted having no enough knowledge being a commerce graduate. She uttered, "*I'm following the book, since I'm not very familiar with everything, I'm a Commerce graduate because even if we graduated from a course, we won't even be able to master our course, so I have a hard time... so I'm following being a new teacher."* Even in the use of laboratory equipment, her knowledge is described by her experiences when asked about it saying, "*No, only easy things, for example, we use only glasses because there are no beakers, we only use glasses, it is okay, but for those that are complicated experiments, I'm not doing it because I'm not confident because I lack knowledge*."

Commitment on handling classes is an important factor for an effective teacher and performance. Mwesiga *et al.* (2018) explained that commitment among teachers is a determinant of quality and education and students' performance. This commitment is shown in performing their professional responsibilities. They further revealed in their study that commitment is interfered by various challenges such as training, professional development, involvement in school decision making, communication, competence of heads and others.

Looking into the experiences of teachers, one can see their commitment to their work. Despite facing various limitations in educational resources, time and finances, they still spent their time understanding the performance and behavior of their students and find ways to facilitate learning. Although they are all in Teacher 1 position, all the teacher-participants showed professional development by way of pursuing master's degree. They also showed their commitment despite having various bachelor's degrees by studying the subject matters in biology in order to deliver effective instruction. The connection of commitment to students' academic performance and achievement in secondary schools is consistent with the findings of Bibiso and Bibiso (2017) which showed that teachers' commitment was positively correlated with students' academic achievement. With the right commitment among teachers, better and effective learning ensues. Hence, the commitment of the Biology teachers in this study can be significant

factors in the academic success of the students regardless of their socioeconomic background.

Teaching strategies. The way teachers deliver lessons in Biology differ as they possess various professional backgrounds and commitment. Some of them seem to be traditional teachers considering themselves to be the sole provider of knowledge while other project the role of facilitators of learning. The experiences of the participants revealed their teaching strategies to help students in Biology such as the *application of interactive activities, bridging of biology subject to real life situations, employment of multimedia and other aids, conduct of remedial classes, giving of reference materials,* and *language code switching.*

One of the participants, Teacher Richard said that he used to have an ***application of interactive activities*** in addition to lectures or discussions. He also believed that ***bridging of Biology subject to real life situations*** of his students could better help them see the meaningfulness of the lessons and appreciate more the subject. His words described this when he uttered, "*so, when you said whether they have understood, or they are interested or the topics have impact on them, I feel there is, of course it is their foundation to improve, to grow and they can use it*." Further, there was an ***employment of multimedia and other aids*** aside from visual presentations in his class. He made use of other means of presenting the lessons. Hence, he declared, "*usually, when it really needs projector, I will use projector since there were topics, like colored that the students should see, because some parts of the books are not colored. So, sometimes I download on youtube, show through videos*."

In addition, Teacher Richard ***conducted remedial classes.*** He conducted remedial classes knowing that there were factors in the learning of his students like poverty and study habits. In cases when some of his students were having difficulty understanding the lesson, he as well conducted remedial class. He shared, "*so there is a factor [in their performance] like poverty, then their study habit was not monitored/given attention by the parents. So, what I did, there were times when I am not very busy, I told him that, maybe you can read in the room during lunch time, we can sit together, besides you are a boy, I'll just listen to what you read, then you have classmates who read well, I'll put you next to them and then they'll correct you if you read wrong, just don't be ashamed ...*"

On the other hand, other teacher participants did not discuss similar experiences as with Teacher Richard. Another participant, Teacher Rose, ***gave reference materials*** that will aid students save time instead of spending it copying the writings on the board. In this way she was able to let the students review the concepts discussed in the class. She mentioned, "*like that when you have daily [lessons], you give a hand out rather than they will write*." In addition to the strategies above, the third participant, Teacher Ruby discussed that she used to have **language code switching** by translating English into their dialect especially when topics are difficult for students to students to understand. In this way she can at least help the students learn in the study. It is described in her words when she said, "*they can understand when you speak bisaya, that is really a huge contribution*."

In connection to the previous subtheme, teachers with high commitment is most likely to select and devise better strategies especially when the aim to produce effective teaching-learning process. This idea is well supported by the experiences of the teacher-participants who did different means to facilitate learning in Biology by employing

multimedia in teaching, bridging Biology concepts to real life for meaningful learning, code switching for better comprehension and even conducting remedial classes which definitely incur time and resources on the part of the teachers. In other words, they applied suitable strategies to improve the performance of their students. However, the strategies they used can be considered to be limited considering the various learning factors at play in the experiences of the students.

The of various teaching strategies in particular those considered as innovative means is acknowledged in the study of Oyelekan *et al.* (2017) that in secondary schools in Nigeria where despite teachers made efforts to improve science teaching, still students poorly performed in science subjects. In other literature, the use of innovative strategies greatly impacted the performance of the students. However, they found out that teachers rarely used more than two innovative strategies identified in their study. Further, the use of innovative strategies matters on their teachers' experience and qualification. The findings of their study denote that even with efforts made by the teachers to employ various strategies in teaching Biology, the need to employ other innovative strategies can help them more so in achieving their goal of helping their student learn.

In connection to the experiences of the teachers, Mamba *et al.* (2017) conducted a study on science teachers' knowledge and use of effective strategies in high-performing secondary schools in Swaziland. They found out that science teachers are knowledgeable in terms of effective teaching strategies however, these strategies where only implemented minimally. Their findings suggest the need to employ strategies considered appropriate in teaching science. However, the study cannot fully determine the other factors why teacher-participants employed the strategies they shared.

On the contrary, the study of Lucero (2021) conducted in a secondary school in Cavite discussed that despite the high extent of employment of science teachers of various methods in teaching (teacher-centered, student-centered and student-teacher interactive methods), still they have no significant relations with the students' performance. The findings call for a reality that other factors in the performance of the students are at play and that the types of methods or strategies used by the teachers do not significantly matter.

Establishment of classroom behavior regulation. For the three teacher participants, only Teacher Richard shared having established classroom management that showed his performance in Biology. He implemented certain rules or agreement in order to better deliver the lessons while helping the students to stay focus in the class. He managed the class by having ***classroom agreement, monitoring of class attendance,*** and implementing ***signal interference.***

In terms of classroom agreement, he made agreement with the class as to who will answer questions during their class discussions. He said, "*those who will not listen, somehow they will feel shy because there are some that are listening, will be surprised while he is the one left standing, but then that's the deal*."

Class attendance was monitored as well in the class of Teacher Richard. He noted, "*what I did for those cutting classes is I really send students to inform them to get inside the class, some students will come back, there are students who follow, there are also some who don't. What I did is I marked them absent because they did not follow. By the time they come in again, I'll talk to them, personal interview*." Additionally, he made use of signal interference so that he could maintain the class attention and add more

interaction. He mentioned, "*Before I call them, I have a signal (drum) to them .. two beats, that means sit down, then one beat means stand up. Whoever responds late/wrong, that's the one who will answer. When I feel they are sleepy, that's my strategy; I'll just drum all of a sudden*."

Furthermore, the teacher-participants also made mentioned that for their own perspective, performance of students in Biology class bears student-related factors such as interest and focus, discipline and lack of confidence. These identified factors also coincide with what the student-participants expressed in their experiences to be as factors in their performance.

Students' behavior in science varies depending on the context of the learning environment. Students no matter how teachers' management the class still show in some point misbehaviors. Misbehaviors of students in Biology class is well supported by the experiences of the student-participants who acknowledged that their behaviors affect their performance. In response, teachers employed classroom behavior management procedures to limit or anticipate classroom disruptions. Sometimes teachers use reactive management strategies (detentions, referrals, removal from class, etc) and positive reinforcement. But building a positive relationship among students is the most important strategy (Parsonson, 2021). This part of the teacher-participants' experiences calls for a classroom management. As Weinstein *et al.* (2021) pointed out that classroom management refers to teachers' actions to maintain an environment that promotes academic achievement among students. Classroom management is not just for order but it for order for the sake of learning. With this, new teachers and even experienced ones often perceived students' behavior as one of the serious challenges in the classroom. It is in this context that teacher-participants tried to main an order or regulation that can create a conducive environment for learning.

Conclusions

Students in Grades 7-10 performed satisfactorily generally and they performed very satisfactorily in Grade 9. This is consistent with the perception of the students where they described their performance as superior, promising and poor. Students belonged to low socio-economic status in terms of their family income the reason that they faced problems related to finances in their schooling such meeting the demands of projects and acquisition of educational resources.

Biology teachers were able to connect pedagogical aspects of the subject to the student's development to promote success in school. Their educational background having earned units in master's degree manifests their commitment for professional development and as means of improving their content knowledge especially when one's baccalaureate degree is not related to Biology.

The factors that interplay in the experiences of the students vary from those in the social environment down to those within them or personal in nature. It projects that understanding the nature of the students‟ performance is not limited within the four walls of the classroom but it traces back at home and within the individual. Access to laboratory and model as a factor emerged from the experiences of the students is a scenario that emphasizes the importance of translating abstract concepts into tangible learning experiences. On the other hand, the teachers‟ skills in teaching as also seen

mostly by the participants is crucial in performance of the students as it is where the ability of the students to grasp biology concepts and mastery of these concepts can as well be relied. The effectiveness of the teachers‟ translation and transmission of competencies depends on how they appropriately use teaching strategies and facilitate learning. Moreover, working within and outside the classroom is peer pressure that continues to influence students decision in learning. Peer pressure put students in a dilemma between attending classes or pleasing the peers and acquire recognition of the group. Just like mentioned in the literature, study habits such as doing further study is evident in the experiences of the students which gives them the avenue of reviewing their lessons and conductive advance research. Hence, developing the habit of studying is crucial among the students.

Class interest as a personal factor also played a role in the students'‟ performance following their study habits. It is in their interest that they took extra effort for their classes and surpass educational challenges just to attend school. In terms of financial factors, the financial demand of projects is a factor too in their performance as only those who have enough financial resources can meet the demands of projects. Usually school projects today require students to access through the internet for a wide array of information but not all of them have the financial capacity for it. Similarly, the experiences of the teachers are consistent with those of the students. Factors in their performance as teachers revolve around the availability of educational resources, environmental conditions, commitment, teaching strategies, and establishment of classroom behavior regulation. This denotes the significance of the provision of adequate educational resources on the part of the school and commitment for better teaching strategies on the part of the teachers that the performance of teachers can be improved.

In general, performance of students and teachers in Biology is the interface of multitude of factors ranging from the individual, colleague or peers and school level. If one aims to improve such performance, then there is a need to address the social, personal, and financial factors in the case of students and school and personal-related factors for teachers. With these results, this study recommends that DepEd may consider fully establishing Biology laboratories and plan for effective laboratory schedules. Teachers may consider attending training and seminars on teaching strategies in Biology. Finally, the guidance counselor office may initiate programs toward students' awareness on some personal challenges they face during their academic endeavors. Meanwhile, teachers may review the requirements of making projects and offer other alternative requirements.

References

Abubakar, M.B. (2020). Impact of Instructional Materials on Students' Academic Performance in Physics, in Sokoto-Nigeria. *IOP Conf. Series: Earth and Environmental Science 476.* https://ui.adsabs.harvard.edu/abs/2020E%26ES..476a2071B/abstract

Adebayo, K.A., Ntokozo, Grace, N.Z. (2020). Availability of Educational Resources and Student Academic Performances in South Africa. *Universal Journal of Educational Research*, *8*(8): 3768-3781. https://www.researchgate.net/publication/343452455_Availability_of_Educational_Resources_and_Student_Academic_Performances_in_South_Africa

Akbari, O., & Sahibzada (2020). Students' Self-Confidence and Its Impacts on Their Learning Process. *American International Journal of Social Science Research*, *5* (1). https://doi.org/10.46281/aijssr.v5i1.462

Babaylo, P. M.A. (2020). Science-Related Attitudes and Academic Achievements of Students with Varied Learning Styles. *JOSTE*, *3*(1). Retrieved from http://nosteonline.org/wp-content/uploads/2020/10/01-Babaylo-For-Final Publication.pdf

Baker, E.D., Hope, L. & Karandjeff, K. (2009). *Contextualized Teaching & Learning: A Faculty Primer, A Review of Literature and Faculty Practices with Implications for California Community College Practitioners.* The Center for Student Success and The Academic Senate for California Community Colleges. Retrieved https://eric.ed.gov/?id=ED519284

Bianchi, N., Lu, Y., & Song, H. (2021). *There's an Education Gap Between Rural and Urban Communities. Can Technology Bridge It?* Kellogg Insight. Kellogg School of Management at Northwestern University. Retrieved from https://insight.kellogg.northwestern.edu/article/education-gap-distance-learning

Bibiso, A., Olango, M. & Bibiso, M. (2017). The Relationship Between Teachers Commitment and Female Students Academic Achievements in Some Selected Secondary School in Wolaita Zone, Southern Ethiopia . *Journal of Education and Practice, 8* (4). https://eric.ed.gov/?id=EJ1132934

Bukoye, R.O. (2019). Utilization of Instruction Materials as Tools for Effective Academic Performance of Students: Implications for Counselling. *Proceedings, 2.* doi:10.3390/proceedings2211395

Centre for Teaching Excellence (n.d). *Active Learning Activities*. University of Waterloo. https://uwaterloo.ca/centre-for-teaching-excellence/teaching-resources/teaching-tips/developing-assignments/assignment-design/active-learning-activities

Chinweuba-eze, V.O. (2021). Impact of Parental Support on Biology Students' Academic Achievement and Attitude: Exploring School Location as a Moderator. *International Journal of Sciences: Basic and Applied Research (IJSBAR), 58* (1). https://gssrr.org/index.php/JournalOfBasicAndApplied/article/view/12537

Creswell, J.W. (2013). *Qualitative inquiry and research design: choosing among five approaches.* SAGE Publication, Inc.

Creswell, J.W. (2012). *Educational research: planning, conducting, and evaluating quantitative and qualitative research*. Pearson Education, Inc.

Curry Jr, K.W. (2012). Scientific Basis vs. Contextualized Teaching and Learning: The Effect on the Achievement of Postsecondary Students. *Journal of Agricultural Education, 53* (1). *DOI: 10.5032/jae.2012.01057*

Dang, E. I. & Bulus, E. J. (2015). The Impact of Finance on the Academic Performance of Secondary School Students in Akwanga Local Government of Nassarawa State, Nigeria. *J. of Social Sciences and Public Policy, 7* (2). 44 – 54. https://www.researchgate.net/publication/284551946_THE_IMPACT_OF_FINANCE_ON_THE_ACADEMIC_PERFORMANCE_OF_SECONDARY_SCHOOL_STUDENTS_IN_AKWANGA_LOCAL_GOVERNMENT_OF_NASSARAWA_STATE_NIGERIA

Davtyan, R. (2014). *Contextual Learning.* ASEE 2014 Zone I Conference. University of Bridgeport, Bridgpeort, CT, USA. https://monolith.asee.org/documents/zones/zone1/2014/Student/PDFs/56.pdf

De Silva, A., Khatibi, A. & Azam, S.M.F. (2016). What Factors Affect Secondary School Students' Performance in Science in the Developing Countries? A Conceptual Model for an Exploration. *European Journal of Education Studies, 4*(6). http://dx.doi.org/10.5281/zenodo.1239967

Delgado, M.F.D., Leite, C. & Fernandes, P. (2014). Curricular contextualization in learning Mathematics: what importance and meaning? *ECER 2014, Mathematics Education Research.* https://www.eera-ecer.de/ecer-programmes/conference/19/contribution/32932/

Department of Education (2015). DO s.2015, 08. https://www.deped.gov.ph/2015/04/01/do-8-s-2015-policy-guidelines-on-classroom-assessment-for-the-k-to-12-basic-education-program/

Department of Education (2016). *K to 12 Science Curriculum Guide*. https://www.deped.gov.ph/wp-content/uploads/2019/01/Science-CG_with-tagged-sci-equipment_revised.pdf

Department of Education (2019). PISA 2018 – National Report of the Philippines. https://www.deped.gov.ph/wp-content/uploads/2019/12/PISA-2018-Philippine-National-Report.pdf

Department of Education – Bureau of Human Resource and Organizational Development (n.d.). RPMS Manual for Teachers and School Heads. http://depedcapiz.ph/downloads/RPMS_Manual.pdf

Duckworth, A.L., Taxer, J.L., Eskreis-Winkler, L., Galla, B.M. & Gross, J.J. (2019). Self-Control and Academic Achievement. *Annual Review of Psychology*, 70(1), 373-399. https://www.msrlab.pitt.edu/wp-content/uploads/2018/07/Duckworth-2019-Self-control-and-academic-achie.pdf

Dworkin, S.L. (2012). Sample Size Policy for Qualitative Studies Using In-Depth Interviews. *Journal of Health, Population and Nutrition, 41:*1319–1320. DOI 10.1007/s10508-012-0016-6

Ebele, U. F. & Olofu, P. A. (2017). Study habit and its impact on secondary school students' academic performance in biology in the Federal Capital Territory, Abuja. *Educational Research and Reviews*, *12*(10), 583-588. https://academicjournals.org/journal/ERR/article-abstract/734608A64524

Elieson, B. (2013). A framework for considering education: Three pillars of cognition and four types of learning. University of North Texas College of Information 2013 Research Exchange Conference Proceedings. https://untresearchexchange.files.wordpress.com/2015/02/unt_coi_research_exchange_conference_2013_proceedings.pdf

Ezike, B.U. (2018). Classroom Environment and Academic Interest as Correlates of Achievement in Senior Secondary School Chemistry in Ibadan South West Local Government Area, Oyo State, Nigeria. *Global Journal of Educational Research, 17*. DOI: https://dx.doi.org/10.4314/gjedr.v17i1.9

Fernandes, P., Leite, C., Mouraz, A., &Figueiredo, C. (2013). Curricular Contextualization: Tracking the Meanings of a Concept. *Asia-Pacific Education Researcher*, *22* (4). https://link.springer.com/article/10.1007/s40299-012-0041-1

Filade, B.A., Bello, A. A., Uwaoma, C. O., Anwanane, B. B. & Nwangburuka, K. (2019). Peer group influence on academic performance of undergraduate students in Babcock University, Ogun State. *African Educational Research Journal, 7*(2), 81-87. https://www.netjournals.org/z_AERJ_19_010.html

Garin, R.M., Reyes, R., Domantay, G.F. & Rosals, J. (2017). Contextualized and Localized Teaching as a Technique in Teaching Basic Statistics. *Asia Pacific Journal of Education, Arts and Sciences, 4* (1). http://apjeas.apjmr.com/wp-content/uploads/2017/05/APJEAS-2017.4.1.2.08.pdf

Hatos, A., & Pop, A. (2019). Commitment to the goal of completing studies in higher education: Dropout risk of the students from social science specialization from three Romanian public universities, *Journal of Adult Learning, Knowledge and Innovation JALKI*, *3*(1), 12-19. https://akjournals.com/view/journals/2059/3/1/article-p12.xml

Hudson & Whisler (2007).*Contextualized Teaching Strategies.* http://contextualizedteachingstrategies.weebly.com/learning-theories.html

Hull, D. (1995). *Who are you calling stupid?: The Revolution that's Changing Education:* Cord Communications.

Johnson, E. B. (2002). *Contextual Teaching and Learning: What it is and why it's here to stay*. Corwin Press, Inc.: California. https://books.google.com.ph/books?id=2HRoigMMdqMC&pg=PA11-IA4&source=gbs_toc_r&cad=4#v=onepage&q&f=false

Jumasseitova, A.K., Kalizharova, Z.E., & Asmagieva, A.K. (2017). How does the involvement of girls in household chores affect their academic performance in the university? *Central Asian Economic Review.* https://articlekz.com/en/article/20171

Jung, K., Zhou, A.Q., & Lee, R.M. (2017). Self-efficacy, self-discipline and academic performance: Testing a context-specific mediation model. *Learning and Individual Differences, 60.* 33-39. https://www.sciencedirect.com/science/article/abs/pii/S1041608017301735

Kalchik, Stephanie & Oertle, Kathleen. (2010). The Theory and Application of Contextualized Teaching and Learning in Relation to Programs of Study and Career Pathways. *Transition Highlights, 2*. Office of Community College Research and Leadership. https://www.researchgate.net/publication/234684911_The_Theory_and_Application_of_Contextualized_Teaching_and_Learning_in_Relation_to_Programs_of_Study_and_Career_Pathways_Transition_Highlights_Issue_2

Kim, H., Sefcik, J.S., & Bradway, C. (2016). Characteristics of Qualitative Descriptive Studies: A Systematic Review. *Res Nurs Health, 40*(1): 23-42. doi: 10.1002/nur.21768

Litheko, S. R. (2012). The Difference in Performance Between Schools Situated in the Urban Areas and Those in the Rural Areas of Lesotho, *Electronic Journal for Inclusive Education, 2* (9). Retrieved from https://corescholar.libraries.wright.edu/cgi/viewcontent.cgi?article=1138&context=ejie

Lucero, J.A. (2021). Teacher's Teaching Methods and Student's Academic Performance in Science: Basis for Teacher's In –Service Training Program. *Global Journal of Research in Humanities & Cultural Studies, 1*(1):24-38. https://gjrpublication.com/gjrhcs-1-1/

Maguire, M. & Delahunt, B. (2017). Doing a Thematic Analysis: A Practical, Step-by-Step Guide for Learning and Teaching Scholars. *All Ireland Journal of Teaching and Learning in Higher Education, 3*:3351-33514. Retrieved from https://ojs.aishe.org/index.php/aishe-j/article/view/335/553

Majo, S. (2016). Factors Influencing Poor Performance in Science Subjects in Secondary Schools in Shinyanga Municipality, Munich, *GRIN Verlag*, Master's Thesis. Retrieved from https://www.grin.com/document/383487

Malik, R. H. & Rizvi, A.A. (2018). Effect of Classroom Learning Environment on Students' Academic Achievement in Mathematics at Secondary Level. *Bulletin of Education and Research, 40* (2), *207-218.* https://eric.ed.gov/?id=EJ1209817

Mamba, D. & Putsoa, B. (2018). Secondary School Science Teachers' Knowledge and Implementation of Effective Teaching Strategies in High-performing Schools in Swaziland. *African Journal of Research in Mathematics, Science and Technology Education, 22* (1). https://www.tandfonline.com/doi/full/10.1080/18117295.2017.1386346

Mang'uui, N.S., Paul, M., Kimani, M. (2021). Effects of Availability of Teaching and Learning Resources on Teacher Performance in Public Secondary Schools in Kitui County, Kenya. *European Journal of Education Studies, 8* (9). DOI: 10.46827/ejes.v8i9.3908

Manila Bulletin (2019, December 19). YEAR-END REPORT: DepEd in 2019: The quest for quality education continues. https://mb.com.ph/2019/12/29/year-end-report-deped-in-2019-the-quest-for-quality-education-continues/

Marc, K. (2011). *The Importance of Good Study Habits*. www.answer.com.

Moldes, V.M., Biton, C.L., Gonzaga, D.J., & Moneva, J.C. (2019). Students, Peer Pressure and their Academic Performance in School. *International Journal of Scientific and Research Publications (IJSRP), 9*(1), 8541. DOI:10.29322/IJSRP.9.01.2019.p8541

Mwesiga, A. & Okendo, E.O. (2018). Levels of Teachers Commitment to the Teaching Profession in Secondary Schools in Kagera Region, Tanzania. *Research on Humanities and Social Sciences, 8* (14). https://www.iiste.org/Journals/index.php/RHSS/article/view/43581

Nnamani, C.N., Dikko, H. G. & Kinta, L.M. (2014). Impact of Students' Financial Strength on their Academic Performance: Kaduna Polytechnic Experience. *An International Multidisciplinary Journal, Ethiopia, 8* (1). *83-98.* DOI: http://dx.doi.org/10.4314/afrrev.v8i1.7

Official Gazette (2013, September 4). Implementing Rules and Regulations of the Enhanced Basic Education Act of 2013. https://www.officialgazette.gov.ph/2013/05/15/republic-act-no-10533/

Oyelekan, O. S., Igbokwe, E. F., & Olorundare, A. S. (2017). Science Teachers' Utilisation of Innovative Strategies for Teaching Senior School Science in Ilorin,

Nigeria. *Malaysian Online Journal of Educational Sciences, 5* (2). https://files.eric.ed.gov/fulltext/EJ1142454.pdf

Paring, I.R., Cereno, A.C., & Decano, R.S. (2021). Determining Factors to Students' Science Achievement in the Implementation of K to 12 Spiral Progression Approach: A Mixed Method. *International Journal of Educational Research Review, 6*(1): 46-54. Retrieved from https://dergipark.org.tr/en/download/article-file/1361436

Parsonson, B.S. (2012). Evidence-based Classroom Behaviour Management Strategies. *Kairaranga, 13* (1). https://files.eric.ed.gov/fulltext/EJ976654.pdf

Parvin, G.R., Ali, D., & Abdolvahab, S. (2019). Does Academic Commitment Affect The Learners' Progress Through Academic Buoyancy? A Structural Equation Model. *Iranian Evolutionary and Educational Psychology Journal, 1* (3). https://www.sid.ir/en/Journal/ViewPaper.aspx?ID=803676

Perin, D. (2011). Facilitating Student Learning Through Contextualization. *Community College Research Center.* https://ccrc.tc.columbia.edu/media/k2/attachments/facilitating-learning-contextualization-working-paper.pdf

Philippine Statistics Authority (2017). *2015 Census of Population, Report No. 2 – Demographic and Socioeconomic Characteristics Zamboanga del Norte.* Quezon City, Philippines. https://psa.gov.ph/sites/default/files/09_Zamboanga%20del%20Norte.pdf

Powers, S., and Guan, S. (2000). Examining the Range of Student Needs in the Design and Development of a Web-based Course. *International and Cognitive Impacts of Web-based Education.*

Ragma, F. & Molina, J.P.F. (2017). Socio-Economic Factors and the Academic Performance of Senior High School Students in Candon National High School. DOI:10.13140/RG.2.2.27548.39044

Rahman, S., Mazlana, M., Kummin, K., Yasina, R.M. & Meerah, T.H.M. (2010). Examining the role of language on students achievement: a study on the use of second language as a medium of instruction in teaching science subject in Malaysia. *Procedia Social and Behavioral Sciences, 9.*1261–1265. doi:10.1016/j.sbspro.2010.12.317

Sarantakos, S. (1998). *Social Research* (2nded.). Houndmills, Basingstoke, Hampshire RG21 6XS and London: MacMillan Press Ltd.

Sarvi, J., Munger, F., & Pillay, H. (2015). *Transitions to K-12 Education System: Experiences from Five Case Countries.* Asian Development Bank: Philippines.

https://www.adb.org/sites/default/files/publication/177761/transitions-k12-education.pdf

SEI-DOST & UP NISMED, (2011). *Science framework for philippine basic education*. Manila, Philippines.

Shute, V.J., Hansen, E.G., Underwood, J.S., Razzouk, R. (2011). A Review of the Relationship between Parental Involvement and Secondary School Students' Academic Achievement, *Education Research International*. https://www.hindawi.com/journals/edri/2011/915326/

Stabback, P. (2016). *What Makes a Quality Curriculum?* IBE UNESCO International Bureau of Education. https://unesdoc.unesco.org/ark:/48223/pf0000243975

Suhendi, A. & Puwarno (2018). *Constructivist Learning Theory: The Contribution to Foreign Language Learning and Teaching.* https://knepublishing.com/index.php/Kne-Social/article/view/1921/4298

Susilawati & Hsiung (2013). Attitude Toward Science of Students in Rural and URBAN Areas of School in ACEH Province of Indonesia. *Proceeding of International Conference on Special Education-CAPEU.* Retrieved from https://www.researchgate.net/publication/335756838_ATTITUDE_TOWARD_SCIENCE_OF_STUDENTS_IN_RURAL_AND_URBAN_AREAS_OF_SCHOOL_IN_ACEH_PROVINCE_OF_INDONESIA

Tartar,

Underwood, Z. (2016). *Connectivism: A Learning Theory for Today's Academic Advising.* *https://nacada.ksu.edu/Resources/Academic-Advising-Today/View-Articles/Connectivism-A-Learning-Theory-for-Todays-Academic-Advising.aspx*

UNESCO-IBE (2016). *What Makes a Quality Curriculum?* http://www.ibe.unesco.org/en/news/what-makes-quality-curriculum

Wang, X., Yao, J., & Zhou, S. (2022). Does housework help improve academic performance? An empirical analysis on the influence of participation in housework on academic performance of primary and middle school students. *Best Evidence in Chinese Education, 10*(1):1283-1301. DOI: 10.15354/bece.22.or009

Weinstein, C.S., & Schafer, N.J. (2021). *Classroom Management.* DOI: 10.1093/OBO/9780199756810-0155

Woldegiorgis, E.T. (2013). Conceptualizing Harmonization of Higher Education Systems: The Application of Regional Integration Theories on Higher Education Studies. *Canadian Center of Science and Education, 3* (2). http://dx.doi.org/10.5539/hes.v3n2p12

Zamora, C.M.B. & Dorado, R.A. (2015). Rural-Urban Education Inequality in the Philippines Using Decomposition Analysis. *Journal of Economics, Management & Agricultural Development*, *1*(1). https://ageconsearch.umn.edu/record/309260/files/RuralUrban%20Education%20Inequality%20in%20the%20Philippines%20Using%20Decomposition%20Analysis.pdf

https://www.eera-ecer.de/ecer-programmes/conference/19/contribution/32932/

_____. *What is a Curriculum and Why it is Needed.* Retrieved from http://www.fao.org/docrep/006/Y1842E/y1842e17.htm