Science Learners' Perspective towards the Use of Module and Social Media as a Tool for Remote Learning

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Abstract: **This study aimed to present the perspective of senior high school students towards the use of modules and social media for remote learning and find out if there would be a significant difference in the student performance after the use of modules and social media. The modules were composed of a series of topics distributed to participants and were followed up with the users of social media, especially messenger and Facebook. The participants of the study were classified according to strand and grade levels: the HUMSS and STEM students who are grade 11 and 12 students. A total of 87 students participated in this study. Researchers created 15 items checklist form that is divided according to namely; Perceived Based on Usefulness of Module and Social Media, Perceived Student Self- Efficacy of Using Module and Social media, and Perceived Ease of Use of Module and Social Media was prepared and validated by the experts in subject matter for gathering data. The findings revealed that there was an increase in the performance of students in the pretest and post-test after the use of modules and follow-up through social media. T-test results revealed that there was a significant difference in the test scores of the students before and after using the module which can be used as a future reference for remote learning and as an additional teaching tool in physics.**

***Keywords*: Learning Modules, social media, remote learning, student learners, individual perspective**

I. INTRODUCTION

Last 2020, in the field of education, student academic life, as well as its learning environments, happens to change when the pandemic came and brought abrupt changes resulting in educational chaos that causes educational institutions to scramble to move classes to distance or remote learning. From "Ma'am, Prof. Teacher and Sir" to "Mama, Papa, Tita, Tito, Ate, and Kuya". Learning will not be the same again for today's generation of students thriving for their right to quality education.

To attend to the needs of student education, the most convenient way and popular mode of remote learning is the modular approach. With the help of technology, specifically social media as a supplemental tool to make sure that the learning remains as it is and not be compromised during the pandemic. As the Philippines Department of Education implemented distance or remote learning where the delivery of learning takes place between the teacher and the students who are geographically remote from each other during the instruction. According to the Department of Education, due to the nationwide pandemic, lessons especially in the science context are delivered outside the traditional face-to-face setup where printed modules materials are given due to technology and internet connectivity remains to be a problem for most students.

Developing effective learning environments during this year or in the year 2020-2021 due to the world's Covid-19 pandemic became a challenge for many schools, institutions, and universities here in the Philippines. Current trends in education, which include shrinking funding, have spurred greater competitiveness among school institutions as they seek new ways to attract students not only in traditional environments but also in the online environment. In both, it is important to maintain academic integrity and to ensure high levels of student learning by achieving a better understanding of students' needs regarding their learning, distance education can be improved and its value as an educational tool increased. By investigating ways that students perceive and interact with the learning environment, it may be that the design of the distance learning environment can be better developed to support learning [1].

From the Department of Education standpoint, it is essential to remember that practitioners of education should not only be concerned with the number of students enrolled but also the quality of student learning obtained in achieving those courses that help each student to overcome obstacles and attain success in their own chosen fields to become an asset to the Philippine Government in the future.

This study is anchored on several theories or ideas on the efficacy of instruction and printed materials, however, focused on the students' experiences and perceptions on science context based on a modular approach and social media. The researcher wants to describe (a) motivational and learner characteristics within remote learning, (b) the positive and negative aspects of remote learning using the module and social media as experienced by students, (c) the use of social media by an instructor to help supplement modular approach to improve the teaching of remote learning and (d) how

students' perceptions of the remote learning environment and the tools used affect the selection of their approach to learning.

In addition, to be able to discourse on the essentiality of instructional innovation and to acquiesce to the rationality on the importance of instruction, this study wants to determine social media's effect on students' performance. Furthermore, to facilitate the inquiry into the effectiveness of modular instruction, the study aimed to determine whether the use of the module in teaching science would show positive results as an alternative approach in traditional teaching.

Significance of the Problem

According to Means et. al., research into the effectiveness of remote instruction has looked primarily at individual implementations of instructional methods within a single class or set of classes taught by a single instructor. This study investigates social media instruction can be used as a supplemental tool for remote learning from the student perspective in a mix of "typically" delivered and designed classes. These classes were designed to investigate a new or innovative remote learning practice; they were simply the current state of online instruction delivered via a modular approach and social media. This study provides a rich, complex, and detailed picture of students within the remote learning environment. By organizing the analysis of data and content around approaches to learning, learner-centered tools can be developed that promote deep learning approaches in students during online learning experiences.

Results from this study yielded recommendations for changes in the design of remote learning that encourage student learning that is aligned with faculty, student, and institutional perceptions of distance education.

II. LITERATURE REVIEW

Today's educational challenges for every school are the setting up and guidelines for remote learning that can help the student improve the learning process. The guidelines are not only intended for staff supporting schools that are facing closures and quarantines due to the Covid-19 (Coronavirus) outbreak but also for students learning, experiencing, and coping with the outbreak. It is containing suggestions and guidelines for remote learning, with further suggestions for free apps and solutions for schools that may not have online or mobile solutions in place at the time of closing and for the following years until the pandemic has been stopped [2].

Developing a remote learning plan for the continuity of student learning covers the teaching strategies, communication rules, devices, solutions, and policies supporting online or blended learning in the school community. Educational advisers and practitioners advise that the learning plan should be kept as simple as possible, but make the expectations clear for learners, teachers, and guardians as to how to learn and teach online [3]. Remote learning that not only focused on the transitions of students from one type of learning to another as their learning context rapidly changes but involves the continuity of learning plans that involve the technologies the school will use to continue teaching that considers how the students will return to campus after the emergency ends.

According to International Baccalaureate Organization 2020, institutions that decided to use online lines and technologies for remote learning must balance learning and teaching based on their circumstances. There are two kinds of online learning. Synchronous that is happening collaboratively and at the same time with a group of online learners and a teacher and asynchronous that happens at any time, not necessarily in a group, but with teacher feedback.

Schools should not assume that synchronous teaching is required or even desirable to support effective learning. The goal is not to try to re-create face-to-face classrooms, which is impossible to do. Online and blended learning for remote learning provides opportunities for learners to work more independently, expand their agency, and learn to use tools and strategies that they otherwise might not have. While it is not recommended to experiment in emergencies situations, innovation, creativity, and resilience are required to make things work. Most schools will discover they need to be adaptive and fast thinking to ensure that learning continues healthily way [1].

Song and Mcnary stated that above all online learning, one area that has been identified as an important factor affecting students' learning experiences in learning online environments is student interaction. Interaction in learning settings is a fundamental process for acquiring basic knowledge and cognitive development. It is also the focus of research for instructional designers, teachers, supervisors, and school officials. Online technologies that are mostly used in asynchronous discussion forums provide an opportunity for learners to engage in social interaction by reading and responding to peers' and instructors' posting and teaching.

Tallent-Runnels et al found that the depth of such interaction or discussion is not equivalent to traditional face-to-face class sessions. The nature and depth of students' interaction in online environments are different from that of face-to-face classroom or traditional teachings where students in physical classrooms can interact face to face or outside of class, students in online courses may only interact with classmates through computer-mediated communication such as email, chat rooms, or discussion boards. Although asynchronous technology may allow students to compare progress with others, explore topics, and reflect more deep other students must share their responses to realize the potential of online communication. Since online learning requires a higher level of student interdependence and students must navigate time and space displacements, maintaining online interaction is a challenging task.

Aside from student interaction, learning materials should be given an emphasis to improve the learning process.

Educational challenges in course delivery that best meet online students' needs to be made more effective in the future. Student perceptions impact their actions, approaches, and learning within the online educational environment Understanding students' online interaction is important because interaction influences the quality of online learning [2].

According to Gabor, in teaching, the use of e-module can increase student understanding of the subject matter discussed by the teacher. It gives a clearer picture of how things work out. In addition, using computer-assisted instruction as a supplement to conventional teaching results in the development of skills that leads to mastery of the subject matter.

In teaching, the classroom teacher is the key person in the educational enterprise and is directly involved in the instructional process in the classroom setting. It also occupies strategic positions in the school system, for on its shoulders lie the responsibility of translating the curriculum into concrete learning experiences [4]. Through the process of teaching and learning, the learners are given the opportunities to gain knowledge and understanding, develop habits and skills, acquire attitudes, and appreciate values.

Redesigning science instruction in the 21st century must include not only what is taught but also the way it is taught. Due to the pandemic outbreak, educational institution especially senior high school teachers uses a modular approach in teaching integrating with technology to promote and maintain the integrity of learning. The use of technology and other modern equipment in order that science teaching and learning are enjoyable and interesting to students resulting to be effective, innovative, and beneficial to the learners.

According to Eggen, and Kauchak, learners retain new knowledge better when the curriculum was presented with a combination of formats of text, sound, graphics, and video and using a computer as a method of instruction. A computer may be used to deliver instruction, reinforce practice, and provide feedback. It can also provide an individualized learning environment in which students can learn or practice according to their own pace or the computer can be used as a remedy for students who lack the pre-requisite abilities to practice basic skills [4].

In connection with the study, the Department of Education uses a modular approach to teach science concepts which are printed and distributed to students where according to UNESCO, a module is a set of learning opportunities organized around a well-defined topic that contains the elements of ordinate dictation, categorical objectives, edifying cognition activities, and evaluation utilizing criterion-referenced measures [5]. It also covers either a single element of subject matter content or a group of content elements composing a discrete unit of subject matter or area of adeptness. In addition, Van stated that a module has placidly defined, objectives; preferably in the behavioral form to inspirit and support the learners towards meeting the desired learning outcomes and offer the best means for the teacher to provide direction in her students' daily search for new understanding and verifications about the subject context especially in science.

Module developments promote the practice to plan and develop modular materials. Module writers develop a common framework for the design and development of modular materials. According to Brown and Atkins, when designing modules, teachers need to be aware of concepts of deep and surface approaches to learning. In selecting the learning experiences, these can be best achieved through objectives that are arranged in logical order. It is also that the teacher should carefully decide on the format and component of the module. Write a draft module. Review the draft module and revise. Select at least three students, each representing fast, slow and average learners from the target population and test the module on them and revise the module according to the result obtained from the test. Conduct further small scale or large scales try out to make suitable revisions [5,6,7].

It is described that modular instruction provides the basis for close interaction between the learner and the subject matter, that the learner is called upon to respond actively in the interaction with an instructional program, and that the rate at which the interaction proceeds are governed individually by each learner's response [8].

Modular approach has been used in science, specifically in biology, chemistry, medical education even in social sciences as well as in computers education considering the individual differences among the learners which necessitate the planning for the adoption of the most appropriate teaching techniques to help the individual grow and develop at her/his own pace [7,8].

The advantage offered to the teacher who uses the modular approach is to provide the opportunity for organizing numerous sequences to reflect the special interests of the teacher and students. It also allows the teacher to focus on the deficiencies of students in the subject matter and serves to eliminate the necessity of covering the subject matter already known to students. With the use of modules, the progress of a student is assessed, and the routine aspect of instruction is reduced giving the teacher a chance to enjoy her personal with the students [8,9].

III. METHODOLOGY

The data for this study are based on students' experiences taking remote learning and using printed modules as the main resource material in learning science subjects. The instructions were assisted by social media especially Facebook as an additional tool for learning science context due to technology and internet connectivity problem. The purpose of this study was to examine students' perceptions of the module and social media as a supplemental tool for remote learning. It also wants to determine how this module affects

students' subject matter performance. In this section, a printed module provided by the Department of Education was used to be part of the study, the participants, score results, survey questionnaires, and data analysis are used to conclude.

Module and Social Media

Department of Education allows learners to use self-learning modules (SLMs) in print or digital format/electronic copy, whichever applies to the learner. However, due to technology and internet connectivity problems, the New Lucena National High where the study was conducted decided to use printed materials for distance or remote learning. Social Media especially Facebook was used in delivering instructions when learners ask for assistance from the teacher. Email, telephone, and text message/instant messaging were used when students had specific individual questions for the instructor but were not considered part of the study. Parents or any member of the family, on the other hand, may serve as a guide or para-teachers to learners at home.

The printed module was used to examine students' perceptions and performances and the main resource material in learning science subjects. The context of the study was prepared and delivered via Module and assisted by social media to supplement the teachers' instruction. The course subject consisted of a series of modules. The module was part of the subject instruction. For each module, students were asked to complete topic-related readings and participate in asynchronous online discussions. In addition, each module consisted of focused objectives with instructional materials and was typically presented through text and graphics. The content and context of the modules were real-world based to promote critical thinking skills and enhanced part of the core content of the science subject along with the foundational learning theory used by the teacher in designing the context of the subject. As part of the research study results, at the end of each module, students were required to take a short multiple-choice test as a form of assessment to evaluate their understanding of key concepts within the module. The multiple-choice questions were primarily basic knowledge and comprehension questions based on the content presented. This assessment was saved and later printed as verification of students completing the learning unit and part of the research study results. In addition to the results, students were asked to write and post their comments in the online forum to reflect and evaluate their learning experience for that module. Students' learning forums were posted on the private group page that was set for each group to which only the student and the instructors had access. Students received a grade for each module. The primary means of communication among students and the instructor took place in the science forum posted in social media private accounts, messenger, email, and phone.

Instrument

A survey questionnaire was given to students after the completion of the module. A survey was administered to science students anonymously during the research study from the month of October to December 2020 and after a class discussion of the module as learning resource materials for the first quarter of the year. The survey instructed participants to provide honest feedback about their experiences with this learning approach. There were 87 students at Senior High School students of New Lucena National High School who completed the survey. The results of the study, therefore, are based on eighty-one responses, which represent more than 80 percent of the total students enrolled. The survey, questions, it is divided into three parts, the first part is all about the perception of the student based on the usefulness of Module and Social Media. The second part is about the perception of students on self-efficacy in using modules and social media and the last part is about students' perception of ease of use of the module and social media. It also included soliciting respondents' opinions and perceptions about the modular approach towards the subject matter and social media strengths and limitations, and recommendations for use as a tool for improvement of remote learning. T-tests tests were applied as an appropriate statistical tool to test for statistical significance between various measures in this study.

Participants

Among the participants are grade 11 students composed of thirty-eight HUMS and twenty STEM students. An additional twenty-nine grade 12 STEM students were added to the study. All of them use the module and social media as part of learning materials and instruction. The characteristics of the participants are summarized in Table 1. As indicated, the overall sample was evenly distributed by gender (54 percent females and 46 percent males). The participants consisted of 67 percent grade 11 students (44 percent HUMSS and 23 percent STEM), 33 percent. Grade 12 STEM students.

Table 1. Participant Characteristics

Gender	Percentage (%)
Male	46
Female	54
Total	100
Student Rank	
Grade 11	67
Grade 12	33
Total	100
Student Area of Specialization/ Strand	
HUMSS	44
STEM	56
Total	100

Data Gathering Procedure

Students' perception of the module and social media as tools for remote learning, their science performance, and their grades (module grades, survey, and first-quarter grades) were the data sources for this study. Three modules were used to analyze students' perceptions over time: Module 1, Module 2, and Module 3. The first three modules were used because the study was conducted during the first quarter of the school year 2020-2021. We selected those three modules because they occurred at the beginning of the school year. Module 1 was a

week-long module. For the first week of the module, the class was instructed to complete the first module and posted a comment and suggestions about the module in the science forum using a Facebook page which is a private account and only members of the research study can actively participate with the guidance of their instructor. Students from each group participated in their own specific discussion forum to discuss the same topics (definitions, context, and characteristics of module for remote learning). During the second week, Module 2 was used as follow up module for the next topic to be discussed in science learning, students participated in the whole class online discussion and instruction (share and exchange ideas on each other's definitions, context, and characteristics) in the main discussion forum and postings from the whole class discussion. Module 2 was another week module, Module 3 was also a one-week module, and both involved the whole class discussion. The collected data of both groups were analyzed and interpreted using mean, standard deviation, and t-test, and conclusions were drawn. The results of the research were in the favor of modular teaching approach; therefore, it is suggested that this approach should be widely used in alternative approaches in teaching to help the student adjust to conventional classroom settings that were usually used at various levels of education.

IV. RESULTS AND INTERPRETATION

Of the 87 students participants, all of them completed the student survey questionnaire. To note the frequency of participants according to their strand and grade level, and the use of modules to discuss the work of students with classmates outside of the class to prepare teachers' discussions prepared in the module. As the participants were asked to answer a questionnaire to provide feedback on their experience of studying the module for remote learning. The feedback is rated from 5- strongly agree, 4-agree, 3-no opinion/ do not know, 2- disagree, 1- strongly disagree. To find out student perception towards the use of modules and social media as a tool for science learning the majority of the respondents indicated that they had 'agree to use an online media to work with classmates outside of class and used online media to discuss or complete assignments.

Data Analysis

After data collection from respondents, the survey items were rated using SPSS. The frequencies of nominal variables, descriptive statistics including percentages, standard deviations, and means of categorical variables, and descriptive were analyzed using SPSS. T-test was used to test the relationships of variables. The responses were collected from a total of 87 respondents from the STEM and HUMSS tracks having no missing value.

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Descriptive analysis

The descriptive statistics of quantitative variables comprised of the frequency and percentage distribution of strand and grade level are presented in Tables 1 and 2. The frequency distribution in Table 1 is based on the strand. 38 participants are in HUMSS and 49 participants are in STEM with a total of 87 participants. In addition, the HUMSS has a 43.7 percent while 56.3 percent are in the STEM strand with a total of 100 percent. In terms of grade level, the frequency distribution of grade 11 is 58 who participated in the current study and 29 participants came from grade 12. In terms of percentage, 66.7 percent were from grade 11 and 33.3 percent were grade 12 participants.

Table 1. Frequency and percentage distribution of the participants based on the strand.

Strand					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	HUMMS	38	43.7	43.7	43.7
	STEM	49	56.3	56.3	100.0
	Total	87	100.0	100.0	

Table 2. Frequency and percentage distribution of the participants based on grade level.

Grade Level					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Grade 11	58	66.7	66.7	66.7
	Grade 12	29	33.3	33.3	100.0
	Total	87	100.0	100.0	

The standard deviation and mean are based on three parts namely; the perception of the student based on the Usefulness of the Module and Social Media. The second part is about the Perception of Student on Self-Efficacy of Using Module and Social media and the last part is Student Perception about of Ease of Use Modules and Social media which are presented in Table 3. The maximum value for all the variables was 5, whereas, the minimum was 1. The mean and standard deviation values as students perceived based on the usefulness of the module and social media were 4.132 and 0.5408 for the HUMSS strand and 4.294 and .6857 for the STEM strand. The mean and standard deviation as perceived student self-efficacy of using a module and social media were 4.279 and .4955 for HUMSS and 4.118 and .8195 for the STEM strand, lastly, as perceived ease of use of the module and social media the mean and standard deviation for HUMSS were 4.053 and 6181 and for the STEM strand, the mean were 4.229 and .6856 respectively. Comparing the three means which is above 4 is nearest to the maximum rating which is 5. The standard deviation is more than .500 or nearer to the normal distribution that making the data closer to the normal distribution of the data samples.

Table 3. Group Statistics of the participants based on strands.

Group Statistics					
	Strand	N	Mean	Std. Deviation	Std. Error Mean
I. Perceived Based on Usefulness of Module and social media	HUMMS	38	4.132	.5408	.0877
	STEM	49	4.294	.6857	.0980
II. Perceived Student Self- Efficacy of Using Module and social media	HUMMS	38	4.279	.4955	.0804
	STEM	49	4.118	.8195	.1171
III. Perceived Ease of Use of Module and social media	HUMMS	38	4.053	.6181	.1003
	STEM	49	4.229	.6856	.0979

Students' Perception According to Strand

Table 4 is the result of the t-test between the three variances or three major areas of the study according to strand. The result of an independent t-test, includes the *t*-statistic value, the degrees of freedom (df), and the significance value of the test (*p*-value). For the first area, Perceived Based on Usefulness of Module and Social media has a t-statistic value of -1.198., degrees of freedom of 85, and a significance value of the test of .234. For the second area, as Perceived Student Self-Efficacy of Using Module and Social media has a t-statistic value of 1.066 degrees of freedom of 85 and a significance value of the test of .290. The last area as Perceived Ease of Use of Module and social media has a t-statistic value of -1.239, degrees of freedom of 85, and significance value of the test of .219. All areas have a lesser 0.1 standard mean error.

Table 4. T- test for Equality of Means according to strand Independent Samples Test

		Levene's Test for Equality of Variances		t-test for Equality of Means						
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference	
									Lower	Upper
I. Perceived Based on Usefulness of Module and social media	Equal variances assumed	1.990	.162	-1.198	85	.234	-.1623	.1355	-.4317	.1071
	Equal variances not assumed			-1.234	84.967	.221	-.1623	.1315	-.4238	.0992
II. Perceived Student Self- Efficacy of Using Module and social media	Equal variances assumed	9.274	.003	1.066	85	.290	.1606	.1507	-.1391	.4602
	Equal variances not assumed			1.131	80.666	.261	.1606	.1420	-.1220	.4431
III. Perceived Ease of Use of Module and social media	Equal variances assumed	.510	.477	-1.239	85	.219	-.1759	.1420	-.4583	.1064
	Equal variances not assumed			-1.255	83.026	.213	-.1759	.1402	-.4547	.1028

In table 5 were the summary results of the mean and standard deviation according to strand. Every three areas have five questions as perceived according to their purpose. For the first area, as Perceived Based on Usefulness of Module and Social media, the first question for 38 HUMSS participants has a mean value of 4.18 and a standard deviation of 0.801 while for 49 STEM participants have a mean value of 4.33 and 0.899 standard deviation value. For the HUMSS strand, the last four remaining questions have an average mean of more than 4.0 which is nearest to the maximum value of 5.0. All of the remaining four questions have a higher value of the standard deviation compared to the normal distribution of 0.500. For the 49 STEM strand participants, the five questions have a higher mean value of 4.2 and a 0.8 standard deviation value. For the second area of the study, as Perceived Student Self-Efficacy of Using Module and Social Media, for HUMSS participants, all five questions have a mean value of 4.2 and a standard deviation value of higher than 0.5 normal distribution while for the STEM strand, the five questions have an average mean of 4.0 and all of them have a higher value of the standard deviation of 0.8. For the last area of study, Perceived Ease of Use of Module and Social Media, the HUMSS strand

has a mean value of 4.0 for the five questions and a 0.7 standard deviation value while for the STEM strand it has a mean value of 4.2 and a 0.8 standard deviation value.

Table 5. Summary Results of the mean and standard deviation according to strand.

	Strand								
	HUMSS			STEM			Total		
	Mean	N	SD	Mean	N	SD	Mean	N	SD
I. 1. Studying through modules with social media provides flexibility of my study at my own pace and time convenient.	4.18	38	.801	4.33	49	.899	4.26	87	.855
2. Through module, I can enable to study irrespective of wherever my location and my personal circumstances.	4.11	38	.689	4.29	49	.935	4.21	87	.837
3. Social media help me improved collaboration and interactivity among my classmate, peers, and teacher.	4.03	38	.854	4.35	49	.855	4.21	87	.865
4. Through social media, it provides sufficient opportunities to check my understanding of the module before taking the test and submitting assignments to my teacher.	4.11	38	.649	4.18	49	.858	4.15	87	.771
5. Learning through module, accommodates my own type of learning styles.	4.24	38	.883	4.33	49	.851	4.29	87	.861
II.1. I feel confident while using modules and social media as a tool for my remote learning class.	4.34	38	.669	3.57	49	1.528	3.91	87	1.282
2. I feel confident in learning science concepts (chemistry, physics, earth science and earth and life) through modules and social media.	4.13	38	.811	4.27	49	.836	4.21	87	.823
3. I feel confident about the way the module materials presented and helped me to maintain my interest in learning topics under chemistry, physics, earth science and earth and life.	4.21	38	.664	4.12	49	.971	4.16	87	.847
4. I feel confident while learning through modules it helps me improve my personal qualities like being responsible, organized, discipline, and self-motivated person.	4.37	38	.633	4.31	49	.742	4.33	87	.693
5. I feel confident while learning through modules it allows me to succeed and perform better at my own pacing.	4.34	38	.534	4.33	49	.899	4.33	87	.757
III. 1. I believe that modules are easy, quick, and worth to share through social media in terms of instructional material in learning science concepts.	4.08	38	.749	4.33	49	.851	4.22	87	.813
2. It would be easy for me to learn through modules and find necessary information through social media in learning science concepts for my remote learning classes.	4.00	38	.735	4.24	49	.990	4.14	87	.891
3. I believed that using modules and social media services can simplify the science learning process.	4.08	38	.850	4.33	49	.899	4.22	87	.882
4. The set-up of using modules and social media services are compatible with the way I learn.	3.95	38	.804	4.04	49	1.020	4.00	87	.928
5. I intend to use modules and social media to assist my science learning because of their quick feedback.	4.16	38	.718	4.20	49	.912	4.18	87	.829

Students' Perception According to Grade Level

Table 6 shows the group statistics of the three main areas of a research study according to grade level. The first area as Perceived Based on Usefulness of Module and Social Media by grade 11 participants has a mean value of 4.224 and has a standard deviation value of 0.5233 while in grade 12 participants it has a 4,221 mean and 0.8095 standard deviation value. The second area of the study as it was the Perceived Student Self-Efficacy of Using Module and Social Media has a mean value of 4.376 for grade 11 participants and has a standard deviation value of 0.5069 while for grade 12 participants, the mean value of 3.814 and 0.8884 standard deviation value. The last area of study, Perceived Ease of Use of Module and Social Media has a 4.207 mean value for grade 11 participants, and 0.6155 standard deviation value while for grade 12 participant , the last area has a mean value of 4.041 and 0.7375 standard deviation value. All areas have a less 0.1 standard error mean value.

Table 6. Mean and standard Deviation according to grade level.

	Grade Level	N	Mean	Std. Deviation	Std. Error Mean
I. Perceived Based on Usefulness of Module and social media	Grade 11	58	4.224	.5233	.0687
	Grade 12	29	4.221	.8095	.1503
II. Perceived Student Self- Efficacy of	Grade 11	58	4.376	.5069	.0666

Using Module and social media	Grade 12	29	3.814	.8684	.1613
III. Perceived Ease of Use of Module and social media	Grade 11	58	4.207	.6155	.0808
	Grade 12	29	4.041	.7375	.1370

Table 7 is the result of the t-test between the three variances or three major areas of the study according to grade level. The result of an independent t-test, includes the *t*-statistic value, the degrees of freedom (df), and the significance value of the test (*p*-value). For the first area, Perceived Based on Usefulness of Module and Social media has a t-statistic value of 024, degrees of freedom of 85, and significance value of the test of .981. For the second area, Perceived Student Self-Efficacy of Using Module and Social media has a t-statistic value of 3.810, degrees of freedom of 85, and a significance value of the test of .000. The last area as Perceived Ease of Use of Module and social media has a t-statistic value of 1.106, degrees of freedom of 85, and significance value of the test of .272.

Table 7. T-test results according to grade level.

Independent Samples Test										
		Levene's Test for Equality of Variances		t-test for Equality of Means						
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference	
									Lower	Upper
I. Perceived Based on Usefulness of Module and social media	Equal variances assumed	6.577	.012	.024	85	.981	.0034	.1437	-.2823	.2892
	Equal variances not assumed			.021	40.062	.983	.0034	.1653	-.3306	.3375
II. Perceived Student Self- Efficacy of Using Module and social media	Equal variances assumed	16.047	.000	3.810	85	.000	.5621	.1475	.2688	.8554
	Equal variances not assumed			3.222	37.814	.003	.5621	.1745	.2089	.9153
III. Perceived Ease of Use of Module and social media	Equal variances assumed	.343	.559	1.106	85	.272	.1655	.1497	-.1321	.4632
	Equal variances not assumed			1.041	48.038	.303	.1655	.1590	-.1542	.4853

In table 8, were the summary results of the mean and standard deviation according to grade level. Every three areas have five questions as perceived according to their purpose. For the first area, as Perceived Based on Usefulness of Module and Social media, the five questions for 58 grade 11 participants has a mean value of 4.20 and a standard deviation of 0.8 while for 29 grade 12 participants has a mean value of 4.22 and 1.02 standard deviation value which is much higher compared to the grade 11 level. The average mean of more than 4.0 which is nearest to the maximum value of 5.0 for both grades 11 and 12. All of the five questions have a higher value of the standard deviation compared to the normal distribution of 0.500 in the first area. For the second area of the study, Perceived Student Self-Efficacy of Using Module and Social Media, for grade 11 level, all five questions have a mean value of 4.376 and a standard deviation value of higher than 0.5 normal distribution which is 0.6518 while for grade 12 level, the five questions have an average mean of 3.812 and all of them have a higher value of the standard deviation of 1.081. For the last area of study as Perceived Ease of Use of Module and Social Media, the grade 11 has a mean value of 4.21 for the five questions and a 0.756 standard deviation value while for the grade 12 level it has a mean value of 4.042 and a 1.059 standard deviation value.

Table 8. Summary Results of the mean and standard deviation according to grade level.

	Grade Level								
	Grade 11			Grade 12			Total		
	Mean	N	SD	Mean	N	SD	Mean	N	SD
1. Studying through modules with social media provides flexibility of my study at my own pace and time convenient.	4.24	58	.757	4.31	29	1.039	4.26	87	.855
2.Through module, I can enable to study irrespective of wherever my location and my personal circumstances.	4.19	58	.661	4.24	29	1.123	4.21	87	.837
3. Social media help me improved collaboration and	4.21	58	.789	4.21	29	1.013	4.21	87	.865

interactivity among my classmate, peers, and teacher.									
4. Through Social media, it provides sufficient opportunities to check my understanding of the module before taking the test and submitting assignments to my teacher.	4.16	58	.670	4.14	29	.953	4.15	87	.771
5. Learning through module, accommodates my own type of learning styles.	4.33	58	.803	4.21	29	.978	4.29	87	.861
1. I feel confident while using modules and Social media as a tool for my remote learning class.	4.43	58	.652	2.86	29	1.575	3.91	87	1.282
2. I feel confident in learning science concepts (chemistry, physics, earth science and earth and life) through modules and social media.	4.26	58	.762	4.10	29	.939	4.21	87	.823
3. I feel confident about the way the module materials presented and helped me to maintain my interest in learning topics under chemistry, physics, earth science and earth and life.	4.31	58	.654	3.86	29	1.093	4.16	87	.847
4. I feel confident while learning through modules it helps me improve my personal qualities like being responsible, organized, discipline, and self-motivated person.	4.45	58	.626	4.10	29	.772	4.33	87	.693
5. I feel confident while learning through modules it allows me to succeed and perform better at my own pacing.	4.43	58	.565	4.14	29	1.026	4.33	87	.757
1. I believe that modules are easy, quick, and worth to share through social media in terms of instructional material in learning science concepts.	4.26	58	.739	4.14	29	.953	4.22	87	.813
2. It would be easy for me to learn through modules and find necessary information through social media in learning science concepts for my remote learning classes.	4.21	58	.744	4.00	29	1.134	4.14	87	.891
3. I believed that using modules and social media services can simplify the science learning process.	4.21	58	.789	4.24	29	1.057	4.22	87	.882
4. The set-up of using modules and social media services are compatible with the way I learn.	4.12	58	.774	3.76	29	1.154	4.00	87	.928
5. I intend to use modules and social media to assist my science learning because of their quick feedback.	4.24	58	.733	4.07	29	.998	4.18	87	.829

V. CONCLUSIONS

The study intended to present the perspective of senior high school on the usefulness of modules and social media for remote learning. It also presented a piece of evidence that despite some challenges, senior high school students could adapt to the new learning methods of distance learning especially the use of the module and social media as a tool for remote learning. The study reveals that the modular approach and social media have a better efficiency experienced in remote learning than in classroom learning. The sudden closure of school premises due to the pandemic presents an enormous opportunity for cultural transformation in the Philippine Educational System. As more "techie" generations enroll in secondary education, need to incorporate blended learning in the curriculum, to design the best features of classroom and distance learning to improve the overall learning environment. The results of this study are interpreted due to the following limitations. First, a bias may exist because of the self-selected sample of grade 11 and 12 levels that are only HUMSS and STEM students of New Lucena National High School secondary education students. Second, the researcher wants to know the perspective of science learners to help improve the modular approach and reveal how social media can help the teaching strategies of teachers for today's generations. Lastly, these senior high school students are just small presentations on how students perceived the use of the module attain educational globally competitive. Thus, the conclusions may not be generalizable to the senior high school population. Despite this, the results may be useful to curriculum makers, teachers, and supervisors that work primarily with a module. The reliability and validity of the questionnaire used in this study were established. The researcher hoped that these results may be used to inform future researchers and eventually lecturers and institutional practices that capitalize on the benefits of using modules and social media to support student development. This may help Philippines Education for a better understanding of how and why teachers are using a modular approach and social media resources that can be a part of students' educational experience. In addition, this information can be used to support lecturers, curriculum developers, and planners in the creation and use of institutionally supported social media resources.

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