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Table of Contents

Page

Flipped Classroom Practices in Improving Economic Skills and Social Learning

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Abstract

The study was conducted to identify the significant relationship on utilizing flipped classroom in improving the economic skills and social learning of grade 9 students. With the use of descriptive-quantitative research design wherein information was gathered about the variables without changing the environment, the study was conducted with 108 students of a public national high school in the Philippines. A researcher-made questionnaire was formulated to gather the responses of the participants. The study was conducted to identify the significant relationship between utilizing Flipped Classroom Practices to improve the academic achievement of grade 9 students in Araling Panlipunan. In relation to this, the study gained the responses of 108 Grade 9 learners through the cluster sampling method. Furthermore, the study utilized descriptive quantitative for its research design, focusing on the Grade 9 learner's. In relation to the academic achievement of grade 9 students, the teachers were able to get the interest of the students, collaboration was promoted among the students, and the learning environment helped the student to achieve more academically. It was also concluded that the student-centered flipped classroom practices were able to affect the economic skills of the students in terms of analyzing hence, implying that the student-centered practices were helpful in improving the economic skills of the students in terms of analyzing. Moreover, the flipped classroom practices were also able to affect the social learning of the students, wherein the flipped classroom practices were able to improve the student's social learning. For this reason, teachers may provide other means of making the student more engaged in the lessons being discussed, such as providing an assessment on every finished lesson to keep the students more focused during discussions.

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1. Introduction

The Flipped Learning Network introduces the idea of flipped learning by the abbreviation FLIP, which represents the flexible environment, learning culture, intentional content, and professional educator (Flipped Learning Network, 2017). These four components, named "the four support points," are the foundations of an instructing approach that is versatile, creative, interactive, and student-oriented. Various researchers use the term "inverted learning" equivalently while characterizing or clarifying flipped learning (Midun et al., 2019). In writing, the period of converted education has likewise been approximately applied as blended learning in different structures when any two kinds of understandings have been joined with advanced innovation, for example, the mobile blended cooperative learning model all through the homeroom (Avci & Adiguzel, 2017), composite learning climate and online learning environment (Hung & Chou, 2018) and blended English getting the hang of utilizing on the web and versatile advances (Milthorpe et al., 2018).

The flipped classroom (FC) is one of the critical online distance schooling draws near. A few researchers have characterized the model. For instance, Bergmann and Sams (2019) portrayed it as leading conventional study hall exercises at home and doing schoolwork tasks in the homeroom. The most acknowledged concept was formulated by Bishop and Verleger (2020) as anchored on the four principal components in the FC procedure given by the Flipped Learning Network (2017). In the strategy, guidance is PC helped and led outside the study hall, and gathering exercises are guided in the homeroom. This incorporates an adaptable environment, learning society, deliberate substance, and expert teacher. Chen et al. (2017) detailed that these support points would be lacking in advanced education. As indicated, moderate exercises, drawing in growth opportunities, and expanded stages should be added to the four components. Among these variables, they permitted adaptable conditions that separated the flipped study hall from different models (Filiz & Kurt, 2018). The flipped homeroom centers around the understudy rather than the educator and urges the understudies to try. Likewise, flipped study hall is a viable learning model that prompts dynamic and significant picking up during in-class and out-of-class learning exercises (Forsey et al., 2020). It was resolved that the model further develops student inspiration and execution when contrasted with customary guidance (Lai & Hwang, 2019; Smit et al., 2017). One of the upsides

of the flipped homeroom is the accessibility of moment input in synchronous meetings led after the understudies are prepared (Hattie, 2018).

There is no unmistakable agreement on the meaning of flipped learning; in any case, most specialists concur that in a flipped homeroom, assignments customarily completed in the study hall should happen outside the homeroom, as well as the other way around, schoolwork in the homeroom (Al-Zahrani, 2018). Generally, it is anything but another idea: schoolwork to do before class, for example, examining or looking into an illustration, has been utilized for quite a while. The systematic utilization of innovation to convey revelatory information makes a flipped homeroom different. The utilization of online recordings is the same as an expert class, and the present instruments make it simple for instructors to make their recordings, which has lifted this model. This permits better utilization of the time in class to learn through training, which can prompt significantly better-extended haul maintenance (Clark & Mayer, 2017). Among the impediments, a few creators include the trouble of drawing in understudies while advancing at home, just as in bunch conversations in the homeroom (Tanner and Scott, 2018).

Several studies have explored the effects of the FC Model on students' achievements, commitment, learning results, and inspiration. Studies have shown that the Flipped Learning model upgrades students learning execution (Zengin, 2017), produces improved learning results (Chen Hsieh et al., 2017; Smallhorn, 2017), and expands students' inspiration (Chyr et al., 2017; Graziano, 2017; Smallhorn, 2017; Yılmaz, 2017). Flipped learning conditions can add to teachers' pre-administration learning, abilities, and complete feeling of improvement, explicitly by making a significant and natural setting for learning. Graziano (2017), for example, directed a review to reveal the advantages of the Flipped Learning Model for pre-administration educators, its effects on understudies' prosperity, and the hardships of the model. It was seen that students were more valuable and excited to take part in flipped examples (Ray & Powell, 2014).

In the context of the study, the flipped learning model introduces another methodology in showing Blended learning instruction. One of the instructing ways that require innovation in teaching is blended learning. This suggests learning through utilizing innovation pre-class and inside the classroom, learning through the materials posted on the Learning Management System (LMS), Quizziz, Google Classroom, Microsoft Teams, or MOODLE when the class,

up close and personal learning with the instructor, and student commitment with companions and dynamic mastering for creating more significant level abilities. The third Renaissance time frame is the comprehensive utilization of data advancements and online media networks in training. To concentrate on the students of this period, the broadened, unique, and powerful learning conditions are essential (Wu & Li, 2015). It is seen that these new-age innovative learning conditions lean toward performing various tasks and cooperative gathering exercises in the homeroom climate (Roehl et al., 2013). At the point when educators viably coordinate data advances into their lessons, there will have established fascinating learning conditions for students who have effectively embraced and generally involved innovation in their lives (Danker, 2015).

The blended learning framework is a framework that builds variety in classroom exercises. It expands the innovativeness of the teachers by compelling them to track down new movements and potentially opens the door for students to comprehend face to face the hour of the data provided to them and permits them to foster their singular acquiring abilities (Gençer, 2015). The online learning environment enables face-to-face learning to get direct help on subjects that understudies don't comprehend while establishing a learning climate outside the homeroom through technologies and online platforms (Hughes, 2007). The exploration hole of the review is as per the following: difficulty to propel students, issues with using time productively, homeroom the board issues, and not having the option to guarantee the inclusion of students in exercises (Şahin et al., 2020), students probably want to avoid group exercises (Johnson, 2013) and there is no prompt revision of student's mistakes and error (Enfield, 2012). Hence, this study aims to develop a guideline proposal using Flipped Learning Model in Araling Panlipunan.

2. Literature Review

2.1. Flipped Learning Model for Academic Success

Kozikoglu (2019) describes flipped learning as a creative and viable learning model among instructors. Flipped learning proposes that the substance ought to be gotten by the student's self-learning before the class to permit teacher-student cooperation in the study classroom. Moving the showing break of the school under the student liability, the flipped learning model adds time for the educator to manage students independently and practice in

the classroom. Subsequently, additional time is allowed for the instructor to direct the learning exercises of the students and tackle their concerns (Ercan-Demirel, 2019; Hwang et al., 2018). Consequently, flipped learning model works with learning in the homeroom with the utilization of innovation outside of the classroom and considers expanding educator students' connection in the class.

Flipped learning is applied at elementary, secondary, and higher education levels. This model uses pre-arranged video instructional exercises to expand up close and personal homeroom exercises (Yoshida, 2019). As such, in the flipped learning model, out-of-class learning works with the procurement of lower request thinking abilities (terms, definitions, ideas, fundamental understanding, and so on) and in-class exercises work with the securing of higher request thinking abilities (censure, addressing, applying, investigation, union, and so forth) (Sarawagi, 2020). The flipped learning model comprises four parts: adaptable climate, learning society, deliberate substance, and expert teachers (Flipped Learning Network, 2017). The flexible environment involves different instructing and learning ways to meet the students' interests, necessities, and assumptions. Gaining society alludes to the change from a teacher-centered way to dealing with a student-centered methodology in which the student is dynamic. The purposeful substance attracts consideration not exclusively to the inclination of the educator, yet in addition to the instructor's job in investigating and setting up the importance of the necessities of the students. The part of expert instructors stresses the requirement for proficient and skilled educators to apply flipped learning model who sees how students learn and who can direct them by giving vital input (Alharbi, 2018).

According to Huber and Werner (2019) and Catrambone (2018), student accomplishment was augmented by flipped learning while Rahman et al. (2017) found that flipped learning model positively affects student accomplishment. Similarly, the analysis of Uzunboylu and Karagözlü (2017) found that flipped learning model has been applied in 48 diverse branches of knowledge and, for the most part, directed to college students. Moreover, utilizing meta-analysis, Tutal and Yazar (2017) presumed that flipped learning has a moderate and constructive outcome on the scholastic accomplishment of the students contrasted with the conventional strategy.

According to Bursa and Kose (2020), flipped classroom practices increased students' academic achievement statistically and significantly. This outcome is predictable with the

aftereffects of various examinations in writing. A portion of these examinations was done in the Social Studies course (Dursunlar, 2018; Erdogan, 2018; Nayci, 2017), while others were led in different classes and at various instructive levels (Carlisle, 2018; Cakir, 2017; Duffy, 2016). In support of this result, Herreid and Schiller (2020) emphasize the importance of videos that enable students to focus on content in flipped classroom practices and that such videos will positively affect the classroom process and bring about a student-centered environment. In addition, Hsin and Cigas (2020) showed that video usage increases students' achievement scores, in line with the results obtained in the study. One of the most critical features of videos that increase academic success is that they can be watched again in a quiet environment according to learning preferences and stay in the virtual classroom at all times. In support of this result, Oyola (2019) concluded that flipped classroom practices encouraged the student to learn at home and that reteaching was facilitated by watching the videos. In addition to this feature of the videos, the questions included in the videos also positively affected the increase in academic achievement. Similar to this result, Wilson (2019), in his research, tried to reveal the effectiveness of the questions added to the videos he shared in the Edpuzzle application. As a result of the study, the questions added to the videos effectively improved students' learning.

Another result of flipped classroom practices positively affecting academic achievement is related to the visuality of e-learning videos shared with students. Visually rich educational materials are thought to appeal to more senses and people (Dhandabani & Sukumaran, 2018). In this study, some students said that the visuality of the videos makes the information better understood and remembered, and their success increases. A few investigations in the writing cross over with this consequence of the exploration. In one of these investigations, Cabi (2018) recommends that recordings that guide students in extracurricular examinations should be chosen or created with rich substance.

2.2. Teaching Flipped Classroom Practices in Araling Panlipunan during Pandemic

According to Alay (2021), to have a fruitful online classroom to teach Araling Panlipunan, it should have planning, managing, and handling to provide adequate knowledge context and create established learning for diverse learners. Moreover, the student's physical condition and psychosocial setting should be prioritized in establishing learning inside the online classroom or google meet. Teaching Araling Panlipunan, which is led by flipped

learning, will increase the participation of students (Chen, 2016; Lazarus, 2018). Likewise, re-watching the recordings before the tests in flipped homeroom rehearses emphatically influences students' academic achievement in anticipation of tests (Bergmann & Sams, 2019). Moreover, it is expressed that obligation will create in students involving flipped homeroom rehearses in Araling Panlipunan (Evseeva & Solozhenko, 2018; O'Flaherty & Phillips, 2018). Responsibility, which is emphasized to create in students with flipped study classrooms practices, is characterized as follows: "The individual is to adjust, to satisfy his/her obligations and to accept the outcomes of the impacts of his/her activity on others, to regard the privileges of others and to safeguard the results of his/her conduct" (Sezer, 2017). It is envisioned that the expansion in the implementations of the students in the classroom and outside the study hall, passing on the control of figuring out how to the student and giving accentuation to the significant level thinking abilities in the exercises in the study hall (Li et al., 2017).

Systems can be utilized to change, from exhausting to drawing in and invigorating students by planning another learning climate-related to computerized games in an assortment of settings and an assortment of subjects—plan in Learning centers around creating and supporting student elements (Zhu and Qi, 2018). For instance, Sebastian (2021) found the Quizizz gamified instructive apparatuses were progressively used to acquire partners' interests. This outcome in learning by consolidating novel game components, for example, pioneer sheets, images, and test reports, every one of which can assist with expanding commitment and inspiration. Yunus and Hua (2021) added that growth opportunities happen in stress-free conditions. This makes students' preferences and interests shown. The learning environment decidedly influences the exhibition of students by working with the learning system and expanding student fulfillment (Pratsri & Nilsook, 2020).

2.3. Teacher-aided Instruction in an Online Learning

Student-Centered. As indicated by Richards and Schmidt (2017: 326), student-centered education depends on "a conviction that regard for the idea of students should be vital to all parts of language instructing, including arranging to educate, and assessment. Learning is reliant upon the nature and will of the students. Students, as per this view, are not detached beneficiaries of information. Instead, they effectively develop knowledge through the social occasion by orchestrating data and incorporating this data with abilities like request, correspondence, and primary and innovative reasoning (Huba & Freed, 2017; Brown, 2017).

Unlike educator-focused methodologies, where instructors finish most work, student-centered guidance is an informative methodology wherein students impact the substance, exercises, materials, and learning speed. The educator isn't a supplier of information but a supplier of chances from which students can advance autonomously and from each other. The educator additionally mentors students in the abilities they need for free mastering (Collins & O'Brien, 2020: 399).

Al-maqtri (2019) found that most students are not propelled to learn Social Studies, that students are not ready to work in gatherings or groups, and that students are glad to be under the teacher's control. This was explained in the study of Yilmaz (2017), that educators had positive attitudes toward the student-centered approach and was agreeable to the constructivist learning hypothesis. Significantly, they accepted that a student-centered approach could make picking up connecting challenging, enjoyable, and applicable.

Interactive Classroom. Most studies are composed of positive perceptions about the impacts and the capability of the interactive classroom (Elaziz, 2017). For example, many investigations report the beneficial outcome of the interactive classroom on students' academic achievement (Thompson & Flecknoe, 2020; Yang et al., 2019; Yorgancı & Terzioğlu, 2020; Yang et al., 2019) but some report the impact of the interactive classroom as irrelevant (Glover et al., 2018; Higgins et al., 2020; Solvie, 2017). Numerous educators see the interactive classroom as an essential showing method (Warwick & Kershner, 2017) that empowers educators to plan and put together exercises, and examples utilizing an expansive assortment of multimodal assets and draw students' mental and creative possibilities into the learning system (Littleton et al., 2017). Moreover, it can be utilized to adequately convey the guidelines to the students (DeSantis, 2019), assist with changing the common homeroom conditions (Somyurek et al., 2018) and change many encountered educators' mentalities toward innovation (Huber, 2017).

Current research on interactive classroom utilization in instructive settings mirrors a few student benefits. For example, they foster students' independence (Harlow et al., 2017; Minor et al., 2020), increment student excitement and inspiration (Schmid, 2019; Torff & Tirotta, 2020; Wood & Ashfield, (2017), can ease instructing and learning (Smith et al., 2018; Glover et al. 2018), upgrade the level of comprehension (Holmes, 2018; Wall et al., 2018), and empower students to take an interest in the examples being directed and give coordinated effort

in the class (Gray et al., 2018; Minor, et al., 2020). An and Reigeluth (2018) also found that K-12 teachers have a positive impression of interactive classrooms while An and Mindrila also found 70% of instructors with positive perception on interactive classrooms.

Teacher-aided. Few studies have investigated college instructors' view of teacher-aided and announced uncertain outcomes. Utilizing an adjusted form of the survey created by An and Reigeluth (2011), Tawalbeh and AlAsmari (2018) analyzed college instructors' impressions of teacher-aided in the Social Studies classes. They observed that members had an uplifting outlook toward teacher-aided and accepted that they were student-focused educators. Then again, Ha (2017) announced reactions of teacher-aided from three college teachers in Social studies and humanities classes. The members detailed that teacher-aided has been mishandled by many "lazy teachers who just do not get ready for their group and give students examine things access whichever ways they need to" (p. 400).

Researchers have noticed that learner-centered showing convictions do not prompt teacher-aided in education. Becker (2017) noticed that instructors are significantly more constructivist in thinking than in actual practice. An and Reigeluth (2018) announced that the absence of information about teacher-aided and different boundaries frequently keeps educators from making a student-centered environment even though they have student-centered beliefs. Kaymakamoğlu (2018) investigated the social studies teacher's convictions and saw practice and actual classroom practice comparable to traditional (teacher-centered) and constructivist (student-focused) education in Turkey. The outcomes uncovered that albeit the teacher-aided communicated constructivist or both constructivist and customary convictions, their apparent practice was generally conventional or teacher-centered.

2.4. Self-paced instruction, asynchronous activities for students

Teacher-centered. Few studies indicate that teacher-centered instruction is utilized in the Saudi setting (Fareh, 2010; Alrabai, 2014; Al-maqtri, 2016). For example, Alrabai (2014) observed that educators in Saudi study halls are moderators of information rather than facilitators of learning. Accordingly, Saudi students depend on the educator as the principal wellspring of information. Fareh (2010) showed that Social Studies educators in the Saudi homerooms spend most of the examples talking and seldom permit students an opportunity to speak or pose inquiries. Teacher-centered regularly has explicit necessities and interests for

which they participate, typically getting to divide courses or exercises (DeBoer et al., 2017). Students may likewise have to a lesser degree, a need to invest energy in practices assuming they are now equipped with the abilities that the exercises try to create (Perna et al., 2017; Shen & Kuo, 2018). To this end, students in online courses to date have shown less participatory examples, groupings, and timing of work (DeBoer et al., 2017). As a result of the variety of participatory models seen to date in self-guided online courses, it is valuable to additionally research the job that planning plays in the learning system in these conditions.

Lecture method. A couple of studies have analyzed the circumstance of lecturing in online learning, which has been utilized in settings, for example, proficient instructor turns of events, proceeding with training courses, or MOOCs (DeBoer et al., 2017; Kovanović et al., 2018; Miyamoto et al., 2018). The present circumstance is logical due to the profoundly time-adaptable nature of these courses, the low level of tension, and the low stakes on a piece of the students to take an interest. The trouble in associating the circumstance and measure of work performed to the course period significantly, mainly when course periods are distinctive for every member. Time-on-task has been famously difficult to gauge in program-based frameworks where the client is not continually interfacing, for example, clicking or effectively playing video (Calderwood et al., 2017; Karweit & Slavin, 2019). This way, DeBoer (2017) proposes that members' planning practices in self-guided online courses need more consideration.

Computer-aided. Work in adaptable and independent computer-aided has been as often as possible noticed not to be direct or follow classic examples (DeBoer et al., 2017). This problem in estimating computer-aided course material is particularly evident in online learning, where not all course movement happens inside online learning (Kovanović et al., 2018). Likewise, students are the arrangement, reiteration, and timing of learning exercises, like discourse and innovative works, and these ought to be focused on in future work (Lemke, 2018; Mercer, 2017; Roth, 2019). Moreover, contemporary or equal work during learning exercises is one more significant aspect that should be broken down. New methodologies that focus on conceptualizing the worldly components of learning would be helpful for informative planners and the training research local area.

There have been propelling informal and casual instructive settings as of late. Separating, practice, reiteration, and expanding the spans where work is acted in a course are

all work timing contemplations that have gotten significant review in computer-aided, as an impact on scattering work over the long-run has been shown to affect learning results in online conditions effectively (Kapler et al., 2018; Miyamoto et al., 2018; Rohrer, 2018). The allure of computer-aided proceeding with instruction courses to specific applications is their adaptable planning or a platform where time is variable and cutoff times are not implemented. Accordingly, the connected advantages of how work is spread over the long run will probably be inspected inside such time-adaptable learning conditions to see what dispersing means for students when they are in full command over their course timing.

3. Methodology

3.1. Research Design

This research adopted the quantitative method wherein, utilizing descriptive quantitative for its research design, focusing on the Grade 9 learner's academic achievement in Araling Panlipunan. According to Baker (2017), this research design gathers information about the variables without changing the environment. Moreover, descriptive designs range from cross-sectional surveys to comparative designs to correlation. Analyzation of the collected data through statistical methods. In this, the findings on the nature of the profile of the grouped respondents were considered, compared, and associated with the variables which will result in the significant relationship using Flipped Learning Model provided for the grade 9 students in Araling Panlipunan and students' academic achievements.

3.2. Research Setting

This research was conducted in a public national high school in the Philippines during the pandemic where students shifted to online learning environment. The respondents from Grade 9 learners answered the survey questionnaire.

3.3. Population Sampling

The respondents involved in the study were 108 Grade 9 learners enrolled in the year 2021-2022. Moreover, the participants were selected through clustered sampling, a technique for probability sampling frequently used to concentrate on huge populations, especially those broadly geologically scattered.

Table 1 shows the demographics of the study's respondents in terms of age, gender, a device utilized, and internet connectivity. Most of the 108 respondents were 14 years old, with 51 total responses. Most of the respondents were female which shows that there were 68 (62.96%) female and 40(37.03%) male respondents in the survey. Meanwhile, most of the respondents were 14 years old or older, female, and used mobile phones for online learning. They also used Wi-Fi to connect throughout their online learning.

Table 1

Demographic Characteristics

Profile		Sex	
		Female	**Male**
Age	14	36	15
	15	29	19
	16	3	6
Device Used	Laptop	5	0
	Mobile Phone	39	31
	Mobile Phone, Laptop	4	0
	Mobile Phone, Personal Computer	5	2
	Mobile Phone, Tablet	3	2
	Mobile Phone, Tablet, Laptop	3	1
	Personal Computer	1	2
	Tablet	7	2
	Tablet, Personal Computer	1	0
Connectivity	Mobile Data	15	12
	Mobile Data, Wi-Fi	3	1
	Wi-Fi	49	27
	Wi-Fi, Broadband	1	0

3.3. Research Instrument

The research utilized a self-made questionnaire split into four parts. The profile of the grade 9 students in Araling Panlipunan is part one. It consists of gender and accessibility, device used, and connectivity. Part two measures teacher-aide instruction and self-paced instruction. It consists of 15 items of questions in teacher-aide instruction which are split into three parts: student-centered, interactive classroom, and teacher-aided. In addition, the self-paced Instruction consists of 15 questions and is divided into three parts: teacher-centered, lecture method, and computer-aided. Part three is an examination to measure the economic skills of the students, consisting of forty-five (45) items. Part three is split into three (3) parts

for the understanding, analyzing, and valuing based on MELC in Araling Panlipunan Grade 9, Third Quarter. Part four measures the Social Learning of Grade 9. This part has fifteen (15) items, five (5) items for student's interest, five (5) student's collaboration for learning, and five (5) effectiveness of learning environment.

Table 2

Result of Reliability Testing

Subscales	No. of Items	Cronbach's Alpha	Internal Consistency
Synchronous Teacher-Aided Format			
Student-Centered	4	.701	Acceptable
Interactive Classroom	5	.775	Acceptable
Teacher-Aided	5	.730	Acceptable
Self-Paced Asynchronous			
Teacher-Centered	5	.870	Acceptable
Lecture Method	5	.789	Acceptable
Computer-Aided	5	.745	Acceptable
Social Learning			
Student's Interest	5	.868	Good
Student's Collaboration for Learning	5	.619	Acceptable
Effectiveness of Learning Environment	5	.734	Acceptable

The reliability testing results are presented in table 2, divided into three (3) sub-scales: synchronous teacher-assisted format, self-paced asynchronous format, and social learning. The three (3) sub-classes were separated into three (3) categories, each of which was related to the three (3) sub-classes. The reliability testing found that the items presented above were mainly acceptable, except for the student's interest category under the social learning sub-class, which received a good rating. This result suggested that the questions presented under each category were suitable for collecting responses from study participants and throughout the research project's progression.

3.4. Data Gathering Procedure

This part includes the preparation, validation, administration, and retrieval of the instrument used in this study.

Preparation. The researcher designed a focused interview as the data collection instrument of this study. This aims at eliciting relevant information concerning flipped classroom practices. Questions related to the research questions are present in the said form.

Validation. The questionnaire was content validated by a thesis adviser who is expert in the field.

Administration. Before administering the instrument, permission was secured from head of the school, and Division Office where the school is included. The questionnaire was converted into a Google Forms with the necessary instructions.

Retrieval. The instrument was retrieved the day after it was given to the respondents. The researcher retrieved the instrument answered by the respondents online after the time set for them.

3.4. Statistical Treatment

This study used frequency and percent distribution, mean, t-test and ANOVA to test and analyze the data.

4. Findings and Discussion

Table 3

Summary of Perceived Synchronous In-class Activities

Synchronous Teacher-Aided Format	Mean	SD	Interpretation
1. Student-Centered	3.81	0.35	Always
2. Interactive	3.75	0.00	Always
3. Teacher-Aided	3.90	0.15	Always
Overall Mean	**3.82**	**0.16**	**Always**

Legend: 3.50-4.00 Always, 2.50-3.49 Often, 1.50-2.49 Sometimes, 1.00-1.49 Never

Table 3 presents the summary table for the perceived synchronous in-class activities in terms of student-centered, interactive, and teacher-aided which gained an overall mean of 3.82 and a standard deviation of 0.16. This was interpreted as always performed by the respondents. Consequently, among the sub-variables stated under synchronous teacher-aided format, teacher-aided gained the highest computed overall mean among the three (3). This result

implies that the perceived synchronous in class activities that the respondents experienced is more inclined in the sub-variable, teacher-aided. In addition, the result means that the synchronous in class activities were properly guided by the teachers during lessons and they perform their duties properly inside the classroom hence, a smooth discussion or performance of activities can be seen or witnessed.

The detailed results of the assessment can be found in the appendix section.

Table 4

Summary of Asynchronous-out of Class Activities

Self-paced Asynchronous	Mean	SD	Interpretation
Teacher-centered	3.93	0.15	Always
Lecture method	3.68	0.41	Always
Computer-aided	3.80	0.26	Always
Overall Mean	**3.80**	**0.27**	**Always**

Legend: 3.50-4.00 Always, 2.50-3.49 Often, 1.50-2.49 Sometimes, 1.00-1.49 Never

Table 4 presents the summary of the asynchronous-out of class activities which gained an overall mean of 3.80 and was given an interpretation that the respondents perceive that the following indicators present among the following sub-variables were always performed.

In correspondence with this, the highest computed mean among the following sub-variables belonged to teacher-centered which obtained a computed mean of 3.93 and was interpreted to be always performed by the respondents. This result implies that in terms of asynchronous out of class activities, the activities performed were aligned with teacher-centered activities. This further means that the asynchronous-out of class activities prioritizes the authority of the teachers to properly manage the students despite learning on their own pace. Moreover, this also means that the teachers set boundaries and were prioritized to properly handle an asynchronous class session.

The detailed results of the assessment can be found in the appendix section.

Table 5 displays the respondents' level of economic skills, which revealed that most of them scored 4 – 6 in understanding, 10 – 12 in analyzing, and 4 – 6 in valuing. This led to the

conclusion that the respondents' economic skills are assessed as low in understanding, extremely good in analyzing, and low in valuing.

Table 5

Level of Economic Skills

Score	Understanding		Analyzing		Valuing		Interpretation
	F	%	F	%	F	%	
13-15	2	1.9	16	14.8	2	1.9	Excellent
10-12	17	15.7	62	57.4	14	13.0	Very Good
7-9	40	37.0	24	22.2	27	25.0	Good
4-6	44	40.7	6	5.6	46	42.6	Low
0-3	5	4.6	-	-	19	17.6	Poor
Total	**108**	**100.0**	**108**	**100.0**	**108**	**100.0**	

This also suggests that the respondents are the greatest at analysis in terms of economic skills. The results in the level of economic skills of the respondents indicates that the respondents of the study have a background knowledge in economic skills hence, helping them to achieve a high score in the test given. Consequently, the respondents excelled in terms of analyzing hence, implicating that the respondents properly analyze concepts related to economic thus, enhancing their economic skills.

Table 6

Summary of Perceived Level of Social Learning

Social Learning	Mean	SD	Interpretation
Student's Interest	3.35	0.54	Often
Student's Collaboration for Learning	3.60	0.41	Always
Effectiveness of Learning Environment	3.60	0.41	Always
Overall Mean	**3.52**	**0.45**	**Always**

Legend: 3.50-4.00 Always, 2.50-3.49 Often, 1.50-2.49 Sometimes, 1.00-1.49 Never

Table 6 shows the summary table of the perceived level of social learning as presented with three (3) variables. These variables gained an overall mean of 3.52 and was interpreted as always experienced by the respondents of the study.

Among the variables presented, the variables, particularly student's collaboration for leaning and effectiveness of learning environment gained a computed mean of 3.60. This result implies that the students prefer collaboration to learn and improve their skills. Moreover, the students also prioritize their environment in learning since this has an impact on their academic performance. In such a scenario, the educator must not only provide information but also engage with the dynamic evolution of the student's data. In this approach, the flipped learning paradigm aims to encourage students to apply their understanding and build higher-order thinking skills (Ercan-Demirel, 2019; Hwang, Lai, and Wang, 2018).

Table 7

Correlation on the Utilizing of Flipped Classroom Practices to improve the academic achievement of grade 9 students in Araling Panlipunan

Flipped Classroom Practices	Economic Skills		
	Understanding	Analyzing	Valuing
Synchronous Teacher-Aided			
Student-Centered	-	0.201[*]	-
Interactive Classroom	-	-	-
Teacher-Aided	-	-	-
Self-Paced Asynchronous			
Teacher-Centered	-	-	-
Lecture Method	-	-	-
Computer-Aided	-	-	-

Based on the computed p-value of 0.201 at an alpha level of 0.05, it was discovered that there is a significant relationship between the students' flipped classroom practices in terms of synchronous teacher-aided in the category student-centered and the students' economic skills in terms of analyzing, as shown in the table. However, there was no significant relationship between the economic skills in terms of understanding, analyzing, and valuing and the flipped classroom practices in terms of synchronous teacher-aided in the categories interactive classroom and teacher-aided and self-paced asynchronous in the categories teacher-centered, lecture method, and computer-aided.

This finding suggests that teachers' student-centered activities helped students develop their economic skills in terms of analysis. The other flipped classroom practices of the teachers, on the other hand, were demonstrated to have no effect on the students' economic skills in terms of comprehending, analyzing, and valuing. Wilson (2019) sought to test the efficacy of the questions added to the videos he posted using the Edpuzzle application, with a similar result. According to the study's findings, adding questions to the films improved students' learning. Hence, to conclude the respondents of the study revealed that student-centered skills were able to improved their analysis in economic skills. This means that since the students were prioritized on their needs, they were able to focus thus improving their analysis on economic skills.

Table 8

Correlation between the Utilizing of Flipped Classroom Practices and the Social Learning of the Students

Flipped Classroom Practices	Social Learning		
	Student's Interest	Collaboration for Learning	Learning Environment
Synchronous Teacher-Aided			
Student-Centered	.401**	.461**	.514**
Interactive Classroom	.546**	.575**	.611**
Teacher-Aided	.421**	.523**	.453**
Self-Paced Asynchronous			
Teacher-Centered	.440**	.499**	.473**
Lecture Method	.422**	.414**	.418**
Computer-Aided	.384**	.413**	.457**

Based on the computed p-values provided in table 8 at an alpha level of 0.05, it was determined that there is a correlation between flipped classroom practices and students' social learning. This suggests that flipped classroom approaches such as synchronous teacher-assisted and self-paced asynchronous had an impact on students' social learning in terms of student interest, learning collaboration, and learning environment. This also means that the activities supplied by the teachers in the synchronous teacher-aided and self-paced

asynchronous settings were able to pique the students' interest, encourage collaboration, and improve the learning environment. Hence, it was concluded by the researcher that in order for the social learning of the students to improved, flipped learning classes practices should be implemented. Such practices can mold the students and the teachers will be able to provide quality education. Moreover, the students will be able to improve their performance thus, making then excel academically.

5. Conclusion

The study was conducted to identify the significant relationship between utilizing Flipped Classroom Practices to improve the academic achievement of grade 9 students in Araling Panlipunan. In relation to this, the study gained the responses of 108 Grade 9 learners through the cluster sampling method. Furthermore, the study utilized descriptive quantitative for its research design, focusing on the Grade 9 learner's.

In relation to the academic achievement of grade 9 students, the teachers were able to get the interest of the students, collaboration was promoted among the students, and the learning environment helped the student to achieve more academically. It was also concluded that the student-centered flipped classroom practices were able to affect the economic skills of the students in terms of analyzing hence, implying that the student-centered practices were helpful in improving the economic skills of the students in terms of analyzing. Moreover, the flipped classroom practices were also able to affect the social learning of the students, wherein the flipped classroom practices were able to improve the student's social learning.

For this reason, teachers may provide other means of making the student more engaged in the lessons being discussed, such as providing an assessment on every finished lesson to keep the students more focused during discussions. Other than activities that are in the style of games, interactive recorded videos may also help the students in encouraging them to understand the lessons more. Activities such as online crossword puzzles or online quiz bees may also help the students to be focused during classes and improve their memory of the lessons being taught. The teachers may also maintain a friendly learning environment for the students so the students may be able to ask questions and suggest ideas without hesitations. To further improve the knowledge of the students in economic skills, the lessons or activities performed can be focused on valuing and understanding and to provide an in-depth

understanding on the relation of synchronous in class activities and asynchronous out class activities to economic skills, an interview can be conducted by the future researchers.

Appendices

Appendix A

Student-Centered

Indicators	Mean	SD	Interpretation
The teacher made the students feel fair and equal during class discussions.	3.75	0.46	Always
The teacher involves students in the task and activities.	4.00	0.00	Always
The teacher is dedicated and extends full support to those students in need.	3.75	0.71	Always
The teacher has a positive attitude and displays energy and enthusiasm in all activities.	3.75	0.46	Always
Overall	3.81	0.35	Always

Legend: 3.50-4.00 Always, 2.50-3.49 Often, 1.50-2.49 Sometimes, 1.00-1.49 Never

Appendix B
Interactive Classroom

Indicators	Mean	SD	Interpretation
1. The teacher encourages students to participate in interactive activities.	4.00	0.00	Always
2. The teacher involves students in presentations to have a better connection.	3.88	0.35	Always
3. The teacher prepares an interactive game for the students.	3.38	0.52	Always
4. The teacher gamifies the activities for effective interaction.	3.75	0.46	Always
5. The teacher checks if the whole class is participating.	3.75	0.71	Always
Overall	**3.75**	**0.00**	**Always**

Legend: 3.50-4.00 Always, 2.50-3.49 Often, 1.50-2.49 Sometimes, 1.00-1.49 Never

Appendix C

Teacher-aided

Indicators	Mean	SD	Interpretation
1. The teacher-aide provides online learning materials to students.	3.75	0.46	Always
2. The teacher aide organizes resources for the lesson to have effective learning outcomes.	3.88	0.35	Always
3. The teacher aide ensures that students follow classroom rules.	4.00	0.00	Always
4. The teacher aide assists students with intellectual and behavioral difficulties.	3.88	0.35	Always
5. The teacher aide provides supervision in all learning activities.	4.00	0.00	Always
Overall	**3.90**	**0.15**	**Always**

Legend: 3.50-4.00 Always, 2.50-3.49 Often, 1.50-2.49 Sometimes, 1.00-1.49 Never

Appendix D

Teacher-Centered

	Indicators	Mean	SD	Interpretation
1.	The teacher delivers specific instructions that help students to learn.	3.88	0.35	Always
2.	The teacher leads the students on what to do in every activity in the lesson.	3.88	0.35	Always
3.	The teacher asks students that are based on the book to keep the lesson interesting.	3.88	0.35	Always
4.	The teacher evaluates students learning by giving feedback.	4.00	0.00	Always
5.	The teacher is consistent about the rules to effectively manage students in the classroom.	4.00	0.00	Always
	Overall	**3.93**	**0.15**	**Always**

Legend: 3.50-4.00 Always, 2.50-3.49 Often, 1.50-2.49 Sometimes, 1.00-1.49 Never

Appendix E

Lecture Method

	Indicators	Mean	SD	Interpretation
1.	The teacher discusses the lesson through recorded videos.	3.75	0.46	Always
2.	The teacher uses reflective activity to have better learning outcomes.	3.75	0.46	Always
3.	The teacher assesses students' progress to ensure to meet learning objectives.	3.75	0.71	Always
4.	The teacher helps the students to enhance memory through recorded video.	3.50	0.53	Always
5.	The teacher let students watch a short video to keep them engaged in the lesson content.	3.63	0.52	Always
	Overall	**3.68**	**0.41**	**Always**

Legend: 3.50-4.00 Always, 2.50-3.49 Often, 1.50-2.49 Sometimes, 1.00-1.49 Never

Appendix F

Computer-aided

	Indicators	Mean	SD	Interpretation
1.	The teacher uses an application to aid teachers' lessons.	3.75	0.46	Always
2.	The teacher presents using PowerPoint, Microsoft, and other presentations of discussion.	4.00	0.00	Always
3.	The teacher uses gamified applications in the lesson.	3.50	0.53	Always
4.	The teacher provides a website for the activities.	3.88	0.35	Always
5.	The teacher uses a combination of text, graphics, sound, and video to enhance the learning process.	3.88	0.35	Always
	Overall	**3.80**	**0.26**	**Always**

Legend: 3.50-4.00 Always, 2.50-3.49 Often, 1.50-2.49 Sometimes, 1.00-1.49 Never

Appendix G

Level of Student's Interest

	Indicators	Mean	SD	Interpretation
1.	I feel like a strong araling panlipunan student at the start of the year	3.13	0.83	Often
2.	I devote sufficient study time learning in araling panlipunan.	3.25	0.46	Often
3.	I enjoy studying araling panlipunan as a subject.	3.50	0.53	Always
4.	I am enthusiastic about learning araling panlipunan as a subject.	3.63	0.74	Always
5.	I feel like a strong araling panlipunan student now.	3.25	0.71	Often
	Overall	**3.35**	**0.54**	**Often**

Legend: 3.50-4.00 Always, 2.50-3.49 Often, 1.50-2.49 Sometimes, 1.00-1.49 Never

Appendix H

Level of Student's Collaboration for Learning

	Indicators	Mean	SD	Interpretation
1.	I get a higher grade working in a group than working individually	3.38	0.74	Often
2.	I acknowledge that everyone in the group has an equal opportunity to participate.	3.75	0.46	Always
3.	I know that everyone in the group does an equal amount of work.	3.50	0.53	Always
4.	I received a grade that is a fair reflection of how much work I did in a group.	3.75	0.46	Always
5.	It is fair that everyone in the group receives the same grade.	3.63	0.74	Always
	Overall	**3.60**	**0.41**	**Always**

Legend: 3.50-4.00 Always, 2.50-3.49 Often, 1.50-2.49 Sometimes, 1.00-1.49 Never

Appendix I

Level of Effectiveness of Learning Environment

	Indicators	Mean	SD	Interpretation
1.	I motivate myself to learn to get a high grade.	3.63	0.52	Always
2.	I maintain effective online interaction during class discussions.	3.50	0.53	Always
3.	I obtain instant feedback from my classmates and my teacher.	3.63	0.52	Always
4.	I encourage myself to attend class by setting the time properly	3.75	0.46	Always
5.	I help myself to be active in class by sharing ideas during the lesson.	3.50	0.53	Always
	Overall	**3.60**	**0.41**	**Always**

Legend: 3.50-4.00 Always, 2.50-3.49 Often, 1.50-2.49 Sometimes, 1.00-1.49 Never

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Reading and Listening Ability Relative to Students' Level of Performance

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Abstract

The study aimed to determine the second language reading and listening abilities of Grade 11 students and their relationship to grammatical morphemes and lexico-grammatical knowledge by proposing engagement exercises to enhance students' language performance in public secondary schools. The study used the descriptive research method to determine students' performance levels in reading, and listening abilities. The respondents were grade 11 students enrolled in the selected secondary schools in the Division of Capiz. Purposive sampling method was used as this study is based upon various criteria, including the capacity and willingness of respondents to participate. The data-gathering instruments utilized in the study were documentary analysis and teacher-made tests. For a meaningful interpretation and analysis of the study, the data were subjected to statistical treatment such as frequency, percentage, ranking, mean, Pearson r product-moment correlation, and T-test. The study's findings revealed that Grade 11 students' performance levels are average in grammatical morphemes and lexico-grammatical knowledge, while the levels of students' reading and listening abilities are generally average. Further, there are relationships between the reading and listening abilities and their socio-demographic attributes. The study recommends language engagement exercises that includes activities that could enhance the listening and reading abilities of Grade 11 students based on the areas needing enhancement.

Keywords: *Reading, Listening, Language, Performance*

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1. Introduction

English as a second language plays a significant role in the lives of speakers of other languages most especially now in the age of globalization. Whenever one goes be it in school, offices, homes and other places regardless of situations, communicative competence and performance are of advantage. Sufficient ability or skill in communication of second language (L2) speaker manifests knowledge in using that language in a real and authentic social environment. The importance and need to learn the English language is clearly explained even in the DepEd K to 12 Basic Education Curriculum. As language is central to the people's intellectual, social, and emotional development, it serves as basis for all communication and serves as foundation in all human relationships. Thoughts, values and understanding are developed and expressed through language aside from personal perspectives of the global community. Hence, competency and performance of learners are very significant.

Examinations results in both public elementary and high schools based on the data provided by DepEd for the past five years manifest decline in the performance of learners in English. Learners encountered problems in reading and listening as well as in grammar and lexicon. In reading, learners have difficulty in identifying key or content words, understanding the meaning of the words read, distinguishing between facts and opinion, finding the main idea, important facts and supporting details, sequencing and drawing inferences from the text read. As regards listening, second language learners have a hard time discriminating sounds and words heard. They also have difficulty of comprehending verbal instruction and oral reading; recognizing grammatical word classes and system; as well as recognizing cohesive devices in spoken discourse. Similarly, Oguan and Del Valle (2022) and Honrado and Biray (2022) have common findings on errors committed by students in written and oral communication.

Skills to understand written texts are termed reading abilities. Chitravelu et al. (1995), Kamhi and Catts (2017) and Delgadova (2015) all argue that reading is not a single skill that is use all the time in the same way but it is a multiple skill that is used differently with a kind of test and fulfilling a different purpose. In learning second language reading is very important which explains the great effort exerted to develop reading skills. It is a major avenue of learning (Mariam, 1991; Alcott, 2021; Whitten et al., 2016). It is also equated with writing as it involves

complex activity and is one of the crucial skills related to the acquisition of the English language. Second language learners having the ability of reading competency can have access to varied materials like scientific, technical and educational. Adams (1990), Guo et al. (2011) and Tong et al. (2014) pointed out that knowledge of linguistic cues, that is, morphological and syntactical forms, is an important aspect of basic reading ability which contributes to effective reading comprehension.

Urquhart et al. (1998) describe reading skill or ability as a cognitive ability which a person is able to use when interacting with texts (Follmer & Sperling, 2018; Wu et al., 2020). Reading helps readers expand their thinking skills, improve concentration, enrich their vocabulary and master their environment effectively. According to Rayner et al. (2001) learning to read is the acquisition and practice of the skills necessary to understand the meaning behind printed words and the process of learning to read is complex and builds on cognitive, linguistic, and social skills developed from a very early age. All relevant dimensions of reading should be embodied by successful readers like comprehension, fluency, mastery of essential strategies and motivation.

In English language learning, it is important for students to develop their language ability particularly their reading skill. Reading skill is described as a cognitive ability which a person is able to use when interacting with texts. Unnecessary reading time is reduced and readers tend to read more focused and selective manner through improved reading skills. In addition, with improved reading skills readers increase their levels of understanding and concentration. Hughes (1989 as cited in Liu, 2010) identified the four levels of reading skills as macro-skills, micro-skills grammatical and lexical abilities, and low-level operations. Reading skills can be improved by having clear reading goals, choosing the right texts, using the right reading styles, and using note taking techniques.

This scenario prompted the researcher to conduct the study along the second language reading and listening abilities of Grade 11 students in the Province of Capiz with the end view of proposing language engagement exercises to enhance students' performance in English. Through this study, students' performance is determined as to what specific areas in reading and listening they performed the highest, which manifest their strength, and the lowest, which can be improved or enriched through engagement exercises.

2. Research Method and Procedure

The study used the descriptive method of research. This was used to determine the second language reading and listening abilities of Grade 11 students. According to Yuen et al. (2009), a descriptive study uses more specific data-gathering techniques, attempts to produce a representative sample, and provides detailed and precise information regarding the problem. The aim of descriptive research is to describe the present behavior or characteristics of a particular population utilizing collected data to describe persons, settings, organizations, and phenomena.

The study was conducted at the Department of Education - Capiz Division. The respondents were the Grade 11 students enrolled for School year 2017-2018 in selected public secondary schools in the first and second districts of the division. A total of 322 respondents were selected from the total population of 2,011. Purposive sampling was used in this study as this sampling method is a form of non-probability sampling in which decisions concerning the individuals included in the sample were taken based upon a variety of criteria which include capacity and willingness to participate in research (Oliver, 2013). All the questionnaires were answered completely thus; all the 322 responses were included in the analysis.

The study utilized teacher-made test specifically for Grade 11 learners to measure their levels of performance in the areas of reading, listening, grammatical morphemes and lexico-grammatical knowledge. The questionnaire was developed by preparing the first draft which was presented to the research advisor for comment and suggestions. The draft was checked according to its contents and its relevance to the research objectives. The test then was validated by English teachers as well as other experts on the field to check the appropriateness of the test items. Statistician was consulted to determine the validity of the instrument. Reliability statistic result is 0.9475 which means that the instrument is reliable to generate accurate results and the test items are higly reliable. Item index discrimination was also done to measure if test items are able to distinguish levels of knowlegde of students.

With regard to the verbal description equivalent (Average) of the students' performance ratings, this was determined based on the standard Psychometric Conversion Table. The mean of the raw scores of the students' performance in the different test areas are converted to z-scores to be able to determine its descriptive equivalent. A z-score is a simple way of converting a mean of the raw score into a standard score. This process involves expressing the

test performance into the number of standard deviation units the mean of the raw score is above or below the population mean. The mean of the 'Z' score is 0 and its standard deviation is 1. The z-score was computed based on the following equation: $Z = (X-M)/\sigma = x/\sigma$, where: X = Mean of raw scores, M = Population mean, σ = Standard deviation of the mean raw scores, x = Deviation of the population mean from the mean of raw scores. The computed z-score value is searched in the standard Psychometric Conversion Table and the corresponding verbal description equivalent is listed in the table summarizing the results.

In the development of the questionnaire, books and other reference materials containing concepts and related literatures, dissertations, theses, journals and online references were utilized. Constructed teacher-made test was submitted to the advisor for comments and suggestions. Final draft of the test was presented to English teachers for comments and the instrument was pilot tested to other Grade 11 students who were not the respondents of the study. Letters of request were then forwarded to the experts on the field as well as to the members of the research examination panel to validate the questionnaires. All suggestions were followed and incorporated in the instrument and the final copies of the validated test were then produced. Then a letter for administration of the questionnaire was made and submitted to the advisor for comments and suggestions.

After the letter was checked and revised, signatures and approvals of the advisor, the dean of the College of Arts and Sciences Graduate Studies, School Principals and the Schools Division Superintendent were sought for the administration of the instrument. The tests were then administered to the respondents with the approved letters of requests. Tests were administered based on prepared schedules. After the administration of the test for students these were retrieved, checked, tallied, and analyzed.

Ethics and the safety of informants have a very special emphasis in any research work. Accordingly, maximum care was used to ensure anonymity and safety of the respondents. Respondents in this study expressed their willingness through an informed consent form, where they can withdraw from the study at any time. Similarly, their identity and the names of their schools were kept anonymous all throughout the data gathering and publication.

For a meaningful interpretation and analysis of the study, the data were subjected to the following statistical treatment: frequency, percentage, ranking, mean, Pearson r Product Moment Correlation, and t-test.

3. Results and Discussion

Reading ability. As a variable of the study, the ability of students in deriving meaning through complex cognitive process of decoding symbols is referred to as reading. Student's reading skill is manifested through the use of cognitive ability in interacting with texts and is viewed as part of reading process unlike comprehension which is the product of a particular text. The four levels of reading skills include macro-skills, micro-skills, grammatical and lexical abilities, and low-level operations. Grade 11 students are expected to have developed advanced reading abilities at this stage of their education. In this study, a set of test questionnaires were designed to evaluate the reading ability of the students. Five items each for identifying key words, understanding words read, distinguishing facts and opinion, finding the main idea, and sequencing and inference were administered to 322 Grade 11 students.

Table 1 shows the performance of Grade 11 students as to reading ability.

Table 1

Performance of Grade 11 Students as to Reading Ability

Test Group	No. of Items	Average Correct Items/ Percent (percent)	z-score	Verbal Interpretation
Identifying key words	5	3.29/ (65.90)	-0.465	Average
Understanding words read	5	3.47/ (69.37)	-0.299	Average
Distinguishing facts and opinion	5	3.59/ (71.98)	-0.175	Average
Finding the main idea	5	3.43/ (68.57)	-0.338	Average
Sequencing and inference	5	4.02/ (80.49)	0.231	Average
Total:	25	Mean= 3.56/ (71.3)	-0.209	Average

As shown in the table, results indicate that for identifying key words, the mean score was 3.29 or 65.90 percent with a verbal equivalent of Average based on the computed z-score of -0.465. For understanding words read, the mean score was 3.47 or 69.37 percent with a verbal equivalent of Average based on the computed z-score of -0.299. For distinguishing facts and opinion, the mean score was 3.59 or 71.98 percent with a verbal equivalent of Average based on the computed z-score of -0.175. For finding the main idea, the mean score was 3.43

or 68.57 percent with a verbal equivalent of Average based on the computed z-score of -0.338. Similarly, for sequencing and inference, the mean score was 4.02 or 80.49 percent with a verbal equivalent of Average based on the computed z-score of 0.231. The overall performance in reading ability has a mean score of 3.56 or 71.30 percent with a verbal equivalent of Average based on the computed z-score of -0.209.

Findings of the study revealed that the performance of Grade 11 students in reading ability test was generally average although they performed highest in sequencing and inference and lowest in identifying key words. This indicates that this batch of students has developed a certain degree of skill in reading and understands their correct use in English language sentences. This further shows that respondents did not only learn one skill but other skills in reading. This conforms to the idea of Chitravelu et al. (1995), Kamhi and Catts (2017) and Delgadova (2015) which states that reading is not a single skill that is use all the time in the same way, but it is multiple skill that used differently with kind of test and fulfilling different purpose. This is also supported by the explanation of Miriam (1991) that reading is a major avenue of learning and Urquhart et al. (1998) description of reading skill or ability as a cognitive ability which a person is able to use when interacting with texts.

In addition, though respondents got an average description in identifying key words it is still considered low compared to sequencing and inferencing. This might be due to lack of focus in some reading skills that need to be improved. Skills in reading that entails comprehension need also to be developed as this would enrich understanding of texts. This is in line with Grabe's (2009) statement that reading abilities or skills contribute so much in enriching reading comprehension as this is an ability to process text, understand its meaning, and to integrate it with what the reader already knows.

This is also supported by the idea of Harris and Hodges (1995) reading comprehension is the constructions of the meaning of a written and spoken communication through a reciprocal, holistic interchange of ideas between the interpreter and the message. The following are the important and required fundamental skills for an effective and efficient reading comprehension: knowing meaning of words, ability to understand meaning of a word from discourse context, ability to follow organization of passage and to identify antecedents and references in it, ability to draw inferences from a passage about its contents, ability to identify the main thought of a passage, ability to answer questions answered in a passage, ability to

recognize the literary devices used in a passage and to determine its tone and mood, and finally ability to determine writer's purpose, intent, and point of view, and draw inferences about the writer.

Listening ability. As the most critical communication skill, listening involves complex, affective, cognitive and behavioral processes. It is giving one's attention to sound, and around 65 to 90 percent of the time students are involved in various listening situation. Generally, most of the time students may have little or no listening instruction thereby making it difficult for them to comprehend.

Ability to listen would entail understanding the speaker's accent, pronunciation, grammar, vocabulary and grasping meaning. In dealing with listening, the following components need to be mastered and these include discriminating between sounds, recognizing words, identifying stressed words and grouping of words, identifying functions such as apologizing in conversations, connecting linguistic cues to paralinguistic cues such as intonation and stress and to nonlinguistic cues like gestures and relevant objects in the situation in order to construct meaning, using background knowledge and context to predict and then to confirm meaning, recalling important words, topics and ideas, giving appropriate feed back to the speaker and reformulate what the speaker has said.

Grade 11 students are expected to have developed advanced listening abilities at this stage of their education. In this study, a set of test questionnaires were designed to evaluate the listening ability of the students. Five items each for sound discrimination, vocabulary, comprehension, recognition of grammatical word classes, and recognition of cohesive devices were administered to 322 grade 11 students.

Table 2 shows the performance of Grade 11 students as to listening ability. As shown in the table, results indicate that for sound discrimination, the mean score was 3.97 or 79.30 percent with a verbal equivalent of Average based on the computed z-score of 0.175. For vocabulary, the mean score was 3.78 or 75.3 percent with a verbal equivalent of Average based on the computed z-score of -0.006.

For comprehension, the mean score was 4.09 or 81.74 percent with a verbal equivalent of Average based on the computed z-score of -0.290. For recognition of grammatical word classes, the mean score was 3.86 or 77.27 percent with a verbal equivalent of Average based

on the computed z-score of 0.077. Similarly, for recognition of cohesive devices, the mean score was 4.32 or 86.33 percent with a verbal equivalent of Average based on the computed z-score of 0.510. The overall performance in listening ability has a mean score of 4.00 or 80.0 percent with a verbal equivalent of Average based on the computed z-score of 0.209.

Table 2

Performance of Grade 11 Students as to Listening Ability

Test Group	No. of Items	Average Correct Items/ Percent (percent)	z-score	Verbal Interpretation
Sound Discrimination	5	3.97/ (79.30)	0.175	Average
Vocabulary	5	3.78/ (75.53)	-0.006	Average
Comprehension	5	4.09/ (81.74)	0.290	Average
Recognition of grammatical word classes	5	3.86/ (77.27)	0.077	Average
Recognition of cohesive devices	5	4.32/ (86.33)	0.510	Average
Total:	**25**	**Mean= 4.0/ (80.0)**	**0.209**	**Average**

Findings of the study revealed that the performance of Grade 11 students in listening ability test was generally average although they performed lowest in vocabulary and highest in recognition of cohesive devices. This indicates that this batch of students has developed a certain degree of skill in listening and understands their correct use in English language sentences. This further means that students have the ability to identify and decipher what the speaker is saying and comprehend the meaning conveyed. This is relative to the explanation of Rost (1994) that listening as an ability to identify and understand what the speaker is saying through understanding his accent, pronunciation, grammar, vocabulary and grasping his meaning, considered the following sub-components of listening that speakers need to master when dealing with this skill: discriminating between sounds , recognizing words, identifying stressed words and grouping of words, identifying functions such as apologizing in conversations , connecting linguistic cues to paralinguistic cues through intonation and stress and to non- linguistic cues in the form of gestures and relevant objects in the situation in order to construct meaning, using background knowledge and context to predict and then to confirm meaning, recalling important words, topics and ideas, giving appropriate feed back to the speaker, and reformulating what the speaker has said.

This is further supported by the concept of Ronald and Roskelly (1985) about listening as an active process that requires the same skills of prediction, hypothesizing, checking, revising, and generalizing what writing and reading demand. In addition, respondents performed highest in the skill recognition of cohesive devices under listening ability perhaps due to their prior learning in class regarding the use of correct conjunctions in sentences and the exercises provided to them by their English teachers. Respondents were able to show logical relationship of words in sentences because they understand the need to use connectors to achieve unity in their sentences and thoughts. This conforms to the idea of Abdul (2014) regarding cohesive devices as typically single words or phrases that hold and hang different parts of the text that help achieve unity in text as a semantic whole and unified whole of linguistic items to have meaningful text. Whereas, respondents performed the lowest in vocabulary perhaps due to time devoted for listening. This affect their exposure to words and their meaning as they lack focus and concentration. This is in line with Ahmed (2015) which states that listening is important as it occupies about 45 percent of the time adults spend in communication and is the most challenging of all the skills in English where students and teachers often fail to give listening the attention it needs. Moreover, in listening, vocabulary is very important as this will enrich one's understanding to what the speaker is transmitting. It is the foundation for listening comprehension.

Without vocabulary, there is difficulty of understanding what is heard and has been written. This conforms to the idea of Braze et al. (2007) which states that vocabulary is considered one of the best or strong predictor of listening across the developmental span, even after decoding skills are controlled. This notion finds additional support from Zeeland's (2013) idea regarding the reciprocal importance of listening and vocabulary; that is vocabulary a prerequisite for listening comprehension, and that listening can serve as a useful source for vocabulary acqusition.

4. Conclusion and Recommendation

The grade 11 students' levels of performance in reading and listening abilities are generally average. Reading and listening make different demands upon the person on the receiving end of the communication. The ability to read and listen is inherent to the respondents and can be developed in many ways, like accumulating vocabulary.

It can be noted that there are 16 items in reading and 6 items in listening that needed intervention. The 16 items in reading corresponds to the five areas in reading namely: understanding words read (3 items), finding the main idea (3 items), distinguishing facts and opinion (3 items), sequencing and inferencing (2 items) and identifying key or content word (5 items). The 6 items in listening corresponds to the four areas in listening namely: recognition of grammatical word classes and system (2 items), vocabulary (1 item), comprehension (1 item) and sound discrimination (2 items). There are more items in reading that needing intervention as compared to listening (i.e. 16 vs. 6), however, looking at the areas involved, the difference between reading and listening is only one (i.e. 5 vs 4). This means that the skill level as evaluated in the different items is lower in reading as compared to listening. It could be that the areas in listening that showed only one item needing intervention could mean that these areas (i.e., vocabulary and comprehension) are indeed difficult. Meanwhile, in reading, identifying key or content word is the area where five items showed strong need for intervention. This is followed by understanding words read, finding the main idea, distinguishing facts and opinion which all have three items needing intervention.

A cumulative factor, an arbitrary factor is used as a kind of consolidation of the individual contributions of the criteria considered and is calculated based on the product of these values (i.e., z-score X correlation X t-test). Also a performance index was determined based on the inverse of the cumulative factor. The performance index provides an estimation of the negative impact a particular item on the students and further provides an estimate of the need for intervention. All the calculated values are notable to be more than double digit negative values. The performance index provides a validation of the argument and support of the items listed as needing intervention. Interestingly, items IIIA showed a double digit performance index value, however this can be ruled out immediately as it didn't have any significant correlations and T-test relationships. Thus, the designed intervention measures to enhance the listening and reading ability, was based on the above criteria and performance index estimates.

The language engagement exercises prepared for Grade 11 Students is designed to improve their reading and listening ability. The materials are intended to supplement standard textbooks and to provide exercises to help students improve their proficiency in the English language. The exercises are arranged based on the areas that students need improvement such as skills given focus are identifying key or content words, understanding the words read,

distinguishing facts and opinion, finding the main idea and supporting details, as well as with sequencing and inferencing. As regards listening ability, exercises are aimed to improve sound discrimination, vocabulary, comprehension and recognition of grammatical word classes and system.

This language engagement exercises also contains objectives and key concepts to guide students as to expected learning competencies that they need to acquire based on exercises provided as well as meaning of terms to guide them as to what is being asked in the exercises. The author hopes that with the help of this language engagement exercises, Grade 11 students will be more encouraged to appreciate and learn in grammar and develop their skills in reading and listening. Further, it is also hoped that this material which is both educational and handy, will become part of the useful set of instructional materials for learning the English language.

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Role of Parent-Teacher Partnership in Learners' Academic Performance

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Abstract

This study was purposely conducted to develop a parent-teacher partnership program to improve learners' academic performance in English 4 by determining learners' academic performance, perception of the parent-child relationship, and on parental involvement in six categories as to parenting, communicating, volunteering, learning at home, decision-making, and collaborating with the community. Descriptive research design was utilized through survey method wherein 24 Grade IV learners under modular distance learning modality were purposively selected as respondents. Learners' perception on parent-child relationship showed positive relationship, while learners' perception on parental involvement in six categories indicated high involvement. Results showed a significant relationship between the parent-child relationship and parental involvement. However, there is no significant relationship between academic performance in English on their perception of the parent-child relationship and parental involvement. The study suggested that Parent-Teacher Association officers along with teachers may conduct a classroom-based program to assist learners at risk in English. Teachers may also review the parent-teacher partnership program so that it will be aligned with the learning needs of their students.

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1. Introduction

Parental involvement includes what they believe that they are supposed to do concerning their children's education. This defines the activities that parents feel important, necessary, and permissible to be involved in on behalf of their children. In line with parental involvement, Batas Pambansa Blg. 232 Chapter 3, Section 14, an act providing for the establishment and maintenance of an integrated system of education in the Philippines, defines parents' duties and obligations individually or collectively, through the school systems, shall help carry out the educational objectives by the national goals. Under this section, parents shall be obliged to enable their children to obtain elementary education and shall strive to enable them to obtain secondary and higher education in the pursuance of the right formation of the youth. Furthermore, parents shall cooperate with the school in the implementation of the school program, curricular and co-curricular.

In the local context, the present study which is situated in Dolores District, parental involvement is very limited especially in some school activities which require their participation and collaboration. According to Aquino (2013), parent involvement practices in the Philippines are limited; hence, policies regarding home-collaboration at national, regional, division, and school levels must still be developed. Limited parental involvement in school especially in English learning happened, probably because they do not realize that it is part of parents' duties and obligations to be involved in all aspects of their child's learning. According to Jafarov (2015), there are many factors affecting the level of parental involvement including lack of time, beliefs about parental duty, parenting style, and lack of knowledge about curriculum. These issues were some of the reasons behind limited involvement of parents in schools. Due to pandemic, parental involvement becomes more crucial. Learners in all parts of the community are facing different challenges that can affect the way they learn while their parents also having a hard time communicating to school's issues and concerns effectively.

Given these premises, the study needs to acquire information about the learners' view on parent-child relationship and their view on the parental involvement to develop a parent-teacher partnership program. Primarily, the program focuses on academic achievement of Grade IV learners in English through incorporating different activities that facilitate learning. Furthermore, this program will increase the involvement of parents and their awareness on the

importance of parent-teacher partnership in supporting the studies of their children while on modular distance learning.

2. Literature review

2.1.Parent-Child Relationship

According to Dawson and Ashman (2010), positive parent-child relationships provide the foundation for children's learning. With parents' sensitive, responsive, and predictable care, young children develop the skills they need to succeed in life. Early parent-child relationships have powerful effects on children's emotional well-being, their basic coping and problem-solving abilities, and future capacity for relationships (Lerner & Castellino, 2012). Through positive parent-child relationship, children learn the skills they need to engage with others and to succeed in different environments. They learn how to manage their emotions and behaviours and establish healthy relationships with adults and peers (Rogoff, 2013). They also learn how to adjust to new situations and resolve conflicts. Families of all types can raise thriving children. This includes two-parent families, single parents, and families with multiple family members involved in care giving. It also includes parents of the same and different genders, fathers, or grandparents as primary caregivers. It is the nature and the quality of the relationships in each family that are most important for children's healthy development.

According to Bornstein (2015), early adolescence marks an important turning point in the parent-child relationship. As the child enters adolescence, the biological, cognitive, and emotional changes of the period spark transformations in the parent-child relationship. In many families, the transition into adolescence coincides with the parent's transition into mid-life, and this, too, may introduce additional challenges into the family system that spill over into the parent-child relationship. It is a time during which the child's urges for independence may challenge parents' authority, as the young adolescent strives to establish a sense of emotional autonomy or individuation. Much like with toddlerhood, many parents find early adolescence to be a difficult period requiring a fair amount of adaptation. Same case with toddlerhood, Bornstein (2015) also mentions that most families can cope with this demands successfully.

Although the significance of peer relationships grows during adolescence, the parent-child relationship maintains its importance for the psychological development of the child. As in previous eras, authoritative parenting—parenting that combines warmth and firmness—seems to have the most positive impact on the youngster's development. The study of

Bornstein (2015) also showed that adolescents who have been reared authoritatively continue to show more success in school, better psychological development, and fewer behaviour problems than their counterparts from other types of homes. Youngsters whose parents are disengaged continue to show the most difficulty.

According to the study of Steinberg (2015), the conflict between parents and children is an inherent feature of family life in adolescence, but systematic research on the so called "generation gap" indicates that the phenomenon has been exaggerated in the popular media. Early adolescence may be a time of heightened bickering and somewhat diminished closeness in the parent-child relationship, but most disagreements between parents and young teenagers are over fairly mundane matters, and most teenagers and parents agree on the essentials. Nevertheless, the increased frequency with which these squabbles occur may take its toll on parents' mental health, especially on the mothers. This period appears to be temporary. However, most parents and adolescents can establish a comfortable working relationship by the beginning of high school. Indeed, by late adolescence, most children report feeling as close to their parents as they did during elementary school (Steinberg, 2015).

Bruch et al. (2010) conducted a study about the positive parent-child relationship. The participants were in Grade 7-12 and used clustered, school-based sampling design and were administered through the use of a survey. The findings showed that students performed better in high school when they had a positive relationship with their parents. Their findings also showed that there was an advantage and disadvantage of a parent-child relationship. However, they found little evidence that the parent-child relationship has a positive direct effect on college enrolment.

Scharp and Thomas (2016) conducted a study about a parent-child relationship in estrange narrative. The participants were 52 women with varied educational backgrounds. A narrative interview was done among the participants. The finding showed the dominant belief that parent-child relationships have no possibility of ending because they were bound by blood. The result of their study challenged the biological definition of family. The finding also showed that the idea of family relationships was non-voluntary and the relationships did not require maintenance. The authors suggested that researchers might explore and complicates the way individuals and discourses of the law pertain to constituting a family.

Parkin and Kuczynski (2012) conducted a study about adolescent perspective within the parent-child relationship. The participants of the study were 32 adolescents, ages between

13-19 years old in a semi-structured interview. The sample was homogeneous concerning the socio-economic status and cultural background. The findings were an indication that the form of resistance may reflect relational concerns. Adolescents reported that withholding information was not the same as outright deception which might be harmful to the relationship or their sense of loyalty to parents.

2.2. Parental Involvement and Academic Performance

According to Aquino (2013), parental involvement practices in the Philippines are limited and these practices may be different from culture and society to society. Parental involvement may have different types, which might have a differential influence on the academic performance of their children. Parents' expectations have a greater impact on students' educational outcomes. Parental involvement may include activities like helping children in reading, encouraging them to do their homework independently, monitoring their activities inside the house and outside the four walls of their house, and providing coaching services for improving their learning in different subjects (Singh et al., 2015).

Parents play a crucial role in both the home and school environments. In general, parental involvement is associated with children's higher achievements in language and Mathematics, enrolment in more challenging programs, greater academic persistence, better behaviour, better social skills and adaptation to school, better attendance, and lower drop-out rates (Henderson & Mapp, 2012). There are many reasons for developing school, family, and community partnerships. They can improve school programs and school climate, provide family services and support and increase parents' skills and leadership, and connect families with others in the school and the community and help teachers with their work. However, the main reason to create such partnership is to help youngsters in school and later life (Epstein, 2015).

Parental Involvement is categorized into four broad strands; parental involvement in children's school-based activities, parental involvement in children's home-based activities, direct parental involvement in academic activities of children, and indirect parental involvement in academic activities of children. Parental involvement levels vary among parents. For example, mother of young children, educated or uneducated parents, father's involvement, academic status, family background, and social environment. It is observed that parental involvement with children from early age has been found to equate with better outcomes especially in building their personalities parents are primary guides to them, children

try to copy them, and considered them that they are always written so parents can shape their lives as they can. Their involvement has a positive impact on children academic achievement even when the background factor of such as social class, family size, has been taken into account (Deslorges & Abouchar, 2013).

Parental involvement may have very essential in the school-based activities of their children. These activities may involve contacts with teachers, checking the attendance of children in school, monitoring their activities in school, checking their periodical academic progress reports. All these things might be very helpful in the higher-level academic achievements of children. Parents become more concerned about the learning opportunities that secondary schools provide. As children move from the middle grades to secondary school, parents also crystallize their educational expectations for their children. As students complete school education, parents become increasingly concerned about their teen's further education and the effects of secondary school programs on postsecondary opportunities (Catsambis & Garland, 2017).

Parental involvement in the education of their children has been significantly linked with the quality of education and academic achievement of children. It may further contribute to mitigating the mass level failure of students in examinations that may indirectly cause wastage of parents; resources as well as the public expenditures for imparting formal education in schools. For example, 50 percent of students fail in secondary level education examinations means a loss of half of the public budget spent on educating the students and parents' expenditures for purchasing books and other allied expenses for educating their children (Epstein, 2015).

Epstein's framework of six types of parental involvement is among the most useful tools developed by the field thus far for defining parental involvement practices and linking them with certain type's outcomes. This widely accepted framework guides to help educators to develop comprehensive family-school partnerships. The six types of parental involvement include parenting (helping families with childrearing and parenting skills), communicating (developing effective home-school communication), volunteering (creating ways that families can become involved in activities at the school), learning at home (supporting learning activities in the home that reinforce school curricula), decision-making (including families as decision-makers through school-sites councils and committees), and collaborating with community (matching community services with family needs and serving the community),

(Epstein, 2015). Each type of involvement encompasses a variety of practices to be undertaken by teachers, parents, and students and is theoretically linked with a variety of distinct outcomes for pupils, teachers, and parents as well.

Educators, along with parents, are encouraged to select those practices likely to produce the types of outcomes that coincide most closely with their needs, goals, and capacities. Epstein emphasizes that not all parental involvement leads to improve student achievement. The selected results (produced by each of six types) that should help correct the misperception that any practice involves families will raise children's achievement test scores (Epstein, 2015). She further notes that while certain practices are likely to influence student's test scores, others are designed to produce outcomes related to attitude and behaviours. Epstein notes that many of the possible secondary or indirect effects of a particular parental involvement practice are not yet understood. For example, parental involvement in type three (Volunteering) or type five (Decision-making) activities may result first in parents' feeling more connected with their children's schools, which may, in turn, lead to other types of involvement that will eventually produce outcomes related to student achievement.

Epstein (2015) defines parental involvement as families and communities who take an active role in creating a caring educational environment. She further asserts that parents who are involved with their children's education are those who consistently demonstrate good parenting skills, communicate with the school staff, volunteer their time in the school, help their children learn at home, take an active role in school-related decision making, and who regularly collaborate with the school community. Epstein's extensive work on school-family-community partnerships outlines schools' responsibilities to each of the six types of involvement established in her framework. A few sample practices are mentioned for each type of involvement. There are, however, many more practices corresponding to each type of involvement.

According to Epstein (2015) school must help families create home environment that support learning by providing them with information about such issues as children's health, nutrition, discipline, adolescents' needs, and parenting approaches. At the same time, schools must seek to understand and incorporate aspects of their students' family life into what is taught in the classroom. Schools are challenged to ensure that all families who need this type of information receive it in appropriate ways.

Outcomes associated with type one activities include improvement in students; behaviour, school attendance, time management skills, and awareness of the importance of school. Parent outcomes encompass improved confidence in, and understanding of, parenting practices, awareness of the challenges in parenting, and a sense of support from schools and others. Teacher-related outcomes include foremost a better understanding of, and respect for their student's families (Epstein, 2015).

Outcomes associated with type two activities include students' improved awareness of their academic progress, more informed decisions about courses, and an understanding of school policies related to their conduct. Parents are likely to grow in their understanding of school programs and policies. They will develop familiarity in interacting with teachers and a great capacity for monitoring their children's progress and responding to their problems. Teachers are expected to develop diverse mechanisms for communicating with parents and an ability to tap the parent network to elicit family views on children's progress (Epstein, 2015).

Epstein (2015) also mentioned that school enhance their connection to families by encouraging them to volunteer in school activities and attend school events. Families who are volunteers grow more familiar and comfortable with their children's schools and teachers. Volunteering efforts that tap parental talents enrich school programs and, particularly in upper grades, facilitate individualized learning. The use of a volunteer coordinator is advised especially at secondary school levels, where coordination of volunteer talents and time with the teacher and students needs becomes increasingly complex. Schools are challenged to define the term volunteer broadly enough to accommodate a wide range of parental talents and schedules. They are also challenged to encourage pupils to volunteer in their community as part of the learning process.

Type three activities are designed to enhance students' skills in communicating with adults; provide them with exposure to a wide variety of adult skills, occupations, etc. and help them develop their skills with the support of volunteer tutors and mentors. Parents are likely to develop a greater appreciation for the works of teachers, develop their skills, and grow increasingly comfortable in working with their children and interacting with others at school. Finally, teachers will be able to pay more attention to individual pupils as a result of volunteer help. They are also likely to become more open to involving parents in varied ways and develop an appreciation for the parental talent base (Epstein, 2015).

Alonso (2017) conducted a study about parental involvement and academic performance. His research explored the relationship between styles of parental involvement a home and academic performance. The participants were Spanish students who were randomly selected. Different three-level hierarchical-linear models were fitted in his studies, such as student, school, and region. The findings were consistent in the hypothesis that parents' involvement in children's education was associated with differential effects in academic performance. The authors suggested that the more evidence would be needed to confirm whether the difference produced by parental styles on achievement were independent of socioeconomic level, gender, nationality repeating school years, motivation, or school type at the student, school, and autonomous community level or region.

Chowa et al. (2012) conducted a study about parental involvement and academic performance in children in children's schooling and how socio-demographic factors were associated with parental involvement. The participants were 60 students from different schools in Ghana. They were randomly selected and completed a baseline survey. The findings were still generally low about parental but becoming more prevalent, especially parents' involvement within the school environment. Finding also revealed that only one measure of parental involvement like talking to children about what they learn from school was significantly and positively associated with academic performance.

2.3 Parental Involvement in English

Several research studies have deemed English language proficiency as an important factor to international students' academic success in institutions where the medium of instruction is in English (Cloate, 2016). He mentioned that as much as parents involve themselves in the education of their children, more academic progress will achieve.

According to Kalayci (2018), parental involvement is a significant factor influencing students' educational development. His study explores Turkish parents' perceptions of involvement in their children's learning English in terms of their demographic characteristics. The participants in his research include the parents of the students studying in the 1st to 4th grades of a private primary school in Ankara. The research was designed as a sequential explanatory study in which a 29-item survey used along with a semi-structures interview. The findings in his study suggest that parents have a positive attitude towards parental involvement and they are generally aware of the academic and psychological aspects of education. He also mentioned that if parents have a good relationship with the teachers they are more likely to get

involved in their children's English language education directly and indirectly. His findings also indicated that such demographic characteristics as gender, age, occupation, or level of education, generally, make no significant difference on parents' perceptions about parental involvement.

2.4. Academic Performance in English

According to the study of Talab (2013), academic performance in English is significantly related to a child's learning style. Students are different based on their ability in motivation levels, and how they respond to instructional practices. The more the student understands the differences, the better the chance they have to meet their different learning needs. Talab (2013) investigated the relationship between learning styles and the academic performance of students who attend an English class to learn English as a second language in Iran. A randomly selected group of 488 high school students (248 male and 240 female) participated in his study.

Talab (2013) used Kolb's leaning Styles Inventory to identify four basic learning types: Accommodating, Diverging, Assimilating, and Converging, Academic performance is evaluated by achievement tests I the English language. The survey results indicated significant relationships between the different learning styles and the performance in an English test, and the performance resulted differently in four groups with preferred learning styles. The results of his study indicated gender differences in the performance in English test and lead to his conclusion that learning styles can be considered as good predictor of any second language academic performance, and it should be taken into account to enhance students' performance specifically in learning and teaching the second language, and also showed that individual differences in learning styles play an important role.

According to Kunle (2018), the academic performance of students has been the focus of educational researchers for a long period and different aspects of it have been investigated so far in the world. In his study, he examined factors affecting the academic performance of students by considering GPA as an indicator of academic performance. His study aimed to investigate the influence of gender, age, employment status, learning style preference, time management skills, test anxiety, and English communication skills. His research study concentrated on the students of the University of Burao who were selected from 6 different faculties by using stratified sampling and 323 questionnaires were distributed among the students. The response rate was 71% and for that reason, the study analyzed data obtained from

230 of these 323 students through ANOVA, Chi-square, and Cochran-Armitage test with the help of SPSS 21. The result of is study indicated that age, gender, employment status, and time management skills have no significant effect on the student's GPA while learning style, test anxiety, and English communication skills have a significant effect on the student's GPA.

Matirosyan et al. (2015) conducted a study about English proficiency on the academic performance of international students. The participants were 59 students enrolled in a four-year university in the United States. His researches use an ex-post-facto, a non-experimental approach. Statistical analyses revealed significant difference in language proficiency and multilingualism concerning academic performance. A standardized self-reported questionnaire was developed and utilized y the researchers I the collection of data. Students were asked to rate their English language proficiency through the use of a 4-point Likert Scale. Students were also asked if they had experience difficulties in understanding English specifically in reading, writing, listening, and speaking. The finding has implicated the role of English proficiency on the academic achievement of international students. Also, the finding of multilingualism has the highest mean GPA. The author suggested that the study needs further research involving a larger sample size, to conclude the effect of multilingualism on academic performance. A study conducted by Fakeye (2014) on Nigerian students also showed a significant performance.

Weda and Sakti (2018) conducted a study about the relationship between study anxiety and academic performance among English students at the Faculty of Language and Literature in Indonesia. The participants were 116 students. Two types of the instrument were used such as questionnaire and a test to measure the students' performance. The findings were revealed that there was a significant correlation between high-level anxiety and low academic performance among English students. The author suggested that further studies in a wide variety of setting with students who have a different socio-economic background, gender, motivation, achievement, and other discipline with students' study anxiety.

The importance of the English language for enhancing educational attainment through improved communication ability can never be emphasized. Students who have so much difficulty with their communication skills in English may not function effectively not only in the English language but also in their academic performance (Olanipekun, 2013). When students' proficiency is high, it will affect and improve the academic performance of such students. Nevertheless, when proficiency in English is lacking in any academic setting, it will lower the child's academic performance.

Pinantoan (2013) pointed out in his study the influence of parental involvement on a student's academic success should not be underestimated. The study stresses the important support system that a student gets from home is equally important as his brain power, work ethics, and genetics which all work in the accomplishment of his goal in life. Furthermore, students with two parents operating in supportive roles are 52% more likely to enjoy school and get straight A's than students whose parents are disengaged with what's going on at school. This is especially the case during the earliest years of schooling, in Kindergarten through the 5th grade, when students with active parents are almost twice s likely to succeed. Once students enter middle school, the effect diminishes slightly-possibly because they are maturing during this time- but there still a 22% difference.

Sapungan et al. (2014) explicate the importance, barriers, and benefits of parental involvement in a child's education. The authors exemplify the fact that parents' involvement in their child's learning process offers many opportunities for success-improvements on child's morale, attitude, and academic achievement across all subject areas, behaviour, and social adjustment. The study underscores that the most common obstacle to parental participation is the parents' pessimistic attitude towards supporting the school where their children are enrolled, and the "we-don't-care-attitude" among parents.

Parental involvement in a child's education is consistently found to be positively associated with a child's academic performance. Another research associates academic performance not only in English but to other subjects as well. In the study of Olanipekun (2013), he mentioned that poor performance in English contributes to poor performance in Mathematics and this he linked to poor reading ability. Mastery of the English language is very important even in students' academic performance.

Now that the pandemic is affecting the educational system, wherein there are no face-to-face classes, learning English is difficult. Parental involvement in teaching English language is very important in this new normal setup. Parental involvement is a significant factor influencing students' educational development (Kalayci, 2018).

2.5. Theoretical framework

This study is anchored on the theory proposed by Joyce Epstein (2011) which is the framework of six types of involvement which emphasize that each type of involvement is a two-way partnership and ideally a partnership that is co-developed by educators and families

working together. The six types of involvement are parenting, communicating, volunteering, learning at home, decision-making, and collaborating with the community.

Outcomes associated with Parenting include improvements in students' behaviour, school attendance, time management skills, and awareness of the importance of school. Parent outcomes encompass improved confidence in understanding parenting practices, awareness of the challenges of parenting, and a sense of support from schools and others. While the outcomes associated with Communicating include students' improved awareness of their academic progress, more informed decisions about courses, and an understanding of school policies related to their conduct. Parents will develop familiarity in interacting with teachers and a greater capacity for monitoring children's progress and responding to their problems.

Volunteering, is a designed to enhance students' skills in communicating with adults; provide them with exposure to a wide variety of adult skills, occupation, and help them develop their skills with the support of volunteer tutors and mentors. Parents are likely to develop a greater appreciation for the work of teachers, develop their skills, and grow increasingly comfortable in working with children and interacting with others in the school.

Learning at home is design for students to gain skills, abilities, and test scores linked with homework, positive attitudes toward school work, view their parents as more similar to teacher and of home as more similar to school, and their ability of self-concept as a learner. Results for parents include support, encouragement, and help children studying at home, awareness of child as a learner, and appreciation of teaching skills.

Decision-making is another type of involvement which is designed for students' awareness of representation of families in school decisions, understanding that students' right are protected, benefits linked to policies enacted by parent organizations are experienced by students. Results for parents include awareness of parents' voices in school decisions, shared experiences with other parents, and input policies that affect a child's education.

Lastly, collaborating with the community involves activities that increased skills and talents for students through curricular and extracurricular experiences, awareness of careers and options for future education and work, and specific benefits linked to programs, services, resources, and opportunities that connect students with the community. While the results for parents involve knowledge and use of local resources by family and child to increase skills and talents, interactions with others in the community, and awareness of schools' role in the community and community's contribution to the school.

Figure 1

Epstein's Theory of parental Involvement, Epstein (2011)

3. Methodology

3.1. Research Design

The study utilized the descriptive research method through the survey technique, chosen on the appropriateness of the problem. The descriptive research aims to accurately and systematically describe a population, situation, or phenomenon. It is an appropriate choice when the research aim is to identify characteristics, frequencies trends, and categories (McCombes, 2019).

3.2. Participants

The respondents of the study were purposively selected the total enumeration of 24 Grade IV learners under modular distance learning modality of a public elementary school in the Philippines during School Year 2020-2021. There were 15 males and 9 females in all and ages between 9 to 10 years old. The respondents of the study were also come from low, middle, and high income background. Parents of the respondents gave consent to the participation of their children. The researcher purposively selected the Grade IV learners since they are the researcher's class advisory.

3.3. Instrument

The variables used in the questionnaire were adapted from Epstein's framework of parental involvement (Epstein, 2011) with modification to fit the requirements and

presentation of the study. Epstein's framework was widely accepted framework and used by many researchers in the field of education in order to determine the extent of parental involvement in child's academic learning. To further ensure the validity of the items used in the instrument, the survey questionnaires have been validated by the school principal and adviser, two English Master Teachers, and Filipino Head Teacher. Upon validation, revisions were made to assess the content validity of the instrument. The respondents were also provided with clear instructions which were appropriate for their grade level to gather the data which showed reliability and consistent results.

The survey questionnaire consists of two parts: Part I was about respondents' perception of the parent-child relationship. The respondents answered 10 items using a 4-point Likert Scale. Part II was about the respondent's perception of parental involvement in school associated with English learning. It was grouped into six major categories: parenting, communicating, volunteering, learning at home, decision-making, and collaborating with the community. Each of the six categories consists of 5 items answered using a 4-point Likert Scale. The questionnaire was written in English with Tagalog translation for easier comprehensibility by the learners' respondents.

3.4. Data Gathering Process

The permission to conduct the study served to the principal where the study was conducted. Before the questionnaire was distributed, the researcher ensured that respondents' parents were given orientation and were asked for consent. Upon approval of the principal to conduct the study, the survey questionnaire was distributed personally by the researcher and was given during parents' orientation, following the safety protocols of the school to gather the data needed in the research study. The survey was done in a week. The data has been collected from the respondents' parents during the submission of their weekly modules. After collecting all the questionnaires, results were counted, tallied, analyzed, and interpreted.

3.5. Data Analysis

The statistical treatment of data used in the study are as follows: frequency count and percentage were used to determine the academic performance of Grade IV learners in English during their first quarterly summative test. Mean and standard deviation, to determine the learners' views on parent-child relationship and their views on parental involvement in terms

of parenting, communicating, volunteering, learning at home, decision- making, and collaborating with community. Pearson Product-Moment Correlation of Coefficient (Pearson's-r) was also utilized to determine the significant relationship between the learners' view of the parent-child relationship and parental involvement. The same statistical tool was used to determine the relationship between learners' academic performance in English and their views on the parent-child relationship and parental involvement.

3.6. Research Ethics

Parents collaboration in this study was necessary and therefore proper orientation on the importance of their collaboration were discussed. The learners who take part in the study were given consent by their parents for their participation. The survey questionnaires used in the study contain the information which is to be answered honestly by the learners' respondents. All their responses treated and kept in strict confidentiality.

4. Findings and Discussion

Table 1

Academic Performance of Grade IV Learners in English

First Quarterly Summative Test Score	Frequency (f)	Percentage (%)	Interpretation
25-30	4	17.00%	Excellent
19-24	8	33.00%	Good
13-18	4	17.00%	Average
7-12	8	33.00%	Poor
1-6	0	0.00%	Very poor
Total	24	100.00%	

Legend: $25-30$ Excellent $7-12$ Poor
        $19-24$ Good $1-6$ Very Poor
        $13-18$ Average

Table 1 showed the academic performance of Grade IV learners in English during their first quarterly summative test. The results show that only 17% were excellent who got the score ranges from 25 to 30 which clearly showed that out of 24 students only 4 got the highest score during the test. While 33% were interpreted as good ranges from 19-24 respectively. The test score ranges from 13 to 18 were only 17% and interpreted as an average result. However, the test score ranges from 7 to 12 were 33% and interpreted as poor. It means that many students

got the lowest score during their summative test in English. There was 0% interpreted as very poor which shows that none of the students got a test score ranges from 1 to 6 respectively.

The results pointed out that most of the learners were not able to get the highest score during their first quarterly summative test in English. Most of them got the lowest test scores in English, and few shows average results. The study of Mosha (2014) revealed that students' performance was affected by the shortage of English teachers and the absence of teaching and learning materials. She also mentioned that limited home support environment and poverty were contributing factors for poor performance in English. Due to different factors affecting the way students learn from a different locality, we cannot disregard the possibility that each factor was also present in each of the learners were the study was conducted.

Table 2

Perception of the respondents on Parent-Child Relationship

	Indicators	Mean	Std. Deviation	Interpretation
1	Tinuturuan ako ng aking mga magulang ng pananampalataya at mga kaugalian (*My parents impart religious beliefs and values to me*)	3.88	0.34	Strongly Agree
2	Hinahayaan ako ng aking mga magulang na ipahayag ang aking mga saloobin at opinion (*My parents allow me to express my feelings and opinions*)	3.58	0.46	Strongly Agree
3	Hinahayaan ako ng aking mga magulang sa solusyunan ang aking mga problema na may tamang gabay (*My parents allow me to solve problems on my own*)	3.38	0.34	Strongly Agree
4	Iginagalang ko ang aking mga magulang sa lahat ng oras (*I always respect my parents*)	3.88	0.34	Strongly Agree
5	Dinidisiplina ako ng aking mga magulang upang itama ang mga maling gawain (*My parents discipline me for my misconduct*)	3.92	0.28	Strongly Agree
6	Sinusunod ko ang aking mga magulang na may paggalang (*I always obey my parents' rule*)	3.71	0.46	Strongly Agree
7	Ang aking mga magulang ang nagbibigay ng mga pangunahing pangangailangan ng pamilya (*My parents provide basic needs for our family*)	3.83	0.48	Strongly Agree
8	Itinuturo ng aking mga magulang ang paraan upang maging matagumpay sa buhay (*My parents taught me the foundation for success*)	3.75	0.44	Strongly Agree
9	Inihahayag ng aking mga magulang ang kanilang pagmamahal at pagmamalasakit sa akin (*My parents express their love and concern for me*)	3.88	0.34	Strongly Agree
10	Ang aking mga magulang ang pinakamahalagang tao sa aking buhay (*My parents are the most important people in my life*)	3.88	0.34	Strongly Agree
	Total Mean	**3.77**	**0.28**	**Strongly Agree**

Legend: 3.25 − 3.99 *Strongly Agree;* 1.75 − 2.49 *Disagree;* 2.50 − 3.24 *Agree;* 1.00 − 1.74 *Strongly Disagree*

Table 2 showed the learners' perception of their relationship with parents. A total mean of 3.77 and indicated strong agreement. The results pointed out that the perception of each learner on the parent-child relationship showed that they had a positive relationship with their parents at home. The learners knew that their parents were doing their responsibilities for the family's welfare. Learners also strongly agree that their parents are important in their educational success. This corresponds to the findings of Bruchet et al. (2010) that students performed better in school when they had a positive relationship with their parents.

While according to the Australian Parenting Website (2018), positive relationship between parents and children were very important because they can learn and develop best when they have a strong, loving, positive relationships with parents, and other careers. They also mentioned that there is a formula for getting the parent-child relationship right, but if the relationship with a child is built on warm, loving, and responsive interaction the child will feel loved and secure.

Based on the results, the respondents personally had an idea of what a positive parent-child relationship should be, and the good things it can contribute to their academic success particularly in English learning. Respondents have probably experienced the love and support of their parents at home. They knew the worth of having a positive relationship with parents throughout their lives.

Table 3

Perception of the Respondents on the Involvement of their Parents

	Indicators	Mean	Std. Deviation	Interpretation
1	Parenting	3.45	0.37	Highly Involved
2	Communicating	3.43	0.53	Highly Involved
3	Volunteering	3.24	0.48	Moderately Involved
4	Learning at home	3.46	0.52	Highly Involved
5	Decision-making	3.33	0.54	Highly Involved
6	Collaborating with the community	3.32	0.54	Highly Involved
	Total Mean	**3.37**	**0.43**	**Highly Involved**

Legend: 3.25 − 3.99   Highly Involved   1.75 − 2.49   Less Involved
             2.50 − 3.24   Moderately Involved   1.00 − 1.74   Not Involved

Table 3 shows that the respondents have parents who were highly involved with a total mean of 3.37 and a standard deviation of 0.43. The results pointed out that the perception of learners on parental involvement in six categories such as parenting, communicating, volunteering, learning at home, decision-making, and collaborating with the community indicated a highly engaged parent in helping their child succeed in school by supporting them in all aspects of learning especially in English subject. Children believed that the involvement of their parents in school especially in English learning plays important role in their education.

According to Kwatubana and Makhalemele (2015), seeing parents involved in the education of their children is a good thing because it improves academic performance. Learners become more focused on their school work. This was supported by the study of Sapungan (2014) that learners whose parents are involved are active and are ready to learn, and become persistent as their parents continuously inquiring about their progress in school. Based on the results, parental involvement in six categories can bring success to a child's academic progress in English because learners knew how important the involvement of their parents is in their education.

Table 4

Correlation of Learners' Perception on Parent-Child Relationship and Parental Involvement

Indicator	Parent- Child Relationship		
	r − value	Degree of Correlation	p − value
Parental Involvement	0.520	Moderate Positive	0.0092*

Significant at 0.05 significant level

Table 4 shows a significant, strong, and positive correlation between learners' perception of the parent-child relationship and parental involvement ($p = 0.0092$, $p < 0.05$). An r-value of 0.520 further reinforces the relatively strong relationship between the variable. This correlation indicated that the more positive the learner's perception is towards relationship between parent and children, the higher the involvement of the parents.

The finding implied that the relationship between the learners' perception of the parent-child relationship and parental involvement indicates a significant correlation. The results showed that there is a strong relationship between the variables. This correlation indicates that the more positive the learners' perception is towards the relationship between parent and child, the higher the involvement of the parents in the child's education. This supports the study of

Mo (2008) that parents' relationship and involvement, nurturing and conveying higher educational aspiration with their children had the strongest effect on student's performance in school.

Table 5

Correlation of Learners' Academic Performance in English on Parent-Child Relationship and Parental Involvement

Indicator	Academic Performance in English		
	$r-$value	Degree of Correlation	$p-$value
Parent-Child Relationship	0.240	Negligible	0.2586
Parental Involvement	0.336	Low Positive	0.1084

*Significant at 0.05 significant level

Table 5 shows the correlation of learners' academic performance in English on learners' perception of the parent-child relationship and parental involvement (p = 0.2586, p = 0.1084 respectively, p > 0.05) which shows that there is no significant relationship between the variables. An r-value of 0.240 further shows a negligible correlation between learners' academic performance in English and their perception of parent-child relationship while an r-value of 0.336 shows a low positive correlation between learners' academic performance in English and parental involvement. This correlation indicates that the learners' perception of the relationship between their parents and their involvement is not significant.

The results pointed out that the learners' perception of the parent-child relationship and parental involvement towards their academic performance in English indicate having no significant correlation. Based on the results, the respondents believe that parents have a vital role in their education, but that doesn't mean it can affect their test score. The result in academic performance in English clearly showed that students have different abilities to communicate and comprehend effectively in English instructions during examinations. As a result, poor performance in English occurs. This supported the study of Olanipekun (2013) that students who have so much difficulty with their communication skills in English may not function effectively not only in English but also in their academic performance.

5. Conclusion

The study proved that parents had a positive relationship with their children and that strong foundation can motivate a child to learn English even better. Parental involvement in six categories such as parenting, communicating, volunteering, learning at home, decision-making, and collaborating with the community is very important to improve academic performance in English. However, the hypothesis stating that there is no significant relationship between learners' view on the parent-child relationship and their perception of parental involvement is rejected at a 0.05 level of significance. While, the hypothesis stating that there is no significant relationship between learners' view on the parent-child relationship and parental involvement in their academic performance in English is accepted. There is no statistical relationship between the variables.

To further ensure that learning happens while on modular distance learning, a program should be developed. In addition, similar studies may be conducted as a follow-up study including variables not incorporated in the present study for future research. The study also suggested that PTA officers along with teachers may develop a classroom-based program that will assist learners at risk in English learning. Teachers may also review the parent-teacher partnership program for learners' improvement in English learning so that it will be aligned with the learning needs of the pupils in different grade levels.

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Effectiveness of Realistic Mathematics Education Approach on Problem-Solving Skills of Students

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Abstract

Mathematics is concerned with the method used in the teaching and learning process in addition to issues encountered in the cognitive domain. The Philippines' education system is still dominated by traditional mathematics teaching, which frequently overlooks the goal of mathematics education—to prepare students to deal successfully with real-life situations. This affects the declining performance of the students in their overall mathematical ability, especially in problem-solving. Hence, this study utilized a pre-experimental design to measure the effectiveness of the Realistic Mathematics Education (RME) approach in the problem-solving skills of the students in terms of understanding the problem, devising a plan, carrying out the plan, and looking back. Furthermore, the cluster sampling technique was used in choosing thirty-five grade 9 students and evaluated their problem-solving ability using a pre-test and post-test assessments. Based on the result, there is a highly significant difference in the mean pre-test and post-test performance of the respondent before and after using the RME approach in all the four phases of problem-solving (p-value=0.000). This implies that the RME is an effective teaching approach that successfully improved the mathematical proficiency of the students, especially in all aspects of problem-solving skills. The findings verify that educators can use the RME approach to expose their students to more collaborative teaching-learning processes that incorporate real-world scenarios. Future researchers may also conduct a similar study in face-to-face learning to comprehensively use the RME approach.

Keywords: *Didactical Phenomenology, Emergent Model, Guided Reinvention, Problem-solving Skills, Realistic Mathematics Education Approach*

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1. Introduction

Mathematics is expected to provide high-quality education that emphasizes problem-solving and makes the learners globally competitive. As stated in the third edition of the World Economic Forum (2020), problem-solving is one of the top abilities most in-demand in the next five years. Furthermore, the Department of Education (DepEd) developed a curriculum that emphasizes the twin goals of mathematics, problem-solving skills and critical thinking. This curriculum satisfies the need to get Filipino pupils ready for the demands of the twenty-first century.

Despite the innovations made by the international and local education system, students still considered mathematics the most challenging subject (Escarez & Ching, 2022) specifically problem-solving (Nurjamaludin et al., 2021). This problem is evident in the Program for International Student Assessment (PISA) 2018, where the Philippines came in last place out of 79 countries in mathematics (OECD, 2019). The Philippines did not reach the average score of 489 and got only 353. In relation with this, according to the study of Roman (2019) from the result of national assessments and research from the Philippines over the past 15 years, students show poor Mathematical performance that is noticeable from basic education to higher education levels. It is supported by the study of Imam (2016) that the country's mathematics performance is still considered poor, and affirm that the initial result of current efforts of the government by adopting K-12 curriculum did not do much to change the status quo. Additionally, from the findings of Pentang (2021), Filipino learners with an unsatisfactory performance in numbers, measurement, and statistics while alarmingly poor in geometry and algebra. Based on the National Achievement Test (NAT) 2018, students got a low mean percentage score of 35.34% in the Mathematical Ability subtest (Penaso & Gaylo, 2019). In this assessment, problem-solving skills are acknowledged as the core of mathematics education (OECD, 2013).

Meanwhile, Laurens et al. (2018) highlighted that using ineffective teaching tactics and learning approaches has an impact on students' capacity to learn mathematics. Moreover, in 1970 a new approach in mathematics teaching was introduced in the Netherlands by Freudenthal Institute popularly known as the Realistic Mathematics Education (RME) approach. Plenty of the past international studies showed that the RME approach is an effective

strategy in enhancing the cognitive and mathematics achievement level of the students (Laurens et al. 2018; Zakaria & Syamaun, 2017). However, in comparison to the traditional lecture with problem-solving skills activities, this teaching style is not widely used in the Philippines. In reviewing related literature and studies, the study was unable to locate any study conducted in the Philippines to consider the RME approach as a teaching strategy for improving students' mathematical skills, to the best of the researchers' knowledge. To fill up the gaps left by previous studies, this study adapted the RME approach to the Philippine educational system and test its effectiveness on problem-solving skills of the students.

With the characteristics of the RME approach, learners can easily relate to the problem and be able to imagine the situations present in it. In solving a problem, they reflect and rely upon their previous knowledge and experiences to understand more. And for systematic problem-solving, this study incorporated the four phases of problem-solving by George Polya. This study was conducted to determine the pre-test performance of the student on problem-solving skills before the use of the RME approach in terms of understanding the problem, devising a plan, carrying out the plan, and looking back. It also determined the post-test performance of the students on problem-solving skills after the use of RME approach and find out significant difference between the pre-test and post-test performances before and after using the RME approach.

2. Literature review

2.1. Realistic Mathematics Education Approach

The RME approach is a development of research strategy and pedagogical theory on mathematics based on the idea of Hans Freudenthal (Dickinson & Hough, 2012). It is a teaching method that uses students' everyday experiences as a starting point for their learning (Kosim & Tirta, 2020). It establishes adequate mathematical comprehension, including the actual use of mathematics. Additionally, RME approach includes three core heuristic principles such as didactical phenomenology, self-developed or emergent models, and guided reinvention (Bray & Tangney, 2016).

Guided Reinvention. Guided reinvention is a procedure in which the students' learning experiences should be aligned to the process in which mathematics was developed by the mathematician (Anwar et al., 2012). It plays distinct roles in the instructional design of this

study, where students let to reinvent mathematical concepts that they relate to in the mathematical statements. The use of guided reinvention promotes the students' work and responses as the main topic of the discussion, and teachers act as facilitators.

Didactical Phenomenology. It is a process that takes place in instructional design, where students should expose to the teaching-learning process that is experientially real to them. Students are more engaged in discussions when they have activities that are personally relevant to them (Stephan et al., 2014). Thus, this process depends on every classroom, the situation of the students, and their level of thinking and experience, where contextualization and indigenization in mathematics education take place (Dickinson & Hough, 2012).

Emergent Model. According to Stephan et al. (2014), educators should support student modelling by introducing new or existing tools, as well as a student-created tool to use for understanding and explaining mathematical reasoning. Additionally, emergent modelling plays a fundamental role in shifting the students' knowledge and reasoning from the informal level into a more formal mathematical concept (Anwar et al., 2012). Furthermore, incorporating various modelling into mathematics learning improves learners' analytical and problem-solving skills significantly (Erbas et al., 2014).

2.2. Problem-solving Skills

A lot of experts believe that the heart of education is to teach students how to think and become problem-solver (Khoiriyah & Husamah, 2018). One of the goals in the development of 21st-century education is acquiring problem-solving skills to be able to prepare the students in facing the demands of life. However, challenges in problem-solving take place and are always evident. Students frequently struggle with problem-solving because they lack a thorough knowledge of the problem-solving process and its application in real-life contexts (Yu et al., 2015). Thus, students should be taught using real-world scenarios to develop their problem-solving skills that cater them with opportunities to become real problem-solvers (Saygılı, 2017). Moreover, the four principles of problem solving includes understand the problem, devise a plan, carry out the plan, and look back, introduced by George Polya (1949).

Understand the Problem. According to Krawec et al. (2013), understanding is one of the variables that contribute to math problem-solving being one of the most difficult areas of the curriculum. Is a complicated talent that not only calculates the answer, but also interprets

and integrates the problem information, forms and retains an image of the problem, and develops a feasible solution, which requires sophisticated thinking and strategic methods. Moreover, the burdensome part of solving a word problem is understanding the problem, especially the words it contains. Thus, a learner's capability to understand and comprehend different terms and expressions in mathematics leads to developing their ability to solve word problems (Vula & Kurshunmlia, 2015).

Devise a plan. According to Ersoy and Güner (2014), one of the most important factors in solving a problem is deciding on the right strategy. The use of a heuristic method, without a doubt, improves pupils' capacity to think while solving arithmetic problems. Furthermore, by drawing diagrams, investigating exceptional situations, specializing answers, and generalizing solutions, a heuristic method promotes the transfer of mathematical reasoning (Hoon et al., 2013). Hence, it fosters critical thinking and creativity, as well as the capacity to establish and implement projects and strategies (Szabo et al., 2020).

Carry out the plan. In the study of Hoon et al. (2013), in the process of finding the solutions of the learners, they pondered further. These methods of thought resulted in the development of creativity by acting it out or going backward to examine the solutions. Additionally, it develops managerial skills and the ability to achieve goals collectively, as well as productivity and the ability to complete tasks in a reasonable amount of time. It teaches pupils how to make the most of previous experiences (Szabo et al. 2020).

Look Back. Looking back, according to Liljedahl et al. (2016), "in memory to previously acquired knowledge [...] and further develops knowledge in long-term memory that may be extended in later problem-solving encounters." In summary, reflecting on the past is a good investment in future experiences with problem-solving situations, since it establishes the connections required later. Additionally, according to Szabo et al. (2020), this final step demonstrates to the learner the advantages of working together to capture the problem, discuss the solution, evaluate it, and find the best solution.

2.3. Theoretical Framework

This research was based on John Dewey's Constructivism Theory (1986). Constructivism theory states that learners can build and develop new information through real-world experiences and ideas. They draw on previous knowledge and apply it to new

information. Dewey claimed that students that learn using real-world activities and interventions display a high level of knowledge and skills in critical thinking and collaboration (Brau, 2020).

The RME approach is a constructivist-based teaching style that encourages students to investigate and collaborate on their learning in relation to real-world concerns (Freudenthal, 1991). Based on Hans Freudenthal's concept, the RME approach is a development of research methodology and mathematical pedagogy (Dickinson & Hough, 2012). In 1970, the Freudenthal Institute in the Netherlands developed this strategy. Guided reinvention, didactical phenomenology, and emergent model are three core heuristic principles of RME in teaching process design, according to Gravemeijer (1994) and Freudenthal (1991).

Meanwhile, problem-solving is guided by the view of George Polya for easier understanding and a more systematic process in solving a problem (Liljedahl et al., 2016). Understand the problem, devise a plan, carry out the plan, and look back are the four phases of problem-solving. Moreover, Dewey believed that the ideas and processes produced by the learners are easily gained from the experiences that have importance to them. The reason why the study saw the potential to the adapted RME approach in increasing problem-solving skills of the learners.

3. Methodology

3.1. Research design

The study utilized a pre-experimental research design as research method. Specifically, one-group pre-test and post-test design. The RME approach is used as the treatment in this study, and the group observed was the students' problem-solving skills, such as understanding, strategizing, applying, and reflecting.

3.2. Respondents of the Study

Junior high school students enrolled in one of the schools in the Province of Batangas in the Philippines during the academic year 2021-2022 comprised the study's population. The sampling technique utilized in this research is clustered sampling— from the two clusters or section of the Grade 9 in the school, random sampling was used to select the study's respondents with 35 Grade 9 students.

3.3. Instrumentation

Lesson Exemplars. The researchers developed lesson exemplars that were parallel with the K-12 most essential learning competencies (MELC) guidelines for Mathematics grade 9 for the current academic year. It was focused on various topics of trigonometry.

Pre-test and Post-test Assessments. An eight-item test that require the four-step problem-solving method, used to evaluate the students' problem-solving abilities. Moreover, it was assessed by a modified rubric adapted from Putra et al. (2020).

3.4. Data Collection Procedure

Implementation. After receiving clearance from the appropriate offices, the researchers began formally applying the teaching technique and collecting data. Following it, the researchers collaborated with the subject instructor to gain a background on the students and the mathematics lesson where the RME approach can be used. With the assistance of the teacher, the assessment was administered using Google Meet. The RME approach was then incorporated, guided by its three core heuristic principles.

The researchers used guided reinvention by providing them with activities that encourage investigation and observation in order for them to make meaning on their own. For didactical phenomenology, real-life experiences were not only used as examples and parts of the discussion, but the researchers let the students experience the discussion by giving them activities that connect the topic in trigonometry to the real world. In the self-emergent model, models or graphs were provided to support their learning and after giving some examples, students were allowed to draw the situation on their own to familiarize and make it a routine in every problem solving that they will encounter. Furthermore, as part of the self-emergent model, the researchers used various online platforms and websites to incorporate tools that will aid their learning. After utilizing the RME approach, the researcher disseminated the post-test with the same level of questioning as the pre-test but not identical. After gathering the data, the results were treated statistically for interpretation.

3.5. Ethical Considerations

The study observed utmost confidentiality in dealing with respondents' test results and personal information. Only the researcher and thesis adviser have access to the results of the

individual data in the test questionnaires. The names of the respondents are omitted from this study.

3.6. Statistical Treatment

The study used descriptive and inferential statistics to give the raw data collected in this study significant meaning. The frequency and percentages were used to present descriptive data on pre-test and post-test outcomes. Paired t-tests, on the other hand, were used to examine the effectiveness of the RME approach on students' problem-solving skills in Mathematics.

4. Findings and Discussion

Table 1

Pre-test Performance of the Students in Problem-solving Skill

Score	Understand the problem		Devise a plan		Carry out the plan		Look back		Interpretation
	f	%	f	%	f	%	f	%	
25-32	7	20.00	-	-	-	-	-	-	Exemplary
17-24	13	37.14	1	2.86	-	-	-	-	Proficient
9-16	15	42.86	18	51.43	10	28.57	1	2.86	Developing
0-8	-	-	16	45.71	25	71.43	34	97.14	Emerging
Total	35	100	35	100	35	100	35	100	

Legend: 25-32 Exemplary; 17-24 Proficient; 9-16: Developing; 0-8: Emerging

Table 1 shows the test scores of the respondents in mathematical problem-solving skills before exposure to the RME approach. On the result of the pre-test examinations in understanding the problem, most of the students fall on the developing level with a total frequency of fifteen (15) students. They can understand the various terminology and phrases that are present in the problem, but more than two values are missing or incorrect on their answer. This shows that most of the respondents are not familiar on the topic the reason why they have difficulty on identifying important concept in the problem. This is supported by the study of Vula and Kurshunmlia (2015), that if students have foreknowledge about the meaning of the terms in a word problem, they can learn mathematical concepts and enhance necessary mathematical understanding without obstructions.

Moreover, seven students got an exemplary level of performance even though the topic has not yet been discussed, because they have prior knowledge about trigonometric identities since it was already discussed before the implementation of the study. It portrays that they have

the mastery on the basic knowledge about the topic, such as the mnemonics SOH-CAH-TOA, which is the foundation of the succeeding MELCs in the fourth quarter of grade 9.

Furthermore, it can be distinguished from the table that when it comes to devising a plan, more than half (51.43%) of the students are prominently under the developing level. It implies that the majority of the students are having difficulty discerning excellent plans that aid in their strategies, which encompasses representations of possible illustrations and recognizing suitable methods or techniques that will direct them to the correct answer. This is consistent with the findings of the study of Phonapichat et al. (2014), which found that students lack organization of problem-solving processes when it comes to formula writing, wherein they are unable to write orderly processes.

In carrying out the plan, the uttermost frequencies of the respondents are in the emerging level, with a total of twenty-five (25) students representing 71.43% out of thirty-five (35). It connotes that most students could not identify several strategies required to solve a given problem, and they cease to elaborate on the processes and outcomes. They also do not demonstrate well-reasoning in utilizing the plan. Moreover, students frequently fail in the third step because they obviously have no clue of (or misapply) problem-solving procedures, notably those required for problem representation. This is parallel to the findings of Dhlamini et al. (2016) states that students who were not proficient or had a low level of proficiency in trigonometry were those who left blank spaces and used incorrect mathematical procedures, resulting in mathematically incorrect responses.

On a final note, almost all of the respondents, 97.14%, fall under the emerging level of performance on looking back. It imposes that the students are either trying or unable to check and reflect on their answers. They are experiencing difficulties examining their solutions. This also means that most of the respondents have not been able to succeed in the antecedent steps. It is consistent with Annizar et al. (2020)'s study, which found that some learners made mistakes during the planning and implementation stages but did not go through the process of looking back. This finding suggests that the step of looking back is foreign to the majority of pupils because so few subjects actually conduct it.

Figure 5 shows the sample answer of student no. 05 on problem number 3 of the eight-item post-test assessment. It represents how most respondents answered the pre-test assessment

indicating a low-performance range from emerging to developing levels in each step of the problem-solving process.

Figure 1

Sample Answer of Student No. 5 in Pre-test Assessment

> **Problem 3.** Consider to illustrate triangle ABC which is a right triangle, where ∠A is the angle of elevation. If the $\overline{AB}$ (Hypotenuse) is 135 inches and $\overline{AC}$ is 88 inches (Adjacent), then label properly the elements of the triangle to its representation and find the measurement of ∠A.

The figure depicts how most learners perform at the developing level during understanding the problem. It is clear from student no. 05's response that she was able to identify what was asked in the problem but was unable to provide the given data in the problem. It implies that the respondent lacks a thorough understanding of the problem and is most likely unaware of the subject. In devising a plan, students were in the emerging to developing level. This means that they were able to draw an illustration but were having trouble labelling the appropriate values. In this case, they were unable to identify the appropriate formula, which is part of the planning stage and will aid the next step.

Meanwhile, in the third phase, Student no. 5 used the wrong formula in answering the problem. It implies that they are familiar with the concept but are impotent to apply the right one. As a result, even though they try answering the problem, they fail to get the correct answer. Finally, regarding the final step, most of the students did not check to see if they had gotten the right answer. Thus, they are unlikely to have any idea of how they can reflect and draw formal conclusions on their response, which is why they only write their answers in the previous step to avoid leaving them blank.

Table 2

Post-test Performance of the Students in Problem-solving Skills

Score	Understand the problem		Devise a plan		Carry out the plan		Look back		Interpretation
	f	%	f	%	f	%	f	%	
25-32	32	91.43	24	68.57	7	20.0	10	28.57	Exemplary
17-24	3	8.57	9	25.71	15	42.86	10	28.57	Proficient
9-16	-	-	2	5.72	9	25.71	6	17.15	Developing
0-8	-	-	-	-	4	11.43	9	25.71	Emerging
Total	35	100	35	100	35	100	35	100	

Legend: 25-32 Exemplary; 17-24 Proficient; 9-16 Developing; 0-8 Emerging

The table 2 highlights the great outcome of the students on their overall post-test assessment after the treatment. On the first principle of mathematical problem-solving, out of thirty-five (35) respondents, thirty-two have exemplary performance with a percent of 91.43%. It shows that most students exhibit a clear and comprehensive understanding of the problem, wherein students carefully analyzed each question in preparation for solving it and easily determined all the given values and variables being asked. They have a broad understanding of the topic, which explains the students' familiarity with many concepts, such as trigonometric ratios, special angles, angle of elevation and depression, and oblique triangles. Knowing a lot of ideas about a specific topic broadens students' reading comprehension. Consequently, they can recognize all the factors involved in approaching the problem, which improves their mathematical problem-solving skills. It is in line with the study of Simpol et al. (2017), who claim that accuracy of a problem's final answer is determined by the students' ability to grasp and extract keywords.

In devising a plan, twenty-four students corresponding to more than 2/3 of the class (68.57%) shows an exemplary level of skill. It means that employing the RME approach increased the respondents' performance in creating a concrete outline of strategies for solving a problem. Students with this prominent outcome are well-learned in strategizing phase, which includes illustrations of a possible diagram and recognizing appropriate methods or techniques that will lead to the correct answer.

Majority of the students in strategizing used correct, comprehensive, and appropriate mathematical concepts as part of their problem-solving process. It indicates that high-performing students take a different perspective to solve the given problem, displaying

multiple plans and connecting the illustrations they created to various formulas they have encountered. Accordant with the discovery of the study of In'am (2014), enhanced strategizing roots from the students' experiences, as this step can be possible by making an analogy with relatively similar problems that the students encountered.

Concerning the third phase of the problem-solving process, the majority obtained the proficiency level with 15 respondents, representing 42.86 %. It demonstrates that the students are skilled in executing the strategies and methods thoroughly, coming from the former step to solve the problem. Students who perform at the proficient level can frequently recognize multiple ways to implement the plan and have strong reasoning skills. They get the accurate answer, but with a few steps and solutions. Students at a high level learn about trigonometry not only by knowing the six trigonometric ratios to be used but also by executing these formulas to find the missing value in the problem.

In terms of the looking back process, students demonstrate a mastery level with ten students accounting for 28.57% performing at an exemplary level and ten students also performing at a proficient level. These large frequency and percentage of students, implies that they successfully interpret and conclude their final answer as part of the last step. They did this step in a clear, focused, and logical manner. In addition, reflecting on their overall solution to getting the final answer is an essential task to identifies which part of the step they overlooked that caused incorrect answer, allowing them to return to some of the previous phases. It explains why the majority of the respondents that have mastery of looking back got their final answers in every problem accurate. This is parallel to the study of Thomson et al. (2021), revealed that students compare and analyze the formula and illustrations used in word problems involving right triangles and generate alternative solving strategies among the six trigonometric ratios.

Figure 6 shows the sample answer of student no. 10 on problem number six of the eight-item post-test assessment. It displays how most of the students answer the post-test with a high-performance range from proficient to exemplary level in all phases of problem-solving.

The figure displays how most of the students that perform at an exemplary level respond to understanding the problem. It can observe that the majority of the respondents copy their answers directly from the problem. Moreover, the sample problem contains unfamiliar

terms such as altitude, slant range, and angle of depression, which are only found in this area of trigonometry. Even so, they were able to make sense of these terms. As seen in student no. 10's answer, she identifies the word *altitude* as synonymous with the term *height* for easier understanding.

Figure 2

Sample Answer of Student No. 10 in Post-test Assessment

Furthermore, more than 2/3 of the respondents fall under the exemplary level of strategizing. This kind of planning provided in the figure is broad and straightforward but accurate. Almost all students at an exemplary level have this kind of plan before solving the problem. From this, she successfully identified the accurate formula.

The majority of respondents demonstrated proficient level in the computing step. Students with excellent result exhibit well-developed thought in carrying out the plans from step 2. From the sample, due to the student's skills and knowledge of trigonometric ratio,

students easily determined the formula and how to perform it to obtain the final answer. Thus, by grasping all of the discussed strategies and formulas for determining the missing value, they improved and became more motivated to handle this type of trigonometric problem. At the last phase of problem-solving, students fall from proficient to an exemplary level of performance. This indicates that students checked their answers carefully using the strategies they used and correctly concluded the final answer. As seen in the figure, student no. 10 presented the formula she used and went back to her process of calculating the angle of depression. She confirmed that the answer was correct after determining that both sides were equal. Finally, she finished the answer with a complete sentence that included the phrase on what was asked and the computed value with the appropriate unit.

Table 3

Test of Difference Between the Mean Pre-test and Post-test Performance of the Students in Mathematical Problem-Solving Skills.

Mathematical Problem-solving Skills	Pre-test		Post-test		t	df	Sig. (2-tailed)
	Mean	SD	Mean	SD			
Understanding the problem	20.89	6.09	30.23	3.19	8.350	34	.000
Devising a plan	8.74	4.01	26.31	5.52	16.433	34	.000
Carrying out the plan	5.40	5.00	18.66	7.89	9.186	34	.000
Looking back	2.03	2.91	17.57	8.93	10.402	34	.000

Legend: p-value (Sig.) < 0.05 – significant, p-value (Sig.) >0.05 – Not significant.

Table 3 displays the significant difference in the respondents' mean pre-test and post-test performance. It demonstrates that the students' mathematical problem-solving skills are highly significant in all the four-phases of problem-solving with a computed p-value= 0.000 for all four phases. This implies that after the exposure of the RME approach, students exhibited an improved academic outcome in problem-solving. This is in parallel with the study of Taufina et al. (2019), who discovered that pupils taught using conventional methods performed significantly less in problem-solving than those exposed to the RME approach.

Based on the given table, it can be gleaned that there is a highly significant difference (p-value= 0.000) between the pre and post-test performance of the students in understanding the problem. It depicts a notable improvement in their mathematical learning from a developing level with a 20.89 mean to an exemplary level with a mean of 30.23. The students' poor performance before treatment was caused by their confusion about the topic's specific

wordings. But through the RME approach, the discussion of every topic was more collaborative and engaging, which improved their self-confidence. The students became more deeply involved in each lesson, sharing their ideas in class, which increased their mathematical skills. It resulted in their mastery of trigonometric concepts and ideas such as trigonometric ratios, special right angles, angle of elevation and depression, and oblique triangles, allowing them to have a more comprehensive understanding of the problem. It is parallel to the findings of Nurjamaludin et al. (2021), which asserted that the RME approach boosts students' confidence, which leads to the success of mathematical problem-solving.

Besides, students enhanced their reading comprehension because of the RME that facilitates self-exploration. They investigate and explore mathematical concepts, where they are introduced to a variety of unfamiliar terms and ideas, they eventually give meaning on their own before the discussion begins. This explains the RME strategy's outstanding accomplishment in the first step of problem-solving, when the respondents' understanding of trigonometry was increased. As resonates with Afthina and Pramudya (2017), when applied to learning models, the RME method increases students' engagement and understanding of geometry instruction.

In terms of devising a plan, the students' mean pre-test performance (8.74) was classified as an emerging level, whereas the mean post-test result showed a notable increase (26.31), demonstrating an exemplary level. It also reveals the computed p-value of 0.000, indicating a highly significant difference in the outcome before and after using the RME approach. This essentially denotes that the utilization of the RME approach has a significant impact on improving the strategizing skills of the learners in problem-solving. Making connections with the students' good work towards the second phase of problem-solving and the RME approach can exhibit different implications. First, students' prior experiences, according to In'am (2014), play a significant role in their problem-solving method. This approach incorporates the students' realities in the discussions and assessment, notably improving the overall performance in Mathematics. Considering problem situations were factually based on their imagination and experiences, students became more interested in the whole teaching and learning process, especially in solving a problem. Using contextualized problems makes the strategizing step easier for them. They get a hint on how to approach the problem since they relate the problem scenarios to their level of thinking and experiences. It

also explains the decreased difficulty for the students to illustrate the situation provided by the problem as part of strategizing. This is in line with Bray and Tangney's (2016) results that RME intervention with contextualized problems or incorporating the didactical phenomenology, one core principle of the RME, significantly improved the skills in mathematical problem-solving of the students, which strategizing belongs.

Second, exposing students to the treatment allows them to see the problem from a different perspective, demonstrate several plans, and connect the illustrations they created to various formulas they have encountered. Thus, mastery of devising a plan subject to high creativity and critical thinking (Szabo et al., 2020). As part of the RME intervention, teachers act as a facilitator while the students' ideas are the center of the discussion. Students not only shared their insights but also discovered new viewpoints in a math class from one another and learned by analyzing each presentation and response. Thus, the RME awakens the students to be open to different possibilities for solving a problem through various plans and strategies. Chairil et al. (2020), who demonstrate that instructional materials based on RME principles develop students' critical thinking skills in problem training and evaluation, support this conclusion.

Lastly, students are required to illustrate the problem situation based on their level of thinking and label it, as part of self-emergent model, allowing them to determine the best formula to use. For this reason, strategizing became routine in every problem-solving task, which leads to a more convenient illustration of the question and connecting it with the method to use. Thus, the RME approach develops students' strategizing and planning because of the repeated and consistent practice. In connection with the study of Julie et al. (2013), they operated the RME in teaching materials for the students and highlighted the principle of the emergent model. They concluded that this technique helps students strengthen their problem-solving skills, primarily in their capacity to plan and strategize effectively before solving problems.

Moreover, the table shows the highly significant difference in the students' pre and post-test mean scores (p-value= 0.000) in carrying out the plan. This implies that after the RME approach, students exhibited improved academic performance in Mathematics- specifically from emerging (5.40) to exemplary level (18.66) on the third phase of problem-solving. The guided reinvention, promotes the students' work and responses as the main topic of the

discussion. Hence, RME produces a student-focused classroom. This explains the improvement in the students' communication skills. Students can express themselves, give explanations, and listen, leading to a deeper comprehension of mathematics. The students' participation is visible in the form of explaining the various answers, which allows them to get familiar with and comfortable with solving other problems. Thus, RME enhanced the communication skills of the students that take part in the improvement of their computational skills. A similar result was discovered by Palinussa et al. (2021), where the RME approach strengthens the students' mathematical reasoning and communication skill that helps in executing a formula for a problem.

Furthermore, didactical phenomenology has a significant impact on the problem-solving process' third phase. According to Liljedahl et al. (2016), one of the reasons students masters the computational step is the high reliance on prior knowledge and previous experiences when solving a problem, and this is where didactical phenomenology takes place in instructional design. Students felt they belonged in the discussion using the RME, which made them more engaged in the conversation. It also brought their eagerness to execute and perform the planned strategy to get the correct answer. As a result, didactical phenomenology helps students improve their computing skills. This is also consistent with the findings of Stephan et al. (2014), stated that when students participate in activities that are personally meaningful to them, they become more engaged in discussions and improve their skills in carrying out the plan.

Moreover, according to Vroom (2020), the emergent model has four stages: situational, referential, generic, and formal. This stages bridges the students' knowledge and reasoning from the informal level into a more formal mathematical concept. Thus, the RME principle has a positive impact on increasing learners' problem-solving ability in terms of executing the strategy. This result is parallel with the study of Anwar et al. (2012), who concluded that emergent modelling enhanced the students' learning process and developed their computational skills, especially in solving contextual problems.

In regards to the looking back process, the students' pre-test performance was the lowest, at 2.03, falling below the emerging level, whereas their post-test performance was remarkable, with a mean of 17.57, corresponding to proficient to exemplary. The table also shows the highly significant difference (p-value= 0.000) in students' performance in the last

step in problem-solving before and after exposure to the RME approach. Some literature indicates that most students rarely reflect or look back once they get their answer since this phase is often omitted which is why it is new for the students (Thomson et al., 2021; Simpol et al., 2017; In'am, 2014). Students that were exposed to the RME strategy, on the other hand, excelled at this procedure and used it as a routine in every problem-solving task they encountered. The strategy equipped the students with all of the knowledge they would need to solve a trigonometric problem. They acquired enough skills in finding different plans and formulas to solve a problem, increased their activeness, and became aware of different perspectives in solving a problem. In other words, RME allows learners to employ their critical thinking skills by reflecting on the problem. This is corroborated by Wulandari's (2020) study, which found that the RME technique increased students' problem-solving abilities, especially in concluding and reflecting on the final answer, through the enhancement of the critical thinking skills as described as the ability that prompts pupils to choose the best conclusion.

Moreover, looking back process can be associated with reflective thinking where the students should look back on their work not only for mathematical accuracy and completeness but also for rationality and applicability. The principle of self-emergent models improves the reflecting skills of the student because it is used to bridge the informal knowledge to formal ones using models. This principle of the RME approach unquestionably developed the students' reflecting skills considering their successful performance. In connection with the study of Junaedi and Wahyudin (2020), they revealed that the final achievement and improvement of the the looking back process of the students is significantly better in using the RME approach.

Lastly, students have acquired mastery of the first three steps of the problem-solving process using the RME approach, which explains their proficiency in the looking back process. This is in line with the result of Nurkaeti (2018), who discovered that the difficulty in looking at the solution won't exist if the learner correctly understands the problem, appropriately plans the solution, and successfully solves it.

5. Conclusion

The following are the significant findings of this study based on the data analyzed and interpreted. The overall pre-test performance of the respondents in problem-solving skills falls

under the emerging to developing level. In understanding the problem and devising a plan, students got developing level, while in carrying out the plan and looking back, students have the emerging level of performance. This implies that familiarity in the topic really much impacted the performance of the students in problem-solving. Outstanding improvement is reflected in the post-test performance of the students after the exposure to the RME approach. Students performed exemplary levels of performance in understanding the problem and devising a plan. In carrying out the plan, students got the proficient level of performance. While in looking back process, students fall under proficient and exemplary levels. This shows that they gained enough learning that enable them to develop different skills and mastered the topic, which contributed to the development of their problem-solving abilities. Moreover, results showed that there is a highly significant difference between the mean pre-test and post-test performance of the students in problem-solving, which all the four phases of problem-solving got a computed p-value of 0.000. This revealed that the use of the RME approach increases the level of problem-solving skills of the students, in all the four-phases.

From the obtained results, RME significantly increased the performance of the students. This helps learners enhance and master the problem-solving ability; thus, the school and its organization may encourage teachers to explore the RME approach to improve the teaching-learning process. Findings also manifest that the use of RME approach is highly interactive, and can provide the best learning experiences for the learners, therefore, teachers may utilize it to expose their students to more engaging and collaborative learning experience with the incorporation of real-world scenarios. They may be encouraged to use this strategy to create learning that is more innovative and creative.

Since the study was conducted through online set-up due to the pandemic, future researchers may conduct a similar study in a face-to-face mode of learning to comprehensively use the RME approach. Also, it is advised to increase the number of respondents and use two classes to have a detailed comparison between the controlled and experimental groups, which falls under the quasi-experimental research design. Moreover, to test the usefulness of the RME approach in other aspects, they may use this parallel approach to the various disciplines of mathematics as well as other subjects like Science and English. In addition, the future researcher may explore each principle and characteristic uniquely found in the RME approach and thoroughly focus on it for designing their learning exemplars. All in all, this study serves

as the foundation for future studies to extend the use of the RME approach from the local to the global educational system.

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Social-Emotional Learning Competencies and Its Relation to Reasoning Skills: Moderating Effect of Academic Strand

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Abstract

Waning attention to the facets of social and emotional learning competencies (SELC) in an educational context along with the students' poor mathematical performance, which can be predicted through mathematical reasoning skills (MRS), is an issue that has to be addressed in the Philippines. Despite the fact that it has been shown to have an impact on mathematics achievement, associating SELC into the field of mathematical reasoning has yet to be explored. Hence, the study attempted to shed attention on the relationship between the perceived SELC of the respondents in terms of self-awareness, self-management, social awareness, relationship skills, and responsible decision-making and their level of MRS as to analyzing, generalizing, and justifying, and if strand moderates this relationship. A descriptive-correlational design with moderation analysis was used and stratified-random sampling technique was utilized in choosing 117 grade 12 students from one state university. Adapted self-report survey and mathematical reasoning tasks were used to gather data. The results revealed that there is a significant relationship between the perceived SELC and MRS, except in self-management and relationship skills. Findings have also suggested that strand moderates the relationship of the two variables which implies that the interaction of SELC and strands of the respondents poses a direct relationship with their reasoning abilities in mathematics, when students are from STEM. Implementation of teaching strategies fostering students' social and emotional states is recommended.

Keywords: *Social-Emotional Learning Competencies, Mathematical Reasoning Skills, STEM, non-STEM, CASEL*

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1. Introduction

Researchers across the years have explored different studies focused on variables to measure not just cognitive skills but also soft skills (Fonger et al., 2018; Inglis & Foster, 2018; Gokce & Guner, 2021) and social-emotional skills of the students (West et al., 2018). With the increasing attention on the different facets of learning, the Social and Emotional Learning (SEL) viewed social-emotional development as the interplay of five specific and interrelated competencies namely self-awareness, self-management, social awareness, relationship skills, and responsible decision-making (Collaborative for Academic, Social, and Emotional Learning, 2020). These social-emotional learning competencies (SELC) have become a growing field of educational research as international organizations, including the United Nations Educational, Scientific, and Cultural Organization (UNESCO, 2019), have also recognized its importance. They devised a 2030 agenda for Sustainable Development that divides student learning into dimensions which include domains of social and emotional, and behavioral development. Thus, the development of these skills in the classroom serves as the preparation of the students (OECD, 2019). However, only 20 states all over the world have integrated SEL into their educational curriculum (CASEL, 2020), and the Philippines is not one of those. In effect, although it was proven to have an impact on mathematical performance (Bhoumick & Saha, 2020) and the students' academic performance in general, West et al. (2018) stated that the social-emotional learning competencies are not assessed in school contexts. In fact, UNESCO (2019) stated that the social and emotional dimension has been given a declining emphasis across different educational levels until upper secondary.

Studies have shown the impact of SELC not just on students' academic performance in general but specifically on their mathematical performance (Kahl et al., 2021). In relation to this, mathematical performance is an important aspect that is recognized not just for educational purposes but also for preparation for future workplaces (National Council of Teachers of Mathematics, 2014). This highlights the significant role of mathematical reasoning skills (MRS) as they are a predictor of mathematical performance (Green et al., 2017). Even though mathematical reasoning is one of the essential proficiencies in mathematics education, educators still struggle to properly understand and assess the reasoning skills of students (Loong et al., 2018). To address this discrepancy, Loong et al. (2018) developed a rubric for

assessing the MRS of students based on three reasoning actions, namely analyzing, generalizing, and justifying.

According to the Research on Improving Systems of Education report in 2020, the SELC of students need further studies to understand the holistic development of learners including their mathematical performance, especially during distance learning (Yorke et al., 2021). Results of different international assessments in mathematics revealed that 60% of the students scored significantly below the average score set by international standards (OECD, 2018). It is also stated that grade 12 students scored the lowest points in the mathematics assessment (NAEP, 2019). In addition, the Philippines has been included in the low-performing countries for several years (World Economic Forum, 2017), even after the implementation of the K-12 curriculum, which includes the development of reasoning skills as part of the learning framework for the mathematics curriculum.

Researchers pointed out the importance of developing social-emotional skills during the transition of students from high school to college, as these skills improve their readiness for tertiary education (Dymnicki et al., 2013). The SELC and MRS of students were associated separately with other factors such as strand (Almerino et al., 2020). In the K-12 curriculum, this stage falls on the senior high school education of the students wherein students are grouped according to their strand as to who are enrolled in Science, Technology, Engineering, and Mathematics (STEM) courses and non-STEM courses, including those who are in Humanities and Social Sciences, Accountancy, Business and Management, and Technical-Vocational Livelihood track. Even though SELC and MRS are both related to mathematical performance, the relationship between the two variables is not yet explored. Thus, this study sought to determine if there exists a relationship between social-emotional learning competencies and mathematical reasoning skills of grade 12 students as moderated by strand.

2. Literature Review

2.1. Social-Emotional Learning Competencies

Social-Emotional Learning (SEL) can be achieved through the process of social-emotional development which leads to the acquisition of the social-emotional skills. These skills are not measured by cognitive assessments such as tests or exams but are proven to have an impact on students' academic performance (West et al., 2018). Taylor et al. (2017) found

that the benefits of SEL-based interventions in student outcomes have positive correlations with their skills and performance even after 18 years. Studies from different countries have also shown the positive impact of integrating SEL into classroom instructions in relation to the students' mathematical performance (Bhoumick & Saha, 2020). In fact, students with high social-emotional competence (SEC) profiles have shown greater mathematics performance in terms of achievement, attitude, and interest (Yang et al., 2019). Moreover, Kahl et al. (2021) found that the strategies to regulate emotion are linked with mathematical achievement across age groups and that the low working memory performance was compensated when they were knowledgeable about managing their emotions. However, Malti and Noam (2016) suggested that further research needs to be conducted to gain a better understanding of how several sub-dimensions of social-emotional development occur in children.

In the Philippine context, there were few studies focused on SEL. For instance, Rungduin and Reyes (2016) explored the development of kindergarten to grade 10 students from a social-emotional perspective. Chin (2018), on the other hand, has developed an instrument for measuring the social awareness competency of college students based on the SEL framework created by CASEL. Datu and Restubog (2020) further discussed the link between the dimensions of grit and SEL and revealed that perseverance and adaptability were positively correlated with SEL competencies.

2.2 Mathematical Reasoning

Another field that has become an area of interest in recent studies is mathematical reasoning, which predicts mathematical performance. Mathematical reasoning skill is a vital component of mathematics in a way that the higher the reasoning skill of the students, the faster they acquire the learning indicators of mathematics. Thus, it is the basic ability that influences performance in mathematics (Hasanah et al., 2019). The National Council of Teachers of Mathematics (2014) promotes the development of necessary knowledge and skills that students need, especially in high school that includes reasoning.

Different dimensions of reasoning were studied in relation to mathematical performance. Green et al. (2017) assert that fluid reasoning, the ability to analyze open-ended problems, recognize patterns and generalizations, and use logic to support arguments, predicts mathematical performance. Jonsson et al. (2022), on the other hand, concluded that creative

mathematical reasoning resulted to an improved mathematical performance. They also stated that the reasoning ability especially the creative reasoning is a stable pattern of educational strategy that positively affect math performance. Moreover, open-ended and creative tasks are generally more effective than algorithmic-based tasks when students demonstrated creative reasoning by prioritizing what they can observe in the illustrations given in their tasks (Mueller et al., 2014; Sullivan & Davidson, 2015; Norqvist et al. 2019).

2.3 Social-Emotional Learning Competencies and Mathematical Reasoning Skills

Studies about SELC and MRS revealed that they are both related to mathematical performance. For example, Verma and Dubey (2020) found that mood states or emotions have a significant effect on the reasoning ability of adolescents and concluded that providing either positive or negative feedback to students influenced their emotions affecting their performance. Martinez-Sierra (2015) indicated that emotions students feel while taking a test may affect their performances. It may vary from positive and negative emotions but, the ability to become aware of these emotions was reported to develop, together with cognitive skills like reasoning and problem-solving, as students age (Demetriou et al., 2020). Moreover, Roth (2016) also argued that mathematical reasoning is social in nature. Students should engage in either written or verbal forms of reasoning when attending mathematics classes. Similarly, students' decision-making skills are influenced by their mathematical reasoning and competence (Pertl et al., 2017). Having good reasoning skills makes decisions to be deeper and more constructive because it was based on supported claims.

2.4 Strand

Strand is one of the variables that is linked with the studies of SEL. Cuy and Salinas (2019) studied the aspirations and readiness of Filipino senior high school students attributed to SELC including self-motivation and time management for self-management, decision-making skills for responsible decision making, and understanding academic strengths for self-awareness. They found significant differences in perceived levels of aspiration and readiness when grouped according to academic track. The HUMSS strand, which is a non-STEM strand, showed the highest level of readiness.

In another study by Almerino et al. (2020) on the academic performance of grade 12 students in the Philippines, students from the STEM strand dominate in terms of non-verbal

reasoning and mathematical capacity. In general, students from STEM are above-average on tests about nonverbal reasoning, quantitative reasoning, reading vocabulary, reading comprehension, mathematical capacity, and mathematical applications. Students from HUMSS and GAS obtained above-average scores, while students from TVL had below-average scores. In relation to this, Cerbito (2020) discovered that there exists a significant relationship between senior high school students' attitudinal factors in mathematics and their proficiency in the subject. Indicators of attitude towards mathematics include their motivation, value, confidence, and enjoyment, which are also social-emotional in nature. He also found significant differences in the attitudes and performance of SHS students in mathematics when they are grouped according to their strands; STEM students demonstrated highest means in terms of attitude and mathematics test scores. A positive correlation between the two variables implies good attitudes towards mathematics predict high level of proficiency in the subject. Therefore, it can be inferred that the strand or track where SHS students are enrolled in could have affected the relationship between affective states and mathematical skills.

MacCann et al. (2020) also found that emotional intelligence (EI) predicts the academic performance of the students. Specifically, the ability to manage, understand, perceive, and use emotions for better decision-making has significant relationship with their achievement. Moderators of relationship between EI and academic performance were also studied. One of these potential moderators was the students' subject areas, particularly mathematics/sciences and humanities. In this regard, students from STEM and non-STEM also take different courses which are more inclined with mathematics and arts and social sciences, respectively. This may support the present study in trying to determine whether strand could have a moderating effect on the relationship between SELC and MR skills.

2.5. Theoretical Framework

Control-value theory states that the SELC of the students could affect their mathematical performance and achievement in aspects of control and value (Pekrun, 2006). The perceived control of the students towards a mathematical task is a result of their self-awareness. If they are aware on their ability to deal with the mathematical task, this will lead them to feel emotions towards it. These emotions are also related to their perceived value on mathematics tasks which may differ in accordance to their interest. These aspects of control and value may lead them to feel positive emotions such as enjoyment and motivation, or

negative emotions such as worry and anxiety in doing a mathematical task. From these emotions, the students' self-management skills may lead them to make responsible decisions on what to do with the task such as thinking of the best strategy to apply on it or skipping the math items that may take so much time to answer. Thus, if the students are aware that they are able to answer a mathematical problem, they will perceive a high level of control and value towards it. As a result, they may feel motivated while answering which will lead to a high performance. On the other hand, if the students are aware that they are not capable of dealing with the task, they may feel anxious towards it which will lead them to perceive a low level of control and value and end up with a low performance.

3. Methodology

3.1. Research Design

This study utilized a descriptive-correlational research design with moderation analysis. The descriptive design was used to describe and study the specific trends and differences SELC and MRS of the respondents (Loeb et al., 2017). The correlational research design is also used to examine if an increase or decrease in SELC corresponds to an increase or decrease in MRS (Tan, 2014). Finally, a moderation analysis was integrated to the design in order to determine whether strand moderates the relationship between the two variables (Holland et al., 2017).

3.2. Population and Sampling

The participants in this study are the grade 12 students of one state university in Laguna, Philippines. The sample was selected through stratified random sampling. The respondents who were enrolled in the second semester of the academic year 2021-2022, were divided into two strata namely STEM and non-STEM. A simple random technique was used to select 53 respondents from a total of 62 students from the STEM strand. On the other hand, out of 147 students from the non-STEM strand, 64 students were selected. All of the 117 respondents were coded as Student 1 to Student 117 to ensure confidentiality in analyzing the data gathered from them.

3.3. Instrumentation and Data Gathering Procedure

The study adapted the Washoe County School District – Social and Emotional Competency Assessment (WCSD-SECA), with established evidence for validity (Crowder et al., 2019) and reliability showing coefficient of $\alpha=0.68$ to 0.74 (Davidson et al., 2017) indicating acceptability and suitability for use (Ursachi et al., 2015). Regarding the mathematical reasoning test, four mathematics teachers and one language teacher checked the tasks' guide questions in terms of their face and content validity. A pilot testing was conducted to ensure that the rubrics assesses the grade 12 students' level of reasoning skills.

Permissions from the college dean, principal and the teachers involved in Senior High School at the university were solicited regarding the conduct of the study and the participation of the grade 12 students. Upon approval, the researchers scheduled an online meeting with the students through Google Meet at their most convenient time, in which they were encouraged to open their cameras while answering. They were briefed on the purpose of the study and given an overview of how they will respond to the survey and test. Due to a conflict in their time availability, the survey which is answered for 30 minutes and the mathematical reasoning tasks which were answered in 90 minutes, were first administered to STEM students, followed by non-STEM students through Google Forms.

3.4. Ethical Considerations

In this study, all participants gave their consent and acknowledged having received complete information about the research procedures. All information of the respondents was kept confidential. To ensure their privacy and anonymity, the participants were coded Student 1, Student 2, and so on.

3.5. Data Analysis

Descriptive statistics were used to analyze the categorical and continuous variables of the study (Kaur et al., 2018). The variable strand (STEM and non-STEM) was analyzed by its frequency. The perceived SELC (very low, low, high, and very high) and level of MRS (not evident, beginning, developing, consolidating, and extending) were analyzed through mean and standard deviation of each component. To analyze the relationship between the variables,

Pearson Product-Moment Correlation was used (Tan, 2014). A moderation analysis with Process Macro was also used to determine if a moderating effect of strand exists in the relationship between SELC and MRS (Holland et al., 2017). After analysis, the findings were interpreted and necessary conclusions were provided.

4. Findings and Discussion

Table 1 illustrates the perceived SEL competency of the respondents. In terms of self-awareness, it was interpreted as high with a mean of 3.05. It can be understood that they find it easy to understand their emotions, thoughts, and behaviors in various contexts. This result is in line with the findings of Akelaitis (2017), which suggests that grade 12 students have more developed intrapersonal skills including their self-awareness as they are experiencing identity searching and self-reflection.

Table 1

Social-emotional Learning Competencies

Indicators	Mean	SD	Verbal Interpretation
Self-awareness			
Knowing the things I am good at	2.86	.730	Highly Self-aware
Knowing to improve things I cannot do at school	2.77	.662	Highly Self-aware
Knowing when I committed a mistake on a particular thing	3.10	.712	Highly Self-aware
Knowing when I have no control over things	2.92	.756	Highly Self-aware
Being aware when I get distracted by what I feel	3.12	.767	Highly Self-aware
Knowing what I feel	2.94	.844	Highly Self-aware
Being aware of the things that make me feel better	3.24	.837	Highly Self-aware
Being aware of how my body responds when I feel nervous	3.26	.790	Very Highly Self-aware
Being aware of when my mood influences the way I interact with others	3.12	.745	Highly Self-aware
Being aware of the things that make me calm	3.13	.772	Highly Self-aware
Overall	**3.05**	**.761**	**Highly Self-aware**
Self-management			
Completing a task even when I am frustrated	2.27	.877	Lowly Self-managed
Trying to be patient for the things I am excited about	2.77	.724	Highly Self-managed
Being calm even when I am stressed	2.27	.877	Lowly Self-managed
Doing the things even if I am not interested	2.33	.809	Lowly Self-managed
Completing a task that I consider difficult	2.47	.738	Lowly Self-managed
Setting goals I want to achieve	3.14	.860	Highly Self-managed
Achieving the goals I set for myself	2.83	.791	Highly Self-managed
Planning out the actions needed to achieve my goals	2.93	.763	Highly Self-managed
Working on my school works even if I don't like it	2.63	.783	Highly Self-managed
Being ready for an upcoming test	2.59	.672	Highly Self-managed
Doing my home works even they are hard	2.77	.712	Highly Self-managed
Planning my project ahead of time so I can pass it on schedule	3.00	.766	Highly Self-managed
Completing my school works even without reminders	2.88	.811	Highly Self-managed
Maintaining concentration in class despite distractions	2.38	.808	Lowly Self-managed
Overall	**2.66**	**0.785**	**Highly Self-managed**

Indicators	Mean	SD	Verbal Interpretation
Social Awareness			
Learning from others who hold opposing views to myself	2.96	.621	Highly Socially Aware
Being aware of the feelings of other people by their facial expressions	3.08	.779	Highly Socially Aware
Knowing when a classmate is in need of help	2.99	.676	Highly Socially Aware
Knowing how to seek assistance when I'm having problems with a classmate	2.46	.846	Lowly Socially Aware
Being aware of how my actions affect my classmates	2.95	.753	Highly Socially Aware
Overall	**2.89**	**0.735**	**Highly Socially Aware**
Relationship Skills			
Respecting my classmate's point of view during an argument	3.46	.534	Very Highly Skilled
Sharing a bond with my classmates	2.85	.906	Highly Skilled
Expressing what I feel with other people	2.42	.958	Lowly Skilled
Seeking advice from an adult when I have school problems	2.32	.972	Lowly Skilled
Being open to talk even with people I do not hang out with	2.15	.952	Lowly Skilled
Having good relationships with my teachers	2.98	.765	Highly Skilled
Overall	**2.70**	**0.848**	**Highly Skilled**
Responsible Decision-Making			
Thinking about the possible consequences of an action before deciding	3.21	.705	Highly Responsible
Knowing what is right from wrong	3.39	.615	Very Highly Responsible
Having multiple solutions to a problem	2.82	.750	Highly Responsible
Refusing an offer of a classmate who wants to break rules	3.18	.677	Highly Responsible
Assisting to make the school a better place	3.05	.600	Highly Responsible
Overall	**3.13**	**.669**	**Highly Responsible**

In relation to this, the highest average for self-awareness is in terms of identifying their body reactions when they feel nervous ($\bar{x} = 3.26$). This may be caused by the corresponding academic activity which they are about to accomplish after this study was conducted, specifically, research defense (Kjolstad et al., 2020). They wanted to accomplish the survey so that they can focus their attention on their upcoming defense. This may have lessened their nervousness since they may prepare better if they finish the questionnaire first since there will be no backlogs on their part.

The student responses for their perceived self-management competency garnered a mean of 2.66. This shows that they find it easy to manage their behaviors and emotions under different circumstances. Arguedas et al. (2016) confirms this result as high school students develop their ability to regulate their feelings in an e-learning set up. Since most of the grade 12 students are also studying through online modality, this could mean that they will also acquire emotion regulation strategies to perform better in this modality. The highest mean is in terms of setting goals they wanted to achieve ($\bar{x} = 3.14$). This exhibits that it is easy for them to identify their aims in life. Senior high school students' goal-setting behaviors are highly influenced by their hope (Ciarocchi et al., 2015). During these two critical years of their

adolescent lives, grade 12 students may experience more goal-directed thoughts about their future after high school.

In their perceived social awareness, grade 12 students gained a mean of 2.89 which signifies high social awareness. This could suggest that it is easy for understand their classmates' perspectives while being aware of their different beliefs. This asserts the findings of Booker and Dunsmore (2017) wherein they found that social competence of grade 12 students develops as they interact in constructive relations with their classmates and teachers which is why adolescent years are critical in enhancing their social skills. The highest mean fall on becoming aware of the feelings of other people through their facial expressions ($\bar{x} = 3.08$). This is due to the increased emotional awareness as facial emotion recognition develops as children age from childhood to early adulthood (Lawrence et a., 2015) which includes the age range of grade 12 students.

Moreover, the respondents' perception of their relationship skills were interpreted as high with 2.70 as mean, which is an indication that it is easy for them to create and maintain meaningful relationships with other people. As students enter upper secondary schools, they would face different social demands such as forming new relationships and joining organizations which enhances their skills in handling and nurturing interactions with other people (Booker & Dunsmore, 2017). They produced very high relationship skills in respecting their classmate's points of view when they have arguments ($\bar{x} = 3.46$). This conveys that they find it very easy to consider others' opinions during a discussion. Undergoing the new educational setup, senior high school students must communicate with one another during activities that involves small group discussions, be it in a synchronous or asynchronous activity (Lee & Martin, 2017). Since the respondents perceived this aspect as the easiest task to do, this could imply that they considered it valuable to view the opinions of their classmates as an avenue to gain knowledge (Auer-Spath & Gluck, 2019).

Lastly, the responsible decision-making competency of the respondents was perceived as high with an overall mean of 3.13 which could mean that it is easy for them to create efficient and constructive decisions in academic and non-academic contexts. One of their critical decisions that grade 12 students have made is their choice of senior high school strand. Grade 12 students may have considered factors such as their school preference, interests, socioeconomic status, and scholastic rating from previous schools before deciding their strand

(Abarro, 2016). They reported very high responsible decision-making in knowing what is right from wrong. This could imply that it is very easy for them to create moral decisions properly as this indicator presented the highest mean of 3.39. This is inclined with the findings of Goyon's and Legaspi's (2020) wherein senior high school students acquired a high level of moral reasoning. This could suggest that the respondents are aware of the consequences of their actions.

Table 2 reflects the scores of the respondents in the mathematical reasoning test in terms of analyzing. From the three problems, the respondents garnered consolidating analyzing skill having 2.48 as mean and 1.131 as standard deviation. This means that one to two errors were committed in the provided similarities and differences among the related ideas and concepts that they have noticed.

Table 2

Level of Mathematical Reasoning Skill in terms of Analyzing

Analyzing	Mean	SD	Verbal Interpretation
The Painted Cube Problem	2.67	1.075	Consolidating
The Matchstick Problem	2.43	1.177	Consolidating
Two Numbers Problem	2.36	1.141	Developing
Overall	**2.48**	**1.131**	**Consolidating**

Legend: 0.0-0.80 (Not Evident), 0.81-1.60 (Beginning), 1.61-2.40 (Developing), 2.41-3.20 (Consolidating), 3.23-4.0 (Extending)

They scored highest in the painted cube problem which shows consolidating analyzing skill with a mean of 2.67. This type of task provides avenue for various explorations of patterns that can be observed spatially, algebraically, or numerically (Jazby & Widjaja, 2019). The students are able to find patterns as they are able to spot similarities and differences among painted and unpainted cubes. They were also able to create formulas and visual representations that can be used to answer the guide question. Figure 1 shows Student 4's work in this problem.
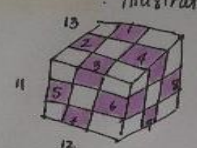
It can be observed that she has presented a spatial representation. However, two errors were in terms of number of small cubes painted on two sides (13, instead of 12) and number of cubes that is not painted at all (one cube). This level of analyzing skill with very minimal error affirms the findings of Jazby and Widjaja (2019) which state that the use of geometric and spatial strategies has a 100% accuracy rate only if done properly.
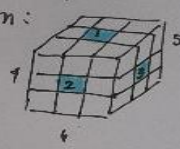
Figure 1

Reasoning of Student 4 in Problem 1 Categorized with Consolidating Analyzing Skills

Table 3 depicts the respondents' reasoning test scores in generalizing skills. With a developing generalizing skill and a mean of 2.18, this indicates that three or more errors were made on the application of concepts from a specific case to a broader sense.

Table 3

Level of Mathematical Reasoning Skill in terms of Generalizing

Generalizing	Mean	SD	Verbal Interpretation
The Painted Cube Problem	2.33	0.983	Developing
The Matchstick Problem	2.30	1.019	Developing
Two Numbers Problem	1.86	1.166	Developing
Overall	**2.18**	**1.210**	**Developing**

Legend: 0.0-0.80 (Not Evident), 0.81-1.60 (Beginning), 1.61-2.40 (Developing), 2.41-3.20 (Consolidating), 3.23-4.0 (Extending)

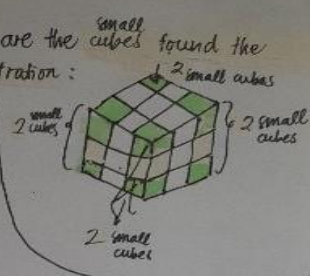They scored the lowest in the two numbers problem with a developing generalizing skill with a mean of 1.86. This could insinuate that the respondents have difficulty in applying the algebraic concepts into a more logical problem which made them commit three or more errors. This problem assesses their knowledge in algebraic reasoning which would require them to evaluate the three given solutions' accuracy. A picture of Student 70's reasoning is

presented in Figure 2 when asked to determine which among the three provided solutions present a correct process.

Figure 2

Reasoning of Student 70 in Problem 3 Categorized with Developing Generalizing Skills
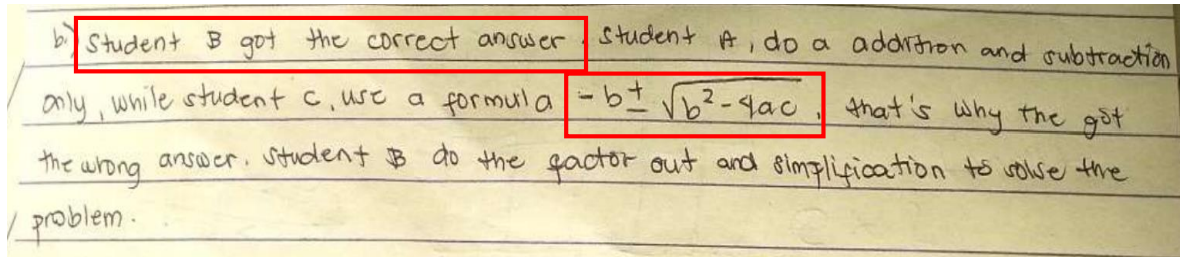
Student 70 chose the second solution as the correct answer which is incorrect because all three solutions were wrong. Also, she stated that Student B is correct because the solution used factoring method (FOIL method was used). Furthermore, she explained that the third solution was inaccurate but she had written the wrong quadratic formula. On the other hand, she mentioned a correct observation of determining the error of the first solution which involved addition and subtraction only. This level may be explained by the difficulties that senior high school students face when dealing with quadratic equations (O'Connor & Norton, 2016). Grade 12 students may be lacking in prerequisite knowledge about solving algebraic problems from junior high school mathematics.

Table 4 summarizes the justifying skills of the which fall on developing level with a mean of 2.18. This could suggest that the respondents have committed three or more errors in constructing logical arguments in an attempt to support their claims.

Table 4

Level of Mathematical Reasoning Skill in terms of Justifying

Justifying	Mean	SD	Verbal Interpretation
The Painted Cube Problem	2.31	1.078	Developing
The Matchstick Problem	2.50	1.337	Consolidating
Two Numbers Problem	1.74	1.213	Developing
Overall	**2.18**	**1.210**	**Developing**

*Legend: 0.0-0.80 (Not Evident), 0.81-1.60 (Beginning), 1.61-2.40 (Developing), 2.41-3.20 (Consolidating), 3.23-4.0 (Extending)*

The two numbers problem provided the lowest mean that fall under the developing justifying skills having 1.74 as mean. This could infer that they are having difficulties in providing their solutions supported by logical argument This is an algebraic problem which requires their knowledge and reasoning regarding algebraic concepts and processes. They were asked to provide their own solution for the given problem while explaining the steps that they took before arriving at an answer. The picture below manifests Student 73's reasoning for this task.

Figure 3

Reasoning of Student 73 in Problem 3 Categorized with Developing Justifying Skills

There is no justification and values of x were not obtained.

Student 73 demonstrated the use of F-O-I-L method incorrectly on simplifying the product of the two binomials. This led her to her next error on generating the standard form of the equation. Moreover, the task assigned also asks for their justification regarding the steps they made to get their answers, which she was not able to mention. Her final answer is also incorrect because the problem was referring to two numbers, not an equation. These multiple errors in her reasoning resulted in her developing level of justifying skills. Regarding this matter, most of grade 12 students were just simply stating their steps without showing their solutions. Given this, mistakes in algebraic and arithmetic skills could possibly be the reasons why the students are still struggling in this type of problem (Didis & Erbas, 2015).

Table 5 indicates the relationship between some of the perceived SELC and MRS of the respondents in varying degrees. In particular, MRS are significantly correlated to self-awareness, social-awareness and responsible decision-making. The positive weak correlation observed indicates that there is a direct relationship between social-emotional learning competencies and mathematical reasoning skills.

Table 5

Relationship Between the Perceived Social-Emotional Learning Competencies and the Level of Mathematical Reasoning Skills

	Analyzing	Generalizing	Justifying
Self-awareness	0.244**	0.190*	0.197*
Self-management	0.166	0.155	0.109
Social awareness	0.251**	0.224*	0.178
Relationship Skills	0.169	0.158	0.11
Responsible Decision-making	0.294**	0.268**	0.222*

**. Correlation is significant at the 0.01 level (2-tailed).

*. Correlation is significant at the 0.05 level (2-tailed).

Results have shown that the self-awareness competency is significantly correlated with analyzing; generalizing; and justifying. This affirms the study of Anggoro et al. (2021) stating that high level of self-awareness would affect students' confidence in choosing a strategy in solving open-ended. It will also help them communicate their thoughts better because they know that these reasoning tasks must have an answer which can be solved accordingly.

Meanwhile, the social awareness competency has also a significant correlation with the reasoning skills except justifying. It has positive weak correlation with analyzing and generalizing skills which highlights the role of social skills and interaction of the students when learning mathematics. Luong et al. (2021) suggest that social contexts inside the classroom help build mathematical knowledge and understanding. Interpersonal relationships could also develop students' ability to articulate their thoughts with one another. Furthermore, the relationship between social awareness and justifying skills is not significant and may be explained by the results of the survey since among all the three SELC that have significant correlation with MRS, social awareness received the lowest mean and a low interpretation in one of its indicators.

Finally, the respondents' analyzing, generalizing, and justifying skills were all significantly correlated with their responsible decision-making competency. This establishes a direct relationship between the ability to reason and create constructive choices under different situations. It can be observed that the correlation coefficients of responsible decision-making received the highest values among the five SELC. This may have occurred because mathematical reasoning influences the decision-making skills of students under risk conditions

(Pertl et al., 2017). Grade 12 students came up with different methods of approaching the given problems including drawing visual representations, generating formulas, doing trial-and-error, and manipulating algebraic expressions. Deciding on what strategy to use to finish the tasks within the time limit requires them to consider the type of problem, the appropriateness of method, and given information. Their choice would be a result of weighing options which is an indication of responsible decision-making.

Table 6

Moderating Effect of Strand on the Relationship between Social-Emotional Learning Competencies and the Level of Mathematical Reasoning Skills

Model						
	coeff	**se**	**t**	**P**	**LLCI**	**ULCI**
Constant	1.6536	0.9523	1.7363	0.0853	-0.2339	3.5411
Social-Emotional Learning Competencies	-0.6396	0.3264	-1.9598	0.0526	-1.2865	0.0072
Strand	-0.5578	0.6474	-0.8617	0.3908	-1.8409	0.7253
Int_1	0.7589	0.2214	3.4283	0.0009	0.3202	1.1977
Model Summary						
R	**R-sq**	**MSE**	**F**	**df1**	**df2**	**p**
0.8958	0.8025	0.1853	147.6171	3.0000	109.0000	0.0000

To determine whether the correlation between SELC and the MRS depends on the grade 12 students' respective strands, a multiple regression model was utilized. After centering between SELC and the MRS and computing their interaction term (Aiken & West, 1991), the variables were tested into the simultaneous regression model which have shown that their interaction was significant, indicating that the effect of SELC on MRS depended on the strand that the students enrolled in. Together, the variables accounted for approximately 80% of the variance in MR skills.

Simple slopes for the association between SELC and MRS were tested for STEM and non-STEM students. Each of the simple slope tests revealed a significant positive association between SELC and MRS for STEM students only. Figure 4 plots the simple slopes for the mentioned interaction.

Figure 4

Results of Slope Test for the Relationship Between SELC and MR for STEM and non-STEM students
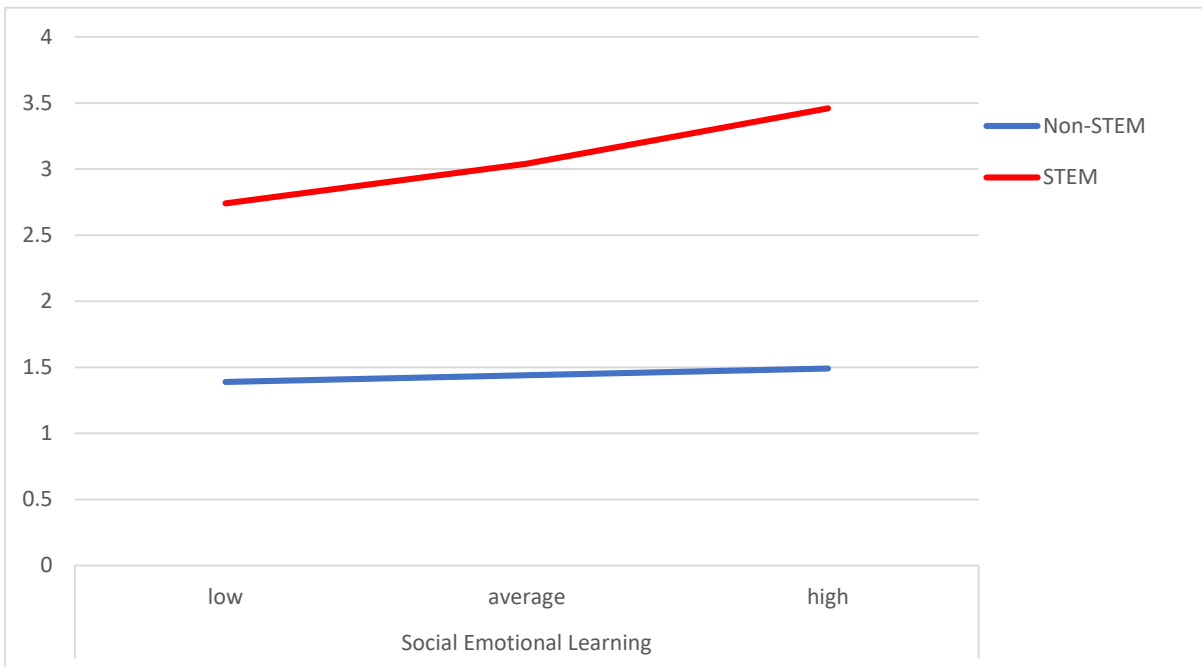
Figure 4 portrays that the increasing slope of the relationship between the two variables demonstrates a positive moderating effect of the strand on STEM students. These findings correspond with the result of the study of MacCann et al. (2020) where the ability to perceive, manage, and understand emotions were found to be a predictor of academic performance. They have also found significant moderators of this correlation in subjects (mathematics/sciences and humanities) that the respondents were taking. Senior high school strands could be distinguished by the differences of courses taken. STEM students take subjects that are more inclined with developing critical thinking, scientific skills, and problem-solving within science, technology, engineering, and mathematics courses while those enrolled in non-STEM strands are more likely to be aligned with arts, humanities, and the social sciences (Tupas & Matsuura, 2019). Having more mathematically-inclined subjects, STEM students need to acquire emotion regulation strategies in order to perform better in their strand (Kahl et al., 2021). These differences in learning contents may affect their educational outcomes. This could explain why strand plays a moderating role as to why SELC are associated with MRS.

Additionally, Cerbito (2020) also found out that senior high school students' affective states like enjoyment and motivation towards mathematics are positively correlated with their

proficiency in the subject. He dealt with significant differences in their attitudes and test scores demonstrated by students when they are grouped into their strands where STEM was found to have the highest mean. These differences of affective mathematics engagement could explain the differences in academic performance since STEM and non-STEM students have reported significantly different emotions and value regarding mathematics (Lee et al., 2019).

Furthermore, Bene et al. (2021) found that students enrolled in STEM-related fields have demonstrated high self-regulation strategies while studying. Self-regulation, a closely-related concept to the self-management competency, is found to be a predictor of the students' grade. Other SEL-related concepts like effort and persistence were also linked with successful mastery of goals and achievement in STEM-related subjects such as mathematics (Murphy et al., 2019). This may establish a connection between affective constructs and STEM education. Integrating SEL in STEM classrooms promote student engagement and classroom success (Ingram et al., 2021). Given this, the strands where the grade 12 students enrolled in could have played a role between the relationship between SELC and MRS.

5. Conclusion

The result of this study suggests that the grade 12 students has high perception of their social-emotional learning competencies in all of its components. Meanwhile, their mean scores in terms of mathematical reasoning skill fall on the consolidating level of analyzing skill, and developing level on aspects of generalizing and justifying. Results also manifest that there is a significant relationship between social-emotional learning competencies and mathematical reasoning skills except for self-management and relationship skills. Thus, teachers may consider implementing teaching strategies that could develop these soft skills and reasoning skills in and beyond the classroom context. Furthermore, it can also be gleaned from the study that the strand moderates the relationship between SELC and MRS for STEM students only. With that, future researchers may also consider using a larger sample from college students in order to determine the extent of the moderating role of STEM courses on the association between the two variables. Since the study was conducted through online set-up due to the pandemic, it is also recommended to conduct the study through face-to-face interactions. Finally, studying other potential moderating variables related to this field of study is also suggested.

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Decentralised Strategic Planning and Capacity Development as Drivers of Leadership Performance in Schools

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Abstract

The purpose of this article is to determine the association between decentralised strategic planning and capacity development as driving forces of leadership for improved performance in public high schools in Mpumalanga Province, South Africa. This study used pragmatism as a research paradigm and followed a parallel convergent mixed methods research approach. The sample comprised 170 respondents consisting of 130 school governing body (SGB) members and 40 Department of Education (DoE) officials. Quantitative data were collected from SGB members through a survey while qualitative data were collected from participants using focus group discussions (FGDs) and individual interviews. The qualitative data were analysed using thematic analysis while SPSS software was used to analyse quantitative data. In testing the hypothesis, it was proven that decentralised strategic planning capacity in SGBs was associated with the effectiveness of strategic planning in Mpumalanga's high schools. The study revealed that the variables, capacity development and decentralised strategic planning, are well associated, and influence leadership for improved performance in high schools. The study also found that school leaders who can develop capacity are able to promote better performance in their schools. Meanwhile, the qualitative results concurrently supported the results of the quantitative study as the influence of capacity development on decentralised school planning proved to have improved school performance and effective decentralised school leadership.

Keywords: *decentralised strategic planning, capacity development, leadership performance, school management, performance drivers*

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1. Introduction

After almost three decades of democracy in South Africa, there has been a significant restructuring of the South African schooling system (Melaphi, 2015). The South African Schools Act of 1996 (SASA) was designed to create a new landscape for school governance based on state, parents, learners, school staff, and community participation and partnership (Heystek, 2011; Toon & Jensen, 2017). The SASA framework provided the basis for the current education system, introducing decentralisation through the establishment of school governing bodies (SGBs) in public schools nationwide. This decentralised approach was part of the transformation of the apartheid education model, where administrative and planning powers were vested in central government. SASA proposed the distribution of power to local governments and individual schools through democratic school governance in the form of SGBs (Department of Basic Education, 2018). In the case of secondary schools, SGBs comprised the principal, elected representatives of parents, teachers, non-teaching staff, and learners (Melaphi, 2015). Despite the government's intentions in decentralising decision-making, it remains questionable whether the process was as empowering as intended.

The SASA of 1996 recognized the importance of school leadership and management in developing a fully functional education system that would improve school performance (Department of Basic Education, 2018). While the effectiveness of school leadership is determined by various factors such as leadership structures, degree of autonomy, leadership qualifications, and competencies of school leaders (Bredenberg, 2018), the quality leadership skills and competencies are crucial to ensure effective strategy formulation and execution. Hence, effective school leadership is a critical condition for a successful school, and several factors contribute to it (Bryk et al., 2010; Saguin & Ramesh, 2020).

Decentralization of school planning modalities is considered necessary for improving overall student achievement, and it promotes effective school leadership by allowing schools and communities to take responsibility for decisions made at the local level (Dou et al., 2017). The decentralization of authority in school strategic planning ensures that school leaders become more involved in pointed strategies deemed beneficial to a specific school. Effective leadership establishes direction in collaboration with all key stakeholders of the school, including parents, students, teachers, and the community (Leer, 2016). It is argued that leaders need to learn and utilize behaviors consistent with leading diverse groups of people, and

capacity building has a role to play in ensuring that leaders learn both the skill sets and behavioral qualities needed to effectively direct organizations (Hargreaves & Ainscow, 2015).

Despite decentralization being introduced to promote effective school leadership, many schools in South Africa continue to underperform, as evidenced by the decline in overall pass rates for the 2020 matric cohort (Department of Basic Education, 2021). Several factors contribute to poor school performance, including the competence levels of school leaders to execute decentralization of school governance effectively (Romanowski & Du, 2020). A lack of capacity among SGB members is a common obstacle to the democratic functioning of SGBs, and it has been suggested that decentralization is not a guarantee of success (Motala & Pampallis, 2005). However, there is lack of published studies exploring decentralised strategic planning and capacity development as drivers of leadership performance in South African schools. Hence, this study aims to explore the links between decentralised strategic planning and capacity development as driving forces for school leaders in achieving better performance in Mpumalanga's public high schools.

This study premises that the association of these two variables with effective leadership of public high schools is an understudied theme. Additionally, it is assumed that the research variable, capacity development as a factor influencing decentralised strategic planning in South African schools, is an area that has not been fully explored. Thus, the main objective of the study is to evaluate how the association of decentralised strategic planning and capacity development influences leadership for improved performance of public high schools in Mpumalanga.

The overall null hypothesis (H0) states that the practice of capacity building and decentralised strategic planning in schools is not associated with the level of school performance. Meanwhile, the overall alternative hypothesis (H1) is that the practice of capacity building and decentralised strategic planning in schools is associated with the level of school performance. The study also ran other supporting hypothesis tests as captured in the results section of this paper.

This study considered decentralisation and capacity development as independent variables while school leadership, public schools, and improved school performance as dependent variables, as visualised in Figure 1.

Figure 1

Conceptual Framework
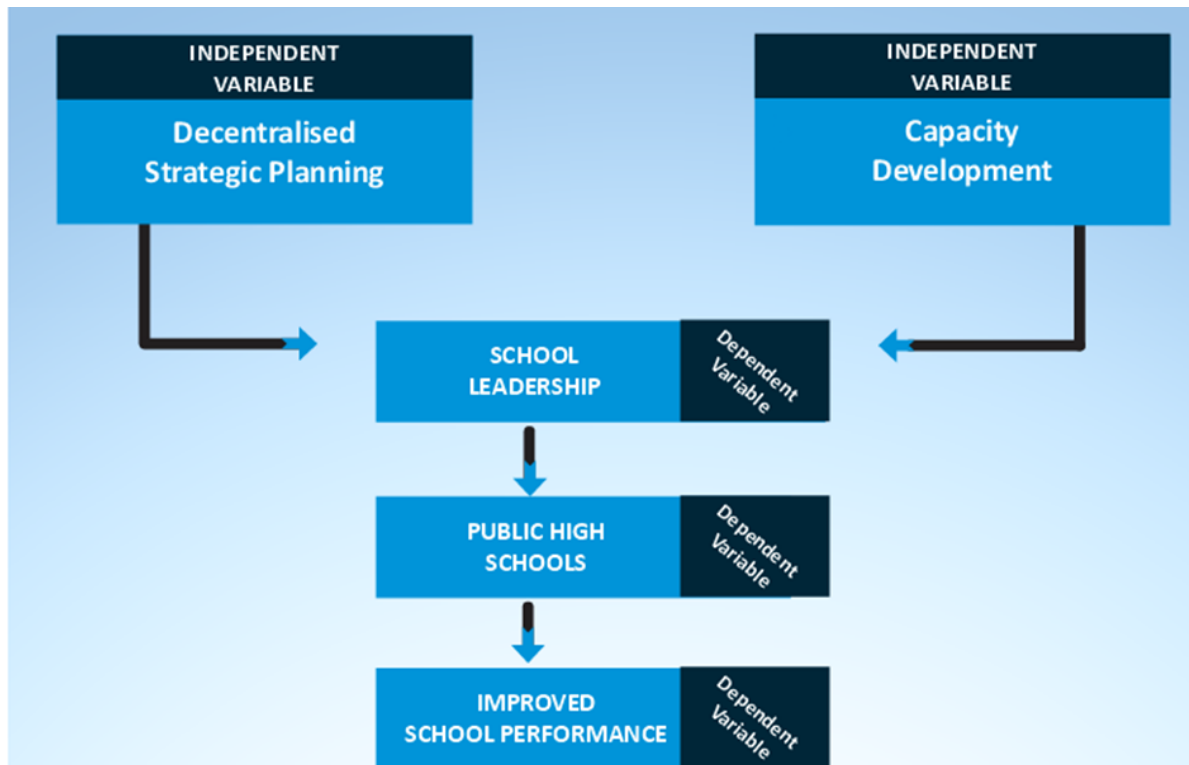
2. Literature Review

Decentralisation refers to the transfer of control of an organisation from a central location to multiple smaller ones (Kochupurackal et al., 2021). This entails that the planning and execution of strategies can occur in various locations rather than just one. However, for this to be successful, capacity-building is essential. Capacity-building, as defined by Gilmer et al. (2021), is a process that enhances an organisation's ability to accomplish its objectives or mission by employing effective management practices, ensuring strong governance, and prioritising performance assessment and achievement. It is, therefore, an initiative aimed at reinforcing an organisation's infrastructure.

2.1. Capacity development to support decentralised strategic planning

Capacity development within an educational system is aimed at enhancing the efficiency and effectiveness of education personnel (Jacobson et al., 2011; Yavuz & Robinson, 2018). Recent research in Tanzania by Yohana (2017) examined the impact of public high school heads' capacity development on students' academic performance. The study revealed that school management seminars for principals and teachers were crucial in enhancing the leadership skills of principals, improving their supervision of daily academic duties, and

strengthening their planning and management of school leadership. Dahnke (2019) confirmed these findings, highlighting the need for schools to address both technical and adaptive elements of change to effectively engage in strategic planning and develop resilience. To ensure consistent performance and execution of decentralised strategic plans, performance management tracking systems were also deemed necessary. According to Lvonen (2017), decentralisation has a significant and positive long-term impact on school and community success.

In another geographical setting, Hert (2010) conducted a study in the United States, examining the impact of capacity development in urban schools. The results indicated that principals viewed professional development as a valuable experience, contributing to their effectiveness as school leaders. The study findings support the use of a leadership capacity development programme as a tool for supporting and developing urban school principals (Clear, 2015).

2.2. Association of strategic planning and capacity development on effective leadership

In South Africa, Vyas-Doorgapersad (2012) conducted a study on decentralisation and capacity building, with a particular focus on paradigm shifts in local self-governance. The study revealed that a lack of administrative capacity and complementary resources hindered the anticipated efficiency that decentralisation promised. To ensure the successful implementation of decentralisation policies, Vyas-Doorgapersad (2012) argued that it was essential for the national government to develop the required capacity for local authorities to undertake and fulfill their assigned responsibilities. If capacity is adequately developed, rural schools could potentially benefit significantly from controlling their own destinies, provided that the right competencies are available to school leadership.

Capacity development activities are comprised of three basic components: the development of basic knowledge and skills to effectively contribute to educational development programmes; the development of an appropriate institutional framework to function efficiently; and the development of a favourable policy environment (Nikoçeviq, 2020). Research on decentralisation demonstrates that it, in and of itself, is insufficient to transform the way a school is managed, and that school autonomy from within, combined with management capacity development, is necessary (Bruns et al., 2011; Honig & Rainet, 2011). Therefore, the ultimate objectives of capacity development include inclusive participatory

organizational governance, improved effectiveness, and increased efficiency at all levels (Becker, 2017).

2.3. Association between capacity development and organisation performance

Capacity building is a multifaceted process that involves enhancing the abilities of individuals, groups, organisations, and communities to perform core functions, resolve problems, and achieve objectives sustainably (United Nations Development Programme, 2018). According to Millar and Doherty (2016), capacity building encompasses the development of knowledge, attitude, and skills of the workforce, enabling them to achieve both short- and long-term objectives at both organisational and personal levels. This view is supported by Nikoçeviq (2020), who contends that capacity building should address the inadequacies of all employees, equipping them with the necessary skills and attitudes to perform their tasks effectively. Capacity building initiatives have been found to have a positive impact on employees' performance (Ahmad et al., 2015). As a planned, system-wide effort to foster cooperative performance, capacity building can improve organisational effectiveness. Furthermore, to remain competitive, cooperative organisations must be efficient and effective (Prakash, 2011).

2.4. Association between capacity development and leadership competence

The construct of leadership competence encompasses three distinct components: personality traits, knowledge and skill, and behaviour (Cumberland et al., 2016). Cumberland and colleagues aggregated knowledge and skill together, using an integrated evaluation tool. Prior to this, Seemiller and Cook (2014) defined leadership competencies as "knowledge, values, abilities, and behaviour that aid an individual in contributing to, or successfully undertaking, a role or task." To ensure that leaders learn the necessary skill sets and behavioural traits for effective organizational management, the concept of capacity building is critical, and it should be executed through careful and successful efforts.

The concept of capacity building is meant to improve productivity, thereby contributing to overall organisational performance (Turner & Short, 2013; Mkoka et al., 2015). It is also intended to teach leaders the necessary knowledge and skills for effective management (Hargreaves & Ainscow, 2015). Empirical studies have demonstrated that capacity building that provides leaders with new knowledge and skills can empower them and lead to better performance (Nankumbi et al., 2011; Asante et al., 2012). Conversely, leaders who do not have access to professional development opportunities have been found to be inadequate in

personnel affairs, staffing, and administration, resulting in ineffective leadership and an inability to create enabling environments for followers in complex and demanding environments (Chanturidze et al., 2015; Mkoka et al., 2015).

A lack of resources can present a significant obstacle to developing leadership capacity, which can, in turn, affect organisational performance. While various arguments have been advanced to illustrate the efficacy of capacity development in enhancing organisational performance, only a few empirical studies have investigated the association between leadership, capacity development, and performance.

3. Research Design and Methods

The present study adopted a pragmatist research philosophy, acknowledging the lack of a universal approach suitable for every research problem (Saunders et al., 2012). A mixed methods research design was utilized, specifically a parallel convergent design where both qualitative and quantitative data were collected and analyzed concurrently (Creswell & Plano Clark, 2011; Teddlie & Tashakkori, 2010). The research was conducted in Mpumalanga schools.

According to the National Senior Certificate Report (2018), there are 556 registered high schools in Mpumalanga, including public and private schools. Using random sampling, the study focused on the 432 public high schools in the province, with a sample population of 10%. Probability sampling was employed to select participating schools and survey respondents, with a lottery simple random technique used to choose eleven schools from each of the four districts in Mpumalanga. Two members of the school governing bodies were randomly selected from each of the 44 schools, yielding a total of 80 school governing body members. Additionally, purposive sampling was used to select 40 SGB members from the Nkangala district to participate in interviews and FGDs, resulting in a qualitative sample of 50 participants.

Table 2
Demographic selection of participants (N=170)

Participants	Population	Instrument
Department of Education	40	Questionnaire
School Governing Body	80	Questionnaire
	40	Focus group discussion
	10	Interviews
Total	**N=170**	

The research adopted a mixed method approach and employed two surveys, one directed to officials from the Department of Education and another to SGB members. Structured questionnaires with closed-ended questions were used to collect data in both surveys. Qualitative data was gathered from 60 SGB members through FGDs and individual interviews. The FGDs comprised four groups, with ten participants in each group. The researcher moderated the discussions, which lasted for a minimum of 60 minutes and no longer than 80 minutes. Face-to-face individual interviews were conducted with ten participants. All FGDs were recorded with the agreement of the participants. Prior to any discussion, all participants were required to sign an informed consent form, which was preceded by formal discussions explaining the ethical considerations and objectives of the study. Key aspects of research ethics, including clearance from the university's ethics committee, the right of participants to withdraw from the discussion at any time, and the right of participants not to be exposed to any form of harm, were thoroughly discussed. All participants were voluntary and fully informed of the study's objectives.

A preliminary study was conducted to ensure the content validity of the questionnaires and interview items by testing their wording and making necessary adjustments prior to administering them to the study participants. In addition, the construct validity of the research instruments was evaluated during the pilot study to ensure that they were accurately measuring the intended data. The pilot study was conducted in three schools that were not included in the final study, using a sample of 12 SGB members. A small sample size was used to assess the stability of data collection procedures.

Following the pilot study, items that were found to be unclear were rephrased to enhance clarity and relevance, while items that were considered inappropriate or overly complex were revised. To assess the reliability of the questionnaire items, Cronbach Alpha coefficients were employed. The Cronbach Alpha coefficient estimates the proportion of variance in test scores that are consistent or can be attributed to true score variance (Cronbach, 1970). The Cronbach Alfa coefficients of 0.72, 0.74, and 0.78 indicated that the research instruments were suitable for the intended research.

4. Results and Discussion

The quantitative analysis utilised many statistical tests including correlation analysis to review the degree of linear relations among variables and regression analysis to determine the degree of causation some variable had on others. Furthermore, the chi-square tests were run to

test the hypothesis set in the initial stages of the study. In this section the quantitative data is summarised.

4.1. Decentralised Strategic Planning and Capacity Development Relationship Influence on School Performance

A Pearson's Chi-square test of association hypothesis testing was carried out at a chosen significance of $\alpha = 0.04$. The test was carried out to determine strategic planning and Capacity Development association on school performance.

H_0: Practice of capacity building and decentralised strategic planning in schools is not associated with the level of school performance.

H_1: Practice of capacity building and decentralised strategic planning in schools is associated with the level of school performance.

Table 2

Chi-Square test on Decentralised Strategic Planning and Capacity Development Relationship

	Value	df	Asymptotic Significance (2-sided)
Pearson Chi-Square	96.148[a]	4	.000
Likelihood Ratio	67.778	4	.000
Linear-by-Linear Association	11.086	1	.001
N of Valid Cases	80		

a. 4 cells (44.4%) have expected count less than 4. The minimum expected count is .61.

The results showed a Chi-square test value of 11.086 (n=80) and a degree of freedom of df = 1. The test showed a p-value of $\alpha = 0.01$, p< 0.04.

Decision: Since the p-value is less than the chosen significant level of 0.04, the null hypothesis is rejected and therefore it can be concluded that there is a strong association between practice of decentralised strategic planning and capacity development on the improvement of school performance.

4.2. Capacity building on DSP and effectiveness of school leadership

The study tested the association between capacity building as a mitigating factor and the effectiveness in school leadership under a decentralised strategic planning dispensation. The first test using Chi-Square was run on SPSS on the association between capacity development on strategic planning and effectiveness in decentralised strategic planning in public schools. The following hypothesis was proposed for testing. The test was on the SGB sample (n=80).

H_0: Capacity development on SP by schools has no association with the effectiveness of DSP in schools.

H_1: Capacity development on SP by schools has association with the effectiveness of DSP in schools.

Table 3

Chi-Square test on Capacity building on DSP and effectiveness of school leadership

	Value	df	Asymptotic Significance (2-sided)
Pearson Chi-Square	80.000[a]	2	.021
Likelihood Ratio	47.474	2	.000
Linear-by-Linear Association	66.859	1	.000
N of Valid Cases	80		

a. 2 cells (33.3%) have expected count less than 4. The minimum expected count is .61.

The results showed a test value of 80.000 (n=80) and a degree of freedom of df = 2. The test showed a p-value of $\alpha = 0.021$, thus p > 0.04.

Decision: Since the p-value *(p = 0.021)* is less than the chosen significant level of p = 0.04 the null hypothesis is accepted. There is enough evidence to support the hypothesis that SGB members believe that capacity development on strategic planning by schools has influence the effectiveness of DSP in schools. It is therefore concluded that SGB members believe that capacity development in strategic planning on SGB members influences the effectiveness of school leadership in implementing decentralised strategic planning.

4.3. Extent of public schools' role in Strategic Planning under Decentralised School Planning policy on effective leadership in schools

The study tested from the DoE sample (n=40) using Chi-Square if there is no association between the extent of public schools' role in strategic planning and the level of effectiveness of leadership in schools.

H0: The extent of public schools' role in strategic planning under decentralised strategic planning policy does not affect the level of effectiveness of leadership in schools.

H1: The extent of public schools' role in strategic planning under decentralised strategic planning policy affects the level of effectiveness of leadership in schools.

Table 4

Chi-Square test on extent of public schools' role in strategic planning and school effectiveness.

	Value	df	Asymptotic Significance (2-sided)
Pearson Chi-Square	8.388[a]	2	.015
Likelihood Ratio	9.813	2	.007
Linear-by-Linear Association	8.162	1	.004
N of Valid Cases	40		

a. 2 cells (33.3%) have expected count less than 4. The minimum expected count is 2.24.

The results showed a Chi-square test value of 8.388 (n=40) and a degree of freedom of df = 2. The test showed a p-value of $\alpha = 0.015$, $p < 0.04$.

Decision: Since the p-value (*p = 0.015*) is less than the chosen significant level of p = 0.05, the null hypothesis is rejected. There is no evidence to support that the extent of public schools' role in strategic planning does not affect the level of effectiveness of public schools' management. The alternative hypothesis is accepted, suggesting that the extent of the role of public schools in strategic planning impacts positively on the effectiveness of leadership in schools.

The same test was conducted on the SGB members sample (n=80) and produced a test value of 27.796, df = 3 and a p = 0.000. The outcome between the two samples corroborates with each other. It is therefore concluded that SGB members and DoE officials concur that the

extent of public schools role in strategic planning influences leadership effectiveness. Table below presents the Chi-Square test results on the SGB members' sample.

Table 5
Chi-Square test on public schools' role in strategic planning influences leadership effectiveness

	Value	df	Asymptotic Significance (2-sided)
Pearson Chi-Square	27.796[a]	3	.000
Likelihood Ratio	33.743	3	.000
Linear-by-Linear Association	16.098	1	.000
N of Valid Cases	80		

a. 3 cells (37.5%) have expected count less than 4. The minimum expected count is 1.92.

4.4. SGB members' competency level in effective DSP

Table 6

Correlation between SGB members' understanding of Strategic Planning and their competence to formulate strategic plans

			Not understanding decentralised Strategic Planning	SGB has little competence to formulate Strategic Planning
Kendall's Taub	Not understanding decentralised Strategic Planning	Correlation Coefficient	1.000	.627[**]
		Sig. (2-tailed)	.	.000
		N	80	80
	SGB has little competence to formulate Strategic Planning	Correlation Coefficient	.627[**]	1.000
		Sig. (2-tailed)	.000	.
		N	80	80

**. Correlation is significant at the 0.01 level (2-tailed).

The relationship between the level of understanding of strategic planning by SGB members and their competency to perform their role was analysed using Kendall's tau-b correlation coefficient. A 2-tailed test at a 0.01 level resulted to a significant correlation coefficient of 0.627 (n=80). This finding indicates that a higher level of understanding of strategic planning processes has a positive impact on the competency level of SGB members.

Those SGB members with a low level of understanding of strategic planning are less likely to be competent in the formulation of strategic plans. It was found that the majority of the SGB members in this study had both low understanding and low competence in decentralized strategic planning. This is consistent with Sindhvad's (2021) suggestion that school leaders who are not provided with training often lack competence and are inefficient in executing decentralized school management systems. Bhue and Paltasingh (2020) similarly observed in India that some school leaders lacked competence and were unaware of their roles, responsibilities, and powers under the new decentralized system school management policy.

Table 7

SGB members' role clarification by SASA effect on SGB members' competency in strategic planning

Model Summary[b]				
Model	**R**	**R Square**	**Adjusted R Square**	**Std. Error of the Estimate**
1	.149[a]	.022	.010	.782

a. Predictors: (Constant), Awareness of roles in strategic planning by SGB members

b. Dependent Variable: SGB members' level of competency in strategic planning

R value shows a simple insignificant degree correlation between the variables of 0.149. The R-square shows that the total variation in the dependent variable cannot be strongly explained by the independent variable by a small degree of 2.2%. It is therefore concluded that the level of awareness of strategic roles by SGB members does not significantly impact the level of SGB members' competency level in strategic planning.

Table 8

Effect of capacity building on SGB members' effectiveness in strategic planning

Model Summary[b]				
Model	**R**	**R Square**	**Adjusted R Square**	**Std. Error of the Estimate**
1	.820[a]	.777	.155	.403

a. Predictors: (Constant), Capacity building provision by the DoE to SGB members

b. Dependent Variable: SGB members effective and competent in Strategic Planning

R value shows a simple high degree correlation between the variables of 0.82. The R-square shows that the total variation in the dependent variable can be strongly explained by the

independent variable by a large degree of 77.7%. It is therefore concluded that the degree of capacity building strongly impacts the level of SGB members' effectiveness in strategic planning.

4.5. Thematic Analysis

The study utilized four focus group discussions and in-depth interviews to gather data from SGB members in the Nkangala District. Each focus group consisted of ten participants who held varying positions within the SGBs. The in-depth interviews were conducted with ten participants from the same district, with all necessary precautions taken to adhere to health guidelines such as social distancing, wearing protective gear like face masks and shields, and avoiding physical contact. The Nkangala District was chosen for convenience as it was the same district where the researcher resided, and with the COVID-19 pandemic coinciding with the data collection period, it was easier to coordinate interviews within the district without the travel restrictions imposed during the lockdown period.

The study findings are presented thematically and sub-thematically, based on an analysis of the data gathered from the FGDs and in-depth interviews. The presentation of the data is reported based on the evidence collected, and where necessary, verbatim accounts are included to support the findings.

Coding. In order to initiate the process of coding, the researcher thoroughly reviewed the data, section by section, guided by the research questions. The process involved identifying recurring concepts and relevant thought patterns in each transcript, followed by adding a note with the corresponding key phrase next to each pattern. Phrases were highlighted with a text marker on paper, and keywords were added in the margin. Figure 2 illustrates the process of how codes were developed and contributed to the theme of the influence of capacity building on decentralization. During the analysis of the transcript data, several codes were developed, including SGB accountability, increased knowledge, better performance, effective decision making, and competence in strategic planning, which contributed to the identification of the subtheme of efficient decentralised school leadership, ultimately leading to the development of the main theme.

Figure 2

Development of codes and themes
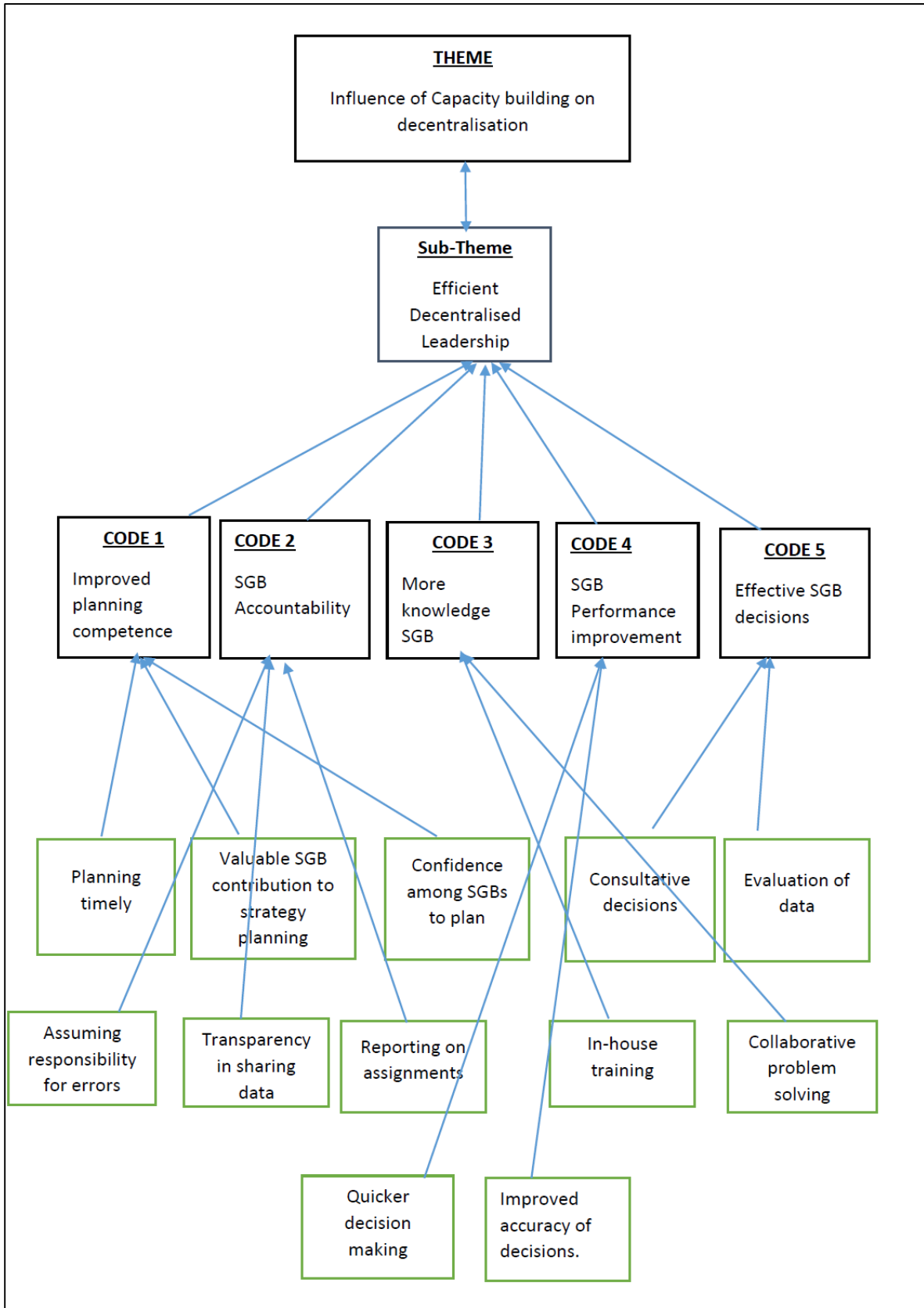
Reflexive Thematic Analysis. Thematic analysis means that by coding insights, the study will be able to identify themes, patterns emerging across multiple data sets across multiple participants' interviews. Reflexive thematic analysis is an approach to analyzing qualitative data to answer broad or narrow research questions about people's experiences, views and perceptions, and representations of a given phenomenon (Lyons & Coyle, 2016).

Figure 3

Reflexive Thematic map capturing four themes

Legend:

- Theme (ellipse)
- Sub-Theme (rectangle)
- Link to Sub-Theme (solid line)
- Relationship Between Themes (dashed line)
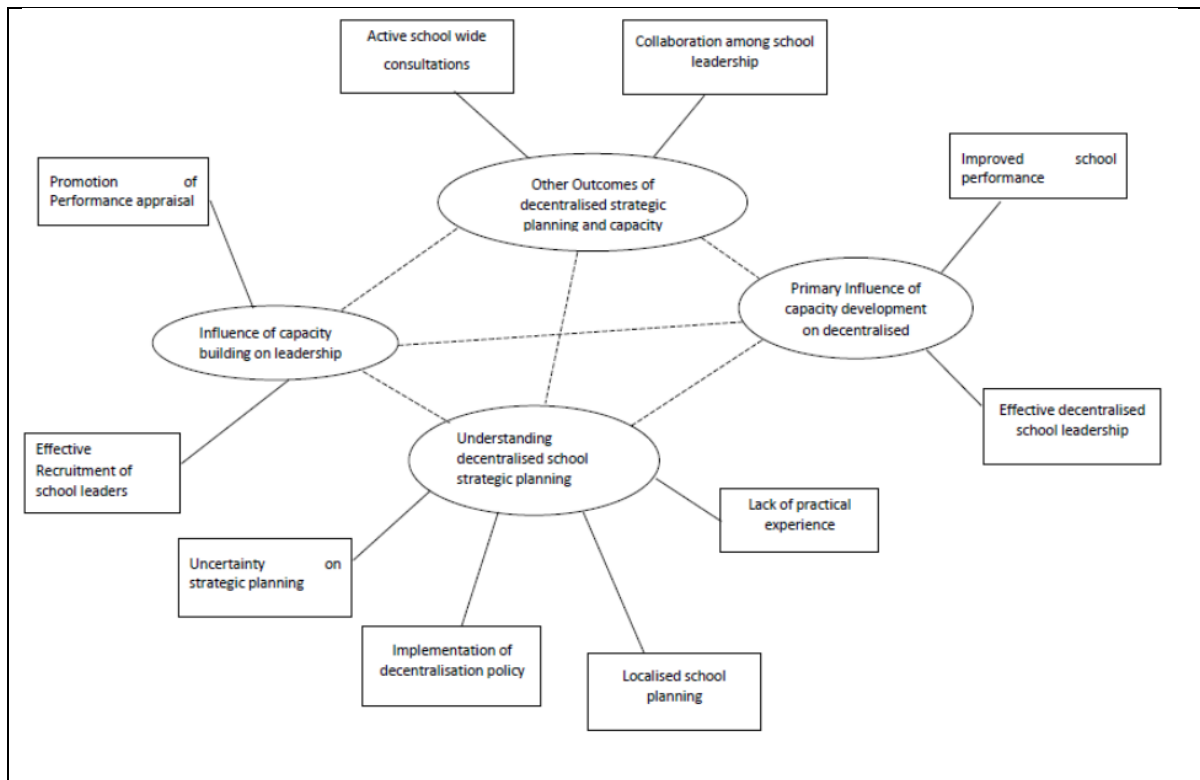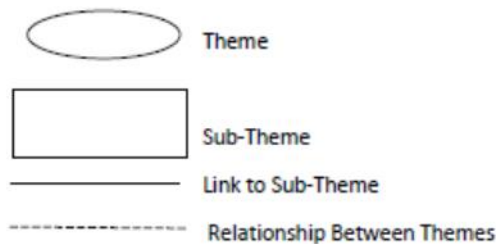
In figure 3, the relationship among the themes is established. Based on the evidence of the lived experience described in the transcript, the understanding of the concept of decentralised school planning is pivotal in the functionality of SGBs. The roping in of capacity development is seen as having tremendous influence on school leadership and this promotes effective decentralisation in schools.

Table 9
Themes and subthemes for qualitative findings

Themes	Subthemes
Understanding decentralised school strategic planning	• Localised school planning • Implementation of decentralisation policy • Uncertainty on strategic planning • Lack of practical experience
Influence of capacity development on decentralised school planning	• Improved school performance • Effective decentralised school leadership
Influence of capacity building on leadership for effective performance	• Promotion of Performance appraisal • Effective Recruitment of school leaders
Other outcomes of decentralised strategic planning and capacity development	• Active school wide consultations • Collaboration among school leadership

4.6. Discussion

The analysis conducted suggests that the alternative hypothesis, which proposes that capacity building has an impact on the effectiveness of SGBs in strategic planning should be adopted. The test showed a value of 80.000 (n=80) and a degree of freedom of df = 2. The p-value was $\alpha = 0.021$, indicating that $p > 0.04$. As the p-value ($p = 0.021$) is lower than the selected level of significance of $p = 0.05$, the null hypothesis is accepted. Therefore, it can be concluded that members of SGBs believe that capacity building for SGB members in strategic planning has an influence on the effectiveness of school leadership in implementing decentralised strategic planning. This finding is consistent with Yamoah and Maiyo (2013), who argue that capacity building is crucial for promoting leadership skills and organisational improvement.

A Pearson's Chi-square test of association hypothesis was conducted with a significance level of $\alpha = 0.04$ to determine whether the practice of capacity building and decentralised strategic planning in schools is associated with the level of school performance. The test resulted in the acceptance of the alternative hypothesis, which states that the practice of capacity building and decentralised strategic planning in schools is associated with the level of school performance. The test showed a value of 11.086 (n=80) and a degree of freedom of df = 1. The p-value was $\alpha = 0.01$, indicating that $p < 0.04$. As the p-value is lower than the selected level of significance of 0.05, the null hypothesis is rejected, and it can be concluded

that there is a strong association between the practice of decentralised strategic planning and capacity development on the improvement of school performance. This finding is consistent with Bridges et al. (2014), who suggest that capacity development is at the heart of school performance improvement in decentralised settings. The research also supports the idea that training, development, and involvement of school leaders in active decentralised strategic planning are the best ways to improve competence (Rwiza, 2016; Bhue & Paltasingh, 2020).

Based on the FGDs, it is generally believed that when schools adopt decentralised school planning and their leaders are well trained and equipped with the necessary capacities to implement the policy, school performance improves. This finding is consistent with Bridges et al. (2014), who argue that for school leadership to develop total capacity that addresses a school's needs and leads to tangible improvements, the school must be genuinely autonomous. Bain et al. (2011) also suggest that comprehensive capacity building, involving coherent, deliberate strategies enacted at the whole school level to positively influence the knowledge, skills, and priorities of individuals and the school as a collective, will result in positive change in the performance of the whole school.

Some participants in the focus group discussions suggested the need to establish a structured appraisal system to gauge the performance of members, which was viewed as necessary to improve the performance of the SGB. Similarly, Dahnke (2019) investigated the use of strategic planning and performance metrics to deliver continuous improvement efforts in large urban school districts. The study found that schools must address technical and adaptive elements of change to be effective at strategic planning and be resilient. Additionally, there was a need for a robust performance management tracking system to ensure that school leaders are consistent in their performance and execution of decentralised strategic plans. The study also found that school leadership needed to be actively prepared to adjust and align their strategies to achieve continuous improvement.

Chi-square tests the null hypothesis that the variables are independent. The test compares the observed data to a model that distributes the data according to the expectation that the variables are independent. Wherever the observed data do not fit the model, the likelihood that the variables are dependent becomes stronger, thus proving the null hypothesis incorrect. Among many statistical methods available to test hypotheses, the Chi-square test was found to be sufficient to determine acceptance or rejection of the hypotheses set in

determining the association of decentralised strategic planning and capacity development as drivers of leadership and performance in schools.

The first Pearson's Chi-square test of association hypothesis testing was carried out at a chosen significance of $\alpha = 0.04$. The test was carried out to determine strategic planning and capacity development association on school performance. Since the p-value is less than the chosen significant level of 0.05, the null hypothesis is rejected, and it can therefore be concluded that there is a strong association between the practice of decentralised strategic planning and capacity development on the improvement of school performance. Tyagi (2011) argues that beyond orientation, intensive involvement of new school leaders in the process of planning and management is essential to build and enhance school leaders' capacities for improved performance.

The second hypothesis test was conducted to ascertain whether the involvement level of the Department of Education (DoE) in the implementation of decentralised strategic plans had an impact on the effectiveness of schools' strategic planning. The null hypothesis was rejected as the p-value was lower than the chosen significant level of 0.05. This suggests that there is significant evidence to indicate that the involvement of the DoE in the implementation of strategic plans affects the effectiveness of schools' strategic planning. Consequently, it can be concluded that decentralised strategic planning practices in schools have a positive impact on effective leadership in high schools in Mpumalanga. Based on this analysis, it is reasonable to reject the null hypothesis and accept the alternative hypothesis. These findings align with Lavonen's (2017) research on the governance of decentralisation in Finnish education, which concluded that decentralisation can have a considerable long-term positive impact on the success of schools and communities.

The study aimed to determine whether there was a significant relationship between the category of SGB members and their involvement in the school strategic planning process. The study employed a one-way ANOVA at a 0.05 significance level and 95% confidence interval to test whether there was a significant difference in the mean involvement of each SGB member category - principal, teacher, or general SGB member not working at the school. The independent variable was the position/category of the SGB member, and the dependent variable was their involvement in the strategic planning of the school. The results showed that the null hypothesis - that there is no significant difference between the means of the three

categories of SGB members in terms of their involvement in the school strategic planning process - was rejected. The findings indicated that SGB members who are not working full-time at the school are less involved in strategic planning than those who work at the school. This finding is in line with existing research that recommends training, development, and involvement of school leaders in active decentralised strategic planning as the best approach to enhancing competence (Rwiza, 2016; Bhue & Paltasingh, 2020).

5. Conclusion

The present study finds that there is a strong association between capacity development and decentralised strategic planning, which significantly influences the leadership of high schools. The evidence suggests that school leaders with access to capacity development are able to promote better performance in their schools. Additionally, the adoption of capacity development in decentralised strategic planning results in positive outcomes, such as wide stakeholder consultation and collaboration among school leaders. It is therefore recommended that access to opportunities for school leaders to develop their capacity be improved at both the school and provincial levels, by subsidizing strategic planning and leadership programmes.

Based on the strong association between capacity development and successful decentralised school strategic planning, it is recommended that all SGBs in South African schools utilizing the decentralised planning system should undergo capacity development programmes tailored to their needs. The DoE may incorporate such programmes into its decentralisation policy, which could include comprehensive orientation, recruitment and selection of SGB members, ethics in leadership, and monitoring and evaluation of strategic plans. This would ensure that SGB members improve their competence from the outset.

To measure the effort and improvement of specific SGBs over time, the DoE should design a national performance management framework for all decentralised schools and mandate the adoption of a specific performance measurement tool within the framework to measure the performance of SGBs consistently and fairly over set periods. Furthermore, the DoE may allocate a budget for training and development to build the capacities of new and existing SGB members, which must be properly accounted for and audited to ensure that the objectives are achieved.

Finally, the DoE, in collaboration with schools, should refine the recruitment processes for SGB members and oversee the activities and plans of their schools. It may be advisable to set basic competence requirements for joining an SGB, which would be the first critical step in improving the quality of contributions made by SGBs given their responsibility for formulating and driving autonomous school plans.

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The Effects of Social Networking Sites Needs and Academic Stressors on Academic Motivation of College Students

Junge B. Guillena

Abstract

In recent years, social networking sites (SNSs) have experienced a surge in popularity, particularly among college students. These online platforms offer diverse functionalities that facilitate connections with friends and family, information sharing, and resource exchange. This study aimed to determine the effects of SNSs needs and academic stressors on the academic motivation of college students in one private schools in Iligan City, Lanao del Norte, Philippines during the second semester of the academic year 2022-2023. Using a simple random sampling procedure, 511 first, second, and third-year college students participated and responded to the adapted Likert-type instruments assessing the study variables. The result showed that most college students used Facebook, Facebook Messenger, and YouTube daily. It was also revealed that both SNSs and academic stressors positively affect extrinsic motivation. However, only SNSs have a positive impact on intrinsic motivation. Furthermore, academic stressors positively affect amotivation. Hence, educators and school administrators should consider incorporating SNSs to enhance motivation and engagement among college students. Specifically, educators can leverage the features of SNSs to promote collaboration, communication, and information sharing among students. Additionally, educators may consider designing academic activities encouraging students to use SNSs to explore and apply course content.

Keywords: *Social networking sites, academic stressors, academic motivation, College students*

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1. Introduction

Social networking sites (SNSs) have recently become increasingly popular, especially among college students (Tafesse, 2022; Kolhar et al., 2021; Gok, 2016; Lavanya & Karthikeyan, 2016). According to Thoene (2012), SNSs provide a range of functionalities that enable individuals to establish connections with their loved ones and acquaintances, as well as share information and resources. However, there is growing concern that SNSs may have more negative impacts than positive ones (Kolhar et al., 2021). For instance, Karpinski et al. (2013) argue that students' increased usage of social media for non-academic purposes can lead to disruptions in the learning environment and have negative effects on their academic performance. Multiple studies (Malak et al., 2022; Bhandarkar et al., 2021; Azizi et al., 2019; Al-Menayes, 2015) have discovered a consistent association between increased time spent on SNSs and lower academic performance among students. These findings suggest that students who prioritize online chatting and making social connections on SNSs over engaging in academic activities such as reading books are more likely to demonstrate poorer academic performance. While SNSs offer various functions for college students, including socializing, entertainment, and information seeking, students must use them in moderation and prioritize their academic responsibilities (Kolhar et al., 2021; Cao et al., 2018). The adverse effects of SNSs on students' academic performance are more pronounced because students tend to use such platforms to have fun and pass the time rather than for academic purposes (Masood et al., 2022).

Several studies have examined the correlation between SNSs, academic motivation, and academic stressors in college students. It was found that excessive use of SNSs can negatively impact academic performance and motivation, and SNS use can lead to increased academic stress and decreased academic motivation (Bottaro & Faraci, 2022). However, some studies have also found that SNSs can positively affect academic motivation, such as providing social support and a sense of belonging (Verduyn et al., 2022). Similarly, Manzano-Sanchez et al. (2021) showed that SNS use could positively affect academic motivation by providing social support and a sense of belonging. For this, Yang et al. (2022) emphasized that academic stress is negatively related to academic motivation in college students.

Despite the existing literature on the relationship between SNSs, academic motivation, and academic stressors among college students, there seems to be a research gap in understanding the specific effects of SNSs and academic stressors on academic motivation among Filipino college students. While some studies suggest that SNS usage and need can negatively impact academic performance and motivation and lead to increased academic stress, other studies suggest that SNSs can have positive effects on academic motivation by providing social support and a sense of belonging. Hence, this study investigates the effects of SNSs need and academic stressors on academic motivation among college students in one of the private schools in Iligan City, Lanao del Norte, Philippines.

2. Literature Review

2.1. Social Networking Site Usage and Needs

SNSs play a crucial role in meeting the various needs of their users, encompassing diversion, cognitive, affective, personal, and social integrative needs. Firstly, diversion refers to the entertainment and relaxation aspect of SNS use, providing a break from academic or work-related tasks. To fulfill this need, SNSs should offer a range of engaging and entertaining features, such as multimedia content, games, and interactive elements (Wu et al., 2020). Secondly, cognitive needs involve acquiring information, knowledge sharing, and intellectual stimulation through SNS use. SNSs should facilitate the dissemination of educational and informative content, encourage discussions, and promote knowledge exchange among users. Additionally, features such as online courses, academic forums, and access to reliable resources can cater to users' cognitive needs, enhancing their learning experiences (Hew et al., 2016). Affective needs pertain to emotional well-being, self-expression, and social support. SNSs should provide a platform for users to express themselves, share their thoughts and emotions, and receive support from their social network. Features like status updates, photo and video sharing, and private messaging can contribute to fulfilling affective needs and promoting positive emotional experiences and social connections (Kross et al., 2019). Personal integrative needs involve the desire for self-presentation, identity construction, and personal development. SNSs should enable users to create personalized profiles, curate their online presence, and express individuality. By offering tools for self-reflection, skill development, and goal setting, SNSs can assist users in personal growth and self-improvement (Raacke &

Bonds-Raacke, 2008). Lastly, social integrative needs encompass the desire for social interaction, relationship building, and community engagement. SNSs should facilitate user-to-user interactions, group collaborations, and networking opportunities. Features like friend requests, commenting, event invitations, and online communities can foster social connections, support shared interests, and promote a sense of belonging (Ellison et al., 2007). By addressing these needs for diversion, cognitive engagement, affective support, personal integration, and social integration, SNSs can create an enriching and fulfilling user experience.

Academic literature has explored the use of SNS concerning academic stress and motivation. In a literature review conducted by Astatke et al. (2021), the influence of SNS on secondary school student's academic achievement was analyzed. The review found that excessive use of SNS could lead to lower academic performance due to distractions and time management issues. However, other studies, such as Doleck and Lajoie's (2018) research on social networking and academic performance, have produced mixed results. While some studies indicated a negative correlation between SNS use and academic performance, others found no significant relationship. The literature review suggests that the impact of SNS on academic performance may depend on individual factors such as self-regulation and time management skills. Tafesse's (2020) work developed and tested a model in which student engagement mediates the relationship between SNS use and college academic outcomes. The study found that SNS use can have positive and negative effects on student engagement, affecting academic outcomes.

Singh and Malik (2021) discovered that SNS use could enhance learners' intrinsic motivation and academic achievement. Additionally, Barton et al. (2021) found that motivation is crucial to academic success. SNS use can also affect students' goal-setting abilities for academic tasks. However, other studies have demonstrated the negative effects of SNS use on academic stress and motivation. The literature review by Astatke et al. (2021) found that excessive SNS usage, inappropriate SNS use, and using SNS for recreational activities rather than educational purposes can harm students' academic achievement. The review also suggested that internet addiction, cyberbullying intentions, and sexually inappropriate behavior can mediate the negative effects of SNS use on academic achievement. Tafesse's (2020) study developed a model that showed that SNS use could have negative effects on academic performance if it leads to decreased student engagement. Moreover, Weinstein

(2022) explored the impact of problematic SNS use on sleep quality and duration in adolescents and young adults, finding a negative correlation between screen-based device usage and sleep quality. Additionally, Kolhar et al. (2021) discovered that excessive social media use could negatively affect family and friends' relationships. In summary, SNS use can positively and negatively affect academic motivation.

2.2. Academic Stressors

Academic stressors refer to the various factors and challenges that can contribute to the stress experienced by students in an educational setting. These stressors encompass academic demands, time management pressures, social expectations, and performance-related concerns. Understanding and addressing these stressors is essential for promoting student well-being and academic success. One significant academic stressor is the high academic demands placed on students, including heavy workloads, challenging coursework, and academic expectations. These demands can create pressure to excel academically, leading to stress and anxiety (Hudd et al., 2018). Students may experience stress when faced with many assignments, examinations, and deadlines, particularly during peak academic periods.

Time management pressures are another common academic stressor. Students often juggle multiple responsibilities, such as coursework, part-time jobs, extracurricular activities, and personal commitments. Balancing these demands and allocating sufficient time for studying and completing tasks can be challenging, contributing to stress (Britt et al., 2017). Poor time management skills and feeling overwhelmed by competing priorities can exacerbate this stressor. Social expectations and interpersonal factors also contribute to academic stress. Students may experience pressure from family, peers, or society to achieve high grades, meet specific academic goals, or pursue certain career paths. These expectations can create stress and feelings of inadequacy or fear of disappointing others (Ganster et al., 2021). Additionally, social interactions within the academic environment, such as group work or presentations, can induce anxiety and stress related to performance evaluation and peer judgment.

The impact of academic stress on students has been extensively studied in academic literature. Studies have shown that academic stress can lead to musculoskeletal disorders, mental well-being, and overall health (Alharbi & Smith, 2018; Ekpenyong, Daniel & Aribo, 2013; Barbayannis et al., 2022). The effects of academic stress on mental and physical health

can be significant, with excessive pressure leading to depression, anxiety, poor sleep, substance abuse, and musculoskeletal disorders (Alsulami et al., 2018). Moreover, academic stress has been linked to negative learning and academic performance effects, resulting to academic burnout (Lin & Huang, 2014). Recent research by Barbayannis et al. (2022) found that nonbinary, female, and second-year college students are most affected by academic stress. Zhang et al. (2022) also reported a positive association between academic stress and depression, perceived stress, and mental pressure among students. The COVID-19 pandemic has exacerbated academic stress among college students, with academic workload and social isolation being significant stressors (Yang, Chen & Chen, 2021).

One study discovered that academic stress harms academic motivation, whereas a high level of autonomous academic motivation can reduce academic stress (Yang et al., 2022). However, another study found no significant relationship between academic stress and motivation and students' academic performance (Tus, 2020). Another study on undergraduate students showed that academic stress negatively correlates with academic motivation (Muza & Muhammad, 2020). Given the complexity and variability of the impact of academic stressors on academic motivation, this current study aims to examine the effect of academic stressors on students' academic motivation.

2.3. Academic Motivation

Academic motivation encompasses various forms, including intrinsic, extrinsic, and amotivation. Understanding these different types of motivation is crucial for comprehending the driving forces behind students' engagement and persistence in academic pursuits. Intrinsic motivation refers to the internal desire and enjoyment that individuals experience when engaging in academic activities. It involves pursuing learning for inherent satisfaction, driven by personal interest, curiosity, and competence (Ryan & Deci, 2000). Intrinsically motivated students are more likely to display higher levels of engagement, persistence, and a deep understanding of the material being studied. Intrinsic motivation is fostered by creating a supportive and stimulating learning environment that allows students to explore their interests, make choices, and experience a sense of autonomy in their learning (Glynn et al., 2015).

Extrinsic motivation, on the other hand, refers to engaging in academic activities to attain external rewards or avoid punishments. These external factors include grades,

recognition, competition, or meeting external expectations (Deci & Ryan, 1985). While extrinsic motivation can provide initial incentives and guide behavior, an overreliance on external rewards may undermine intrinsic motivation and hinder long-term engagement. To promote healthy extrinsic motivation, educators can create a supportive classroom climate that emphasizes mastery-oriented goals, acknowledges effort, and provides meaningful feedback (Grolnick & Ryan, 1987). Amotivation represents the lack of motivation or intention to engage in academic tasks. Individuals who experience amotivation feel disconnected from the value or relevance of academic pursuits and may exhibit disinterest, apathy, or a lack of effort (Vallerand, 1997). Addressing amotivation requires identifying the underlying reasons and barriers that contribute to this state, such as a perceived lack of competence, the irrelevance of the curriculum, or a sense of learned helplessness. Strategies to combat amotivation include providing students with autonomy, relevance, and competence opportunities and fostering a positive and supportive learning environment (Vansteenkiste et al., 2009).

Academic motivation, which is critical for academic success, directs behavior towards achievement (Steinmayr et al., 2019), and highly motivated students actively engage in academic activities, leading to better academic outcomes (Kotera et al., 2021). Oclaret's (2021) study on the impact of academic intrinsic motivation facets identified six subscales of intrinsic academic motivation: mastery orientation, need for achievement, power motivation, fear of failure, authority expectations, and peer expectations.

Academic motivation plays a critical role in determining students' success in their studies, and several studies have been conducted to examine its various aspects. According to Steinmayr et al. (2019), achievement motivation is an essential determinant of academic success as it directs behavior toward achieving academic goals. H.U. & Luo's (2021) study among senior medical students revealed that academic motivation is reflected in a student's approach, persistence, and interest in academic subjects. A literature review conducted by Vu et al. (2022) also demonstrated that multiple motivation constructs are linked to academic achievement, emphasizing the importance of the motivation-achievement cycles in learning. Additionally, Cañabate et al. (2021) raised the question of the role of academic motivation in cooperative approaches in educational psychology, highlighting the need to explore this aspect of academic motivation further.

3. Methodology

3.1. Design and Participants

The present study employed a cross-sectional and descriptive research design, utilizing an online Google form survey to collect quantitative data. The participants were 511 college students from a private institution in Iligan City, Lanao del Norte, Philippines, selected through a simple random sampling procedure. The sample was predominantly female, with 72% (n=368) of participants identifying as female and 28% (n=143) as male. The mean age of the students was 19.89 years old, with a standard deviation of 1.88 years, and the majority fell within the age range of 17-19 years old, accounting for 75.7% (n=387) of the sample. First-year college students comprised the most significant proportion of participants, followed by second-year college students (37.8%, n=193), with only 3.7% (n=19) participants in their third year of college. Regarding parental education, most students reported having parents who were college graduates (n=296, 57.9%). In contrast, in terms of parental income, most participants came from families with a monthly income of at least 20,000 (n=311, 60.9%).

3.2. Instruments

Social Networking Sites Usage and Needs Scale (SNSUN). Ali et al. (2020) developed and validated an instrument consisting of five dimensions of social networking site (SNS) needs (diversion, cognitive, affective, personal integration, and social integration) using a two-phase approach: expert validation of the questionnaire and instrument convergent validation. They administered the adapted questionnaire to 162 participants in an online survey in Pakistan, followed by structural equation modeling (SEM). The instrument demonstrated high reliability with a Cronbach's alpha coefficient of .922.

Academic Stressors. The scale used in this study was adapted from Yikealo et al. (2018) and consisted of 10 items. The participants rated their stress levels on a scale of 1 (never) to 4 (frequently), with higher scores indicating more significant stress. The scale demonstrated a marginal level of reliability, with a coefficient of $\alpha = 0.60$.

Academic Motivation (AMS) Scale. Vallerand et al. (1992) initially developed the instrument utilized in this study. It consists of 28 items that are categorized into three primary subscales: intrinsic motivation (12 items), extrinsic motivation (12 items), and amotivation (4 items). The instrument has been found to have satisfactory internal consistency ($\alpha = 0.79$) and

temporal stability over one month (mean test-retest correlation = 0.79). Intrinsic motivation is the enjoyment and satisfaction derived from participating in an activity for its own sake (Vallerand, 1992; Deci & Ryan, 1985). Extrinsic motivation refers to behaviors engaged in as a means to an end rather than for their own sake (Vallerand, 1992; Deci, 1975). Another motivational construct, amotivation, was later introduced by Deci and Ryan (1985) to explain human behavior further. Individuals are considered amotivated when they do not perceive any connection between outcomes and their actions and are neither intrinsically nor extrinsically motivated.

3.3. Procedure

Participants were given online Google form surveys through various means, including Facebook group chats, individual messenger accounts, and institutional email addresses, to gather data. The questionnaires, adapted in English, were given directly to the participants who had a firm grasp of the language, without translation to the local dialect. Sufficient time, up to two days, was given to complete and return the surveys to ensure a high response rate. The collected data were encoded into Jamovi, a free statistical software, and analyzed using descriptive statistics, such as frequency and percentages, mean, and standard deviation. The Pearson correlation was utilized to investigate potential associations between students' SNS needs, academic stressors, and academic motivation. Finally, multiple regression analysis with simultaneous entry was performed to test if social networking sites and academic stressors significantly impact students' academic motivation.

3.4. Study Limitations

The cross-sectional research design has limitations as it provides only a snapshot view of the data at a particular moment, without the ability to establish causality or track changes over time. Furthermore, questionnaire-type instruments are susceptible to numerous factors that may impact their accuracy, such as memory bias and social desirability bias, leading respondents to give socially acceptable answers. These instruments may also need more detail to fully capture the intricacies of the phenomenon under investigation. Additionally, a study's sampling method may have limitations, including sampling bias and sampling error. Sampling bias can occur when certain groups are over or under-represented in the sample, resulting in inaccurate results. Similarly, sampling error can result from random fluctuations in the sample,

leading to inaccurate results. However, these limitations can be minimized by utilizing appropriate sampling techniques such as randomization and stratification.

4. Results

This section presents the analysis and findings per the study's research objectives.

Table 1

Usage of Different SNSs

SNS	Everyday	3-5 times a day	Occasionally	Rarely	Never
Facebook	348 (68.1)	75 (14.7)	53 (10.4)	33 (6.5)	2 (.4)
Twitter	71 (13.9)	43 (8.4)	150 (29.4)	99 (19.4)	148 (29.0)
WhatsApp	6 (1.2)	8 (1.6)	96 (18.8)	54 (18.8)	347 (67.9)
Myspace	3 (.6)	4 (.8)	86 (16.8)	26 (5.1)	392 (76.7)
Instagram	230 (45.0)	93 (18.2)	99 (19.4)	53 (10.4)	36 (7.0)
Snapchat	26 (5.1)	24 (4.7)	130 (25.4)	114 (22.3)	217 (42.5)
LinkedIn	5 (1.0)	3 (.6)	89 (17.4)	52 (10.2)	362 (70.8)
Google+	213 (41.7)	96 (18.8)	105 (20.5)	35 (6.8)	62 (12.1)
YouTube	246 (48.1)	123 (24.1)	115 (22.5)	23 (4.5)	4 (.8)
Facebook Messenger	465 (91.0)	28 (5.5)	15 (2.9)	2 (.4)	1 (.2)

Table 1 presents the results of a survey on respondents' usage of different SNSs. The data are displayed in terms of the frequency of use, ranging from "*Every day*" to "*Never.*" The table shows that Facebook is the most widely used SNS, with 68.1% of respondents using it daily and 93.2% using it at least occasionally. In contrast, Myspace is the least used SNS, with only 0.6% of respondents using it every day and 16.8% using it occasionally. Twitter is used by a smaller percentage of respondents, with 13.9% using it every day and 29.4% using it occasionally. WhatsApp is used even less frequently, with only 1.2% of respondents using it every day and 18.8% using it occasionally. Moreover, Instagram is another popular SNS, with 45% of respondents using it daily and 64.6% using it at least occasionally. Snapchat is also used frequently, with 25.4% of respondents using it occasionally and 5.1% using it daily. LinkedIn is used less frequently than other SNSs, with only 1% of respondents using it every day and 17.4% using it occasionally. Google+ is used more frequently, with 41.7% of respondents using it daily and 62.6% using it at least occasionally. Finally, Facebook

Messenger is the most widely used messaging app, with 91% of respondents using it daily and 99.4% using it at least occasionally. Then, the survey results suggest that Facebook, Instagram, and Google+ are the most widely used SNSs, while Myspace is the least used. The data also indicate that messaging apps like Facebook Messenger are top-rated among users.

Table 2

SNS Needs Assessment of the Respondents

Indicators	Mean	SD	Description
Diversion	**3.55**	**1.08**	**Agree**
1. SNSs help me to feel less lonely.	3.44	1.17	Somewhat
2. I use SNSs to pass the time when I am bored.	3.83	1.25	Agree
3. SNSs, let's escape my worries.	3.31	1.16	Somewhat
4. I start using SNSs when I have nothing better to do.	3.61	1.22	Agree
Cognitive needs	**3.85**	**1.15**	Agree
1. SNSs help me in research and studies.	3.98	1.27	Agree
2. SNSs help to search for jobs/online businesses/scholarship	3.76	1.22	Agree
3. SNSs help to gain knowledge.	3.82	1.21	Agree
4. SNSs give me information about others.	3.85	1.22	Agree
Affective needs	**3.12**	**.95**	**Somewhat**
1. Using SNSs is one of the routine things I do when I am online.	3.71	1.21	Agree
2. SNSs help me to express my emotions to others easily.	3.16	1.14	Somewhat
3. SNSs allow me to develop a romantic relationships.	2.67	1.13	Somewhat
4. I use SNSs to talk about my problems and get advice.	2.93	1.14	Somewhat
Personal integrative needs	**2.76**	**1.29**	**Somewhat**
1. SNSs are part of my self-image.	2.88	1.10	Somewhat
2. SNSs portray an image of me to others.	2.95	1.09	Somewhat
3. People can use SNSs to judge me.	2.69	1.15	Somewhat
4. I use SNSs to gain favorable approval among friends.	2.51	1.11	Somewhat
Social integrative needs	**3.65**	**1.07**	**Agree**
1. SNSs allow me to communicate with my friends.	3.98	1.29	Agree
2. SNSs allow me to stay in touch with family.	3.97	1.29	Agree
3. SNSs enable me to add new friends.	3.54	1.20	Agree
4. SNSs enable me to find more interesting people than in real life.	3.11	1.17	Somewhat
5. SNSs enable me to get through to someone who is hard to reach.	3.66	1.24	Agree
Total Measure	**3.39**	**.89**	**Somewhat**

Legend: 1.00-1.49 Strongly Disagree; 1.50-2.49 –Disagree; 2.50-3.49 –Somewhat; 3.50-4.49 Agree; 4.50-5.00 - Strongly Agree

Table 2 presents the mean and standard deviation scores for the five dimensions of social media needs assessment - diversion, cognitive, affective, personal, and social integrative needs. The total mean score for all the dimensions is also provided, which is 3.39, with a standard deviation of 0.89. Regarding diversion needs, the mean score is 3.55 (*SD=1.08*), which indicates that the respondents agree that social media platforms help them feel less lonely, pass their time when they are bored, and escape their worries. The highest mean score among these items is for using social media when they have nothing better to do (*Mean=3.61, SD=1.22*). Regarding cognitive needs, the mean score is 3.85 (*SD=1.15*), indicating that the respondents agree that social media platforms help them in their research and studies, job search, gaining knowledge, and obtaining information about others. The highest mean score among these items is for using social media to help in research and studies (*Mean=3.98, SD=1.27*). For affective needs, the mean score is 3.12 (*SD=.95*), indicating that the respondents somewhat agree that social media platforms are one of the routine things they do when they are online. However, they only somewhat agree that social media helps them express their emotions to others easily (*Mean=3.16, SD=1.14*). The lowest mean score in this dimension is for developing romantic relationships (*Mean=2.67, SD=1.13*) and using social media to discuss their problems and get advice (*Mean=2.93, SD=1.14*). For personal integrative needs, the mean score is 2.76 (*SD=1.29*), indicating that the respondents somewhat agree that social media platforms are a part of their self-image, portray an image of them to others, and can be used to judge them. However, they only somewhat agree that they use social media to gain favorable approval among friends (*Mean=2.51, SD=1.11*).

Finally, for social integrative needs, the mean score is 3.65 (*SD=1.07*), indicating that the respondents agree that social media platforms allow them to communicate with their friends, stay in touch with their family, add new friends, and get through to someone who is hard to reach. However, they somewhat agree that social media enables them to find more interesting people than in real life (*Mean=3.11, SD=1.17*). Thus, the respondents' total mean score for social media needs assessment is 3.39 (*SD=.89*), indicating that they somewhat agree that social media platforms meet their diversion, cognitive, affective, personal integrative, and social integrative needs, but only to a limited extent. The standard deviation scores indicate that the respondents' ratings were relatively consistent, with slight response variations.

Table 3

Academic Stressors of the Respondents

Indicators	Mean	SD	Description
1. Unfair grading system in the college	2.51	.82	Sometimes
2. Pressure in daily studying	3.22	.76	Sometimes
3. Difficult to deal with academic problems	3.05	.75	Sometimes
4. Depression due to low GPA	2.70	.97	Sometimes
5. Difficulty in studying for long hours	3.12	.83	Sometimes
6. Too much academic workload	3.13	.80	Sometimes
7. Inadequate educational facilities	2.55	.89	Sometimes
8. Dissatisfaction with one's program	2.43	.86	Rarely
9. Instructors' poor subject matter mastery and pedagogical competence	2.41	.92	Rarely
10. Boringness in attending classes regularly.	2.29	.90	Rarely
Total Measure	**2.74**	**.55**	**Sometimes**

Legend: 1.00-1.49 Never; 1.50-2.49 Rarely; 2.50-3.49 Sometimes; 3.50-4.00 Frequently

Table 3 shows that the respondents experienced academic stressors sometimes, with a mean score of 2.74 and a standard deviation of .55. The most commonly experienced academic stressors were pressure in daily studying (*Mean=3.22, SD=.76*), difficulty in dealing with academic problems (*Mean=3.05, SD=.75*), difficulty in studying for long hours (*Mean=3.12, .83*), and too much academic workload (*Mean=3.13, SD=.80*). The least commonly experienced academic stressors were dissatisfaction with one's program (*Mean=2.43, SD=.86*), instructors' poor subject matter mastery and pedagogical competence (*Mean=2.41, SD=.92*), and boringness in attending classes regularly (*Mean=2.29, SD=.90*).

Table 4 presents the results of the respondents' academic motivation in terms of intrinsic motivation. The mean score for the total measure is 3.62, with a standard deviation of .90, indicating that the respondents have a high level of intrinsic motivation toward their academic pursuits. The indicators with the highest mean scores are "Because my studies allow me to continue to learn about many things that interest me" (*Mean=4.00, SD=1.08*), "For the pleasure that I experience in broadening my knowledge about subjects which appeal to me" (*Mean=3.82, SD=1.10*), and "Because college allows me to experience personal satisfaction in my quest for excellence in my studies" (*Mean=3.77, SD=1.13*), all of which correspond a lot with intrinsic motivation. The indicators with the lowest mean scores are "For the pleasure I experience while surpassing myself in my studies" (*Mean=3.31, SD=1.14*), "For the pleasure

that I experience when I read interesting authors" (*Mean=3.42, SD=1.13*), and "For the pleasure that I experience when I feel completely absorbed by what certain authors have written" (*Mean=3.39, SD=1.15*), all of which correspond moderately with intrinsic motivation.

Table 4

Academic Motivation in terms of Intrinsic Motivation

Indicators	Mean	SD	Description
Because I experience pleasure and satisfaction while learning new things.	3.57	1.14	Corresponds a lot
For the pleasure, I experience when I discover new things never seen before.	3.87	1.09	Corresponds a lot
For the pleasure that I experience in broadening my knowledge about subjects that appeal to me.	3.82	1.10	Corresponds a lot
Because my studies allow me to continue to learn about many things that interest me.	4.00	1.08	Corresponds a lot
For the pleasure, I experience while surpassing myself in my studies.	3.31	1.14	Corresponds moderately
For the pleasure that I experience while I am surpassing myself in 1 of my personal accomplishments.	3.69	1.11	Corresponds a lot
For the satisfaction, I feel when I am in the process of accomplishing difficult academic activities.	3.59	1.17	Corresponds a lot
Because college allows me to experience personal satisfaction in my quest for excellence in my studies.	3.77	1.13	Corresponds a lot
For the intense feelings I experience when I am communicating my own ideas to others.	3.52	1.07	Corresponds a lot
For the pleasure that I experienced when I read interesting authors.	3.42	1.13	Corresponds moderately
For the pleasure that I experience when I feel completely absorbed by what certain authors have written.	3.39	1.15	Corresponds moderately
For the "high" feeling that I experience while reading about various interesting subjects.	3.48	1.15	Corresponds moderately
Total Measure	**3.62**	**.90**	**Corresponds a lot**

Legend: 1.00-1.49 Does not correspond at all; 1.50-2.49 Corresponds a little; 2.50-3.49 Corresponds moderately; 3.50-4.49 Corresponds a lot; 4.50-5.00 Corresponds exactly

Hence, the results indicate that the respondents are intrinsically motivated in their academic pursuits. They derive pleasure and satisfaction from learning new things, broadening

their knowledge, and experiencing personal satisfaction in their quest for academic excellence. However, there is room for improvement in deriving pleasure from surpassing oneself in studies and finding pleasure in reading interesting authors.

Table 5

Academic Motivation in terms of Extrinsic Motivation

Indicators	Mean	SD	Description
Because I think that a college education will help me better prepare for the career I have chosen.	4.19	1.11	Corresponds a lot
Because eventually, it will enable me to enter the job market in a field that I like.	3.93	1.14	Corresponds a lot
Because this will help me make a better choice regarding my career orientation.	4.02	1.07	Corresponds a lot
Because I believe that a few additional years of education will improve my competence as a worker.	3.87	1.15	Corresponds a lot
To prove to myself that I can complete my college degree.	4.01	1.12	Corresponds a lot
Because I want to show myself that I can succeeding in my studies.	4.03	1.14	Corresponds a lot
To show me that I am an intelligent person.	3.03	1.22	Corresponds moderately
Because when I succeed in college, I feel important.	3.70	1.23	Corresponds a lot
Because with only a high-school degree, I would not find a high-paying job later.	3.00	1.41	Corresponds moderately
In order to obtain a more prestigious job later.	4.03	1.12	Corresponds a lot
Because I want to have "the good life" later.	4.16	1.12	Corresponds a lot
In order to have a better salary later.	3.91	1.17	Corresponds a lot
Total Measure	**3.82**	**.90**	Corresponds a lot

Legend: 1.00-1.49 Does not correspond at all; 1.50-2.49 Corresponds a little; 2.50-3.49 Corresponds moderately; 3.50-4.49 Corresponds a lot; 4.50-5.00 Corresponds exactly

The results show that participants scored highest on indicators related to the potential career benefits of a college education. Participants strongly agreed that pursuing a college degree would help them prepare for their chosen career (*Mean=4.19, SD=1.11*) and enable them to enter the job market in a field they like (*Mean=3.93, SD=1.14*). They also indicated that obtaining a college degree would help them make a better career choice (*Mean=4.02, SD=1.07*) and improve their competence as a worker (*Mean=3.87, SD=1.15*). These results

suggest that many participants view a college education as a means to an end rather than an intrinsically valuable pursuit. Participants also indicated that they were motivated to prove their academic abilities and feel important. They strongly agreed that completing their college degree would prove they could succeed in their studies (*Mean=4.03, SD=1.12*) and make them feel important (*Mean=3.70, SD=1.23*). However, they only moderately agreed that obtaining a college degree would show that they are intelligent (*Mean=3.03, SD=1.22*).

Finally, participants indicated that they were motivated by the potential financial benefits of a college degree. They strongly agreed that pursuing a college degree would help them obtain a more prestigious job (*Mean=4.03, SD=1.12*), have "the good life" later (*Mean=4.16, SD=1.12*), and a better salary later (*Mean=3.91, SD=1.17*). Thus, the results suggest that many participants are motivated by external factors, such as career and financial benefits, rather than intrinsic enjoyment of learning. The total measure of extrinsic academic motivation was 3.82, indicating a high degree of correspondence with the construct of academic motivation.

Table 6

Academic Motivation in terms of Amotivation

Indicators	Mean	SD	Description
Honestly, I don't know; I really feel that I am wasting my time in school.	1.99	1.16	Corresponds a little
I once had good reasons for going to college; however, now I wonder whether I should continue.	2.54	1.30	Corresponds moderately
I can't see why I go to college, and frankly, I couldn't care less.	2.00	1.20	Corresponds a little
I don't know; I can't understand what I am doing in school.	2.05	1.20	Corresponds a little
Total Measure	**2.14**	**1.01**	Corresponds a little

Legend: 1.00-1.49 Does not correspond at all; 1.50-2.49 Corresponds a little; 2.50-3.49 Corresponds moderately; 3.50-4.49 Corresponds a lot; 4.50-5.00 Corresponds exactly

Table 6 presents the results of the student's academic motivation in terms of amotivation, which refers to the absence of motivation or the lack of interest in academic activities. The mean score for the total measure is 2.14, which corresponds a little to amotivation. Looking at the indicators, the highest mean score is for the item "I once had good reasons for going to college; however, now I wonder whether I should continue" (*Mean=2.54, SD=1.30*), which corresponds moderately to amotivation. This result suggests that some

students may have started college with clear motivations but are now questioning whether they should continue. The other three items have mean scores ranging from 1.99 to 2.05, corresponding to amotivation. These items express a lack of understanding or interest in academic activities, such as "Honestly, I don't know; I really feel that I am wasting my time in school." Overall, the results suggest that while most students do not express strong feelings of amotivation, there is some degree of uncertainty and lack of interest among a subset of students.

Table 7

Reliability, Skewness, and Correlation Analysis of the Study Variables

Variables	Cronbach's Alpha	Skewness	1	2	3	4	5
1. SNS Needs	.962	-1.065	1				
2. Academic Stressor	.830	-.428	.083	1			
3. Intrinsic Motivation	.951	-.630	.336**	.042	1		
4. Extrinsic Motivation	.939	-.979	.330**	.109*	.883**	1	
5. Amotivation	.849	.711	.099*	.274**	.096*	.065	1

Table 7 presents the study variables' reliability analysis, skewness, and correlation analysis. Reliability analysis shows the internal consistency of each construct, which is measured using Cronbach's alpha coefficient. All constructs show high reliability as their Cronbach's alpha coefficient is above 0.8, indicating that the items in each construct are strongly correlated. Skewness measures the degree of symmetry of the distribution of each construct. Skewness values range from -2 to +2, and values closer to zero indicate a more symmetrical distribution.

Correlation analysis shows that SNS Needs have a significant positive correlation with Intrinsic Motivation ($r=.336, p < .01$), Extrinsic Motivation ($r=.330, p<.01$), and amotivation ($r=.099, p<.05$), indicating that higher SNS Needs are associated with higher levels of intrinsic, extrinsic motivation, and amotivation. Academic Stressors have a moderate positive correlation with Amotivation ($r=.274, p<.01$) and a weak positive correlation with Extrinsic Motivation ($r=.109, p<.05$). Intrinsic Motivation is significantly correlated with Extrinsic Motivation ($r=.883, p<.01$), indicating that the two constructs are strongly related. Finally, amotivation does not correlate with extrinsic motivation ($r=.065, p>.05$).

Table 8

Evaluation of the Variance Inflation Factor (VIF), Tolerance, and Durbin-Watson values of the Regression Models

Study Variables	VIF	Tolerance	Durbin-Watson
Model 1 (*Dependent: Intrinsic Motivation*)			1.958
SNS Needs	1.007	.993	
Academic Stressor	1.007	.993	
Model 2 (*Dependent: Extrinsic Motivation*)			1.906
SNS Needs	1.007	.993	
Academic Stressor	1.007	.993	
Model 3 (*Dependent: Amotivation*)			1.962
SNS Needs	1.007	.993	
Academic Stressor	1.007	.993	

The VIF and Tolerance values are used to assess multicollinearity in regression models. VIF measures the extent to which the variance of an estimated regression coefficient is inflated due to multicollinearity. Tolerance, conversely, is the reciprocal of VIF and measures the proportion of variance in a predictor variable that is not shared with other predictors. VIF values below ten and Tolerance values above 0.1 are generally considered acceptable, indicating no significant multicollinearity issues. The Durbin-Watson statistic tests for autocorrelation in the residuals of a regression model. A value close to 2 suggests no significant autocorrelation, implying that the residuals are independent and satisfy the assumption of independence in regression analysis. Thus, multiple linear regression analysis with a simultaneous entry is suitable for testing the effect of SNS needs and academic stressors on students' academic motivation.

Table 8 shows the regression analysis results that examined the relationship between SNS needs, academic stressors, and academic motivation. The table includes three regression models, each of which has a different dependent variable: intrinsic motivation, extrinsic motivation, and amotivation.

Table 9

Regression Analysis of Predicting Academic Motivation by SNS Needs and Academic Stressor

Predictors	Model 1 Dependent: Intrinsic Motivation		Model 2 Dependent: Extrinsic Motivation		Model 3 Dependent: Amotivation	
	B	S.E. (B)	B	S.E. (B)	B	S.E. (B)
SNS Needs	.339**	.042	.327**	.042	.087	.048
Academic Stressor	.024	.071	.139*	.071	.502**	.080
R^2	*.113*		*.116*		*.081*	
F	*32.480** *		*33.204** *		*22.337** *	

*Note: Analysis is based on multiples regression method   ** $p<.01$ * $p<.05$*

In Model 1 (for predicting intrinsic motivation), social networking sites (SNS) needs significantly predicted intrinsic motivation ($B=.340$, $p<.01$), explaining 11.3% of the variability of intrinsic motivation. In Model 2 (predicting extrinsic motivation), SNS needs again significantly predicted extrinsic motivation ($B=.334$, $p<.01$), and the academic stressors also significantly influence extrinsic motivation ($B=.139$, $p<.05$), explaining 11.6% of the variance of extrinsic motivation. In Model 3 (predicting amotivation), SNS needs did not significantly predict amotivation ($B=.087$, $p>.05$), while academic stressors positively influence amotivation, explaining 8.1% of the variance of amotivation. The results suggest that SNS needs positively relate to intrinsic and extrinsic motivation but not amotivation. The academic stressor is positively related to extrinsic motivation and amotivation but not intrinsic motivation.

5. Discussion

This research aims to examine how SNS needs and academic stressors affect the academic motivation of college students in a private college in Iligan City, Philippines, during the second semester of the academic year 2022-2023. The study discovered that most college students prefer Facebook and Facebook Messenger and visit these platforms daily, and nearly half of them also use YouTube to watch videos. In contrast, they are less likely to be interested in other social media platforms like WhatsApp and MySpace. According to the previous research by Pew Research Center (2018) and Valenzuela et al. (2009), Facebook is the most widely used social media platform among American adults and college students in the United

States. Valenzuela et al. (2009) found that Facebook was linked to attitudes and behaviors that promote social capital. This result suggests that college students may choose Facebook over other social media platforms. In the Philippines, Facebook and Instagram are the most popular social media platforms, with Facebook having the largest market share. According to Statista (2023), the number of Facebook users in the country is expected to reach 97.6 million by 2027.

Regarding their SNS needs, the students agreed that social media platforms help them in their research and studies, job search, gaining knowledge, and obtaining information about others. It also helps students gain knowledge and obtain information about others (Chen & Xiao, 2022). SNSs are considered a dynamic tool to expedite the development of open learning settings by encouraging collaboration, group discussion, and exchanging ideas (Ashraf et al., 2021). Also, social media platforms have become essential to students' social lives as they allow them to communicate with their friends, stay in touch with their family, add new friends, and get through to someone hard to reach (Chukwuere, 2021). Moreover, social media platforms help students feel less lonely, pass their time when bored, and escape their worries (Chukwuere, 2021; Chen & Xiao, 2022). However, the psychological effects of social on students' life need to be studied in more depth to see whether social media acts as social support for students and whether students can use social media to cope with negative emotions and develop (Chen & Xiao, 2022). Thus, it is essential to understand the positive and negative effects of social media on students' lives and to encourage them to utilize these platforms for academic and social purposes (Gulzar et al., 2022; Boateng & Amankwaa, 2016; Ashraf et al., 2021).

Students responded that their most commonly experienced academic stressors were pressure in daily studying, difficulty dealing with academic problems, difficulty studying for long hours, and too much academic workload. However, the least experienced academic stressors were dissatisfaction with one's program, instructors' poor subject matter mastery and pedagogical competence, and boringness in attending classes regularly. These findings suggest that the students are generally satisfied with their programs and instructors and that the stress they experience is primarily related to the demands of their coursework. Some studies (Pascoe et al., 2020; Terada, 2018) have also highlighted the negative impact of academic stress on students' mental health and academic performance. The study by Terada (2018) found that when students experience an academic setback such as a bad grade, the amount of cortisol-the

stress hormone in their bodies, increases, which can impair their ability to learn and perform well in future academic tasks. However, there are ways to combat academic stress and improve students' performance. According to Beilock (2011), learning habits to combat academic stress can bring benefits beyond the classroom. High-stakes situations are an inevitable part of school and work life. Students who learn to manage their stress and perform well under pressure will be better equipped to succeed in their future careers.

Motivation is a crucial factor in academic achievement, and it has been shown to positively influence students' study strategy, academic pursuit, adjustment, and well-being (Kusurkar et al., 2013). Intrinsic motivation, which is the drive to learn for the sake of learning, is a strong predictor of academic achievement (Reeve, 2012). Intrinsically motivated students derive pleasure and satisfaction from learning new things, broadening their knowledge, and experiencing personal satisfaction in their quest for academic excellence (Kusurkar et al., 2013). However, external factors such as career and financial benefits can motivate students rather than intrinsic enjoyment of learning (Ryan & Deci, 2000). While most students do not express strong feelings of amotivation, there is some degree of uncertainty and lack of interest among some students. This finding highlights the importance of understanding the different theories of motivation, some of which focus on the quantity of motivation, while others focus on the quality of motivation. Self-determination theory (SDT) of motivation considers the source of motivation, whether internal or external and the quality of motivation (Kusurkar et al., 2013). Research studies have shown that intrinsically motivated students have higher achievement levels, lower levels of anxiety, and high levels of engagement (Reeve, 2012). Intrinsic motivation has been found to play a significant role in the academic pursuits of nontraditional students (Vallerand et al., 1992). However, external interventions can also promote situational interest and motivate academically unmotivated students (Hidi & Renninger, 2006). Understanding the different theories of motivation and the role of intrinsic and extrinsic motivation can help educators design interventions that promote student engagement and academic success.

SNSs have become an essential part of college students' lives. They provide an opportunity to connect with friends and acquaintances, share information and experiences, and build support networks. Current research has shown that social networking sites can positively influence the intrinsic and extrinsic motivations of college students. However, academic

stressors may have a positive influence on extrinsic and amotivation. First, let us examine the relationship between social networking sites and motivation. Several studies have suggested that social networking sites enhance students' intrinsic motivation. According to Ryan and Deci's self-determination theory, intrinsic motivation is driven by autonomy, competence, and relatedness (Ryan and Deci, 2000). Social networking sites can enhance these factors by providing students with a platform to express themselves freely, share their achievements and experiences with others, and connect with peers who share similar interests (Ellison et al., 2007). A study by Raacke and Bonds-Raacke (2008) found that students who used Facebook reported higher levels of intrinsic motivation to learn compared to those who did not use Facebook. Social networking sites can also enhance extrinsic motivation by providing students with a platform to showcase their achievements and receive recognition and feedback from others. For instance, a study by Burke. Marlow and Lento (2010) found that college students who received feedback and recognition from their peers on Facebook reported higher levels of extrinsic motivation to learn.

However, academic stressors can also impact college students' motivation. According to the control-value theory of achievement emotions, academic stressors such as workload and academic pressure can positively and negatively affect motivation (Pekrun et al., 2009). They added that moderate stress could enhance students' extrinsic motivation by increasing their perceived value of the task. But, excessive stress can lead to amotivation, which refers to a lack of motivation or interest in the task. A study by Kusurkar et al. (2013) revealed that academic stressors were positively associated with extrinsic motivation and amotivation among medical students. The study found that high levels of academic stressors were associated with higher levels of extrinsic motivation and amotivation. The authors suggest that excessive stress may lead to a sense of helplessness or lack of control, which can decrease motivation and lead to amotivation.

6. Conclusion

This study found that most college students used Facebook Messenger, Facebook, and YouTube daily, suggesting that these platforms have become integral to their daily routines. The results also highlight that using social networking sites is related to fulfilling cognitive, social integrative, and diversion needs, which may contribute to the positive effects on intrinsic

and extrinsic motivation. Further, the study shows that academic stressors are common among college students, including pressure in daily studying, too much academic workload, and difficulty studying long hours. Interestingly, the result indicates that academic stressors have a positive effect on extrinsic motivation and amotivation. While the positive effect on extrinsic motivation may be attributed to the desire to achieve academic goals, the positive effect on amotivation may indicate that excessive stress may lead to a lack of motivation or disinterest in academic pursuits.

Educators and school administrators consider incorporating social networking sites to enhance motivation and engagement among college students. Specifically, educators can leverage the features of social networking sites to promote collaboration, communication, and information sharing among students. Additionally, educators may consider designing academic activities encouraging students to use social networking sites to explore and apply course content. However, it is essential to note that excessive use of social networking sites may lead to distraction and negatively impact academic performance. Therefore, educators should also guide and support students to develop healthy and balanced technology habits.

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E-Learning Games Enjoyment to Pupils' Learning Behaviors in Mathematics Classroom

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Abstract

One of the hardest courses for students to grasp is mathematics, yet it's a crucial ability to have. In order to figure out why students behave in a certain way when studying mathematics, researchers must look for the factors that influence their behaviors. This study helped by presenting the Grade 6 students' learning behaviors in mathematics and their enjoyment of e-learning games. With thirty (30) grade six students as respondents to the adapted-modified survey questionnaire, the study's objectives for the academic year 2021–2022 were successfully met through the descriptive-correlational research design and purposive sampling technique. The findings demonstrate a positive significant relationship between interest, confidence, motivation, and usefulness that is consistent with students' learning behavior in mathematics and the enjoyment of e-learning games in terms of concentration, goal clarity, feedback, challenge, autonomy, immersion, social interaction, and knowledge improvement. Findings showed that e-learning games were helpful at increasing students' interest in the subject. This means that using e-learning games as a good teaching tool can help to enhance and enhance students' learning behavior. Taking into account the limitations on a specific subject, the study suggests further scrutiny on the enjoyment of e-Learning games as applied in other disciplines.

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1. Introduction

Mathematics is one of the most difficult courses for students to grasp (Anwar et al., 2020), but it is a crucial skill to have. It is regarded by society as the foundation of scientific and technological knowledge, and it is highly valued by people all over the world (Kanafiah & Jumadi, 2013). It always comes to people's minds that mathematics is needed to survive and go along with life. However, some students believe mathematics is boring, complicated, and uninteresting. Many students drop out of mathematics classes before completing their assignments. Despite the benefits of studying mathematics, many people believe that it is complex, obscure, and of little interest to them. Although mathematics is undeniably important in life, most students find it incredibly challenging to grasp the numerous mathematical abilities and procedures required in their daily lives. (Kanafiah & Jumadi 2013).

With the advances in technology and the consequence of the pandemic, new landscape of learning mathematics and all other subjects have emerged. For instance, e-learning enabled by technological advancements and globalization can add to the improvement and enjoyment of mathematics teaching and learning. Many games can aid in the teaching and learning process and meet the basic requirements of learning environments. Similarly, mobile technology (such as smartphones) is increasingly getting used in mathematics teaching and learning (e.g., tablets and computers), due to its specifications of portability, availability, and internet access which has piqued the interest of educational researchers and practitioners. The broad acceptability among youth and other individuals, makes mobile devices to emerged as an emergent agent capable of expanding the parameters of outside-the-classroom mathematics instruction. The mathematical, scientific, and engineering processes covered by the Common Core Math and Next Generation Standards will be easily mapped to the properties of mobile devices such as recording and gathering data, interacting with people and working together, reading and analyzing content, and developing one's own forms of expression and representation (Moyer-Packenham et al., 2019).

Given the students' negative behavior towards learning mathematics and the new paradigm of teaching and learning, this study merged the two concepts to assess their relationship. The concept of learning behaviors in mathematics is extracted from the study of Otoo et al. (2018). They use variables that have not been examined by previous researchers and these are interest, motivation, confidence, and usefulness. Hence, this study determines

primary school kids' enjoyment of playing online math games and its effects on their behavior as learners in Grade 6. The study specifically aims to ascertain the level of enjoyment of Grade 6 students by describing their participation in playing educational video games during Mathematics lessons in terms of their concentration, goal clarity, feedback, challenge, autonomy, immersion, social interaction, and knowledge improvement and to describe learning behavior in attending Mathematics lessons in terms of interest, confidence, motivation, and usefulness. Additionally, the study seeks to ascertain whether or not Grade 6 students' enjoyment of playing online math games during class time significantly influences their performance.

2. Literature Review

2.1. Enjoyment of E-Learning Games

The assessment of enjoyment in e-learning games is based on the parameters proposed by Csikszentmihalyi (1998), which has eight sub variables namely: concentration, goal clarity, feedback, challenge, autonomy, immersion, social interaction and knowledge improvement. According to Lu and Yang (2018), concentration has the ability to direct one's thoughts in the desired direction and is essential for learning, and important for efficient learning to improve students' academic achievement. On the other hand, goal clarity is described in management and applied psychology literature as the extent to which the job's end goals and objectives are clearly communicated and properly defined (Anderson & Stritch, 2016). Moreover, Mag (2019) asserts that feedback can be used for a variety of purposes, including the graded achievements, students' understanding, skills, and motivation are developed. Furthermore, Oliveira et al. (2021) refers challenge as the level of difficulty in the game; a component found in many case studies stated that increasing difficulty levels for students' aid in the progressive development of knowledge.

Following the study of Lim et al. (2019), when a person is immersed in a certain object, they lose sight of their surroundings and personal difficulties. As such, real-world dissociation is a common trait of concentration and immersion. Social interaction influences person's behavior, which includes networking, interaction, inspiration, and persuasion (Msomi et al., 2018). It is the way to communicate and interact with other people. On the other hand, to obtain a complete knowledge information representation, a hierarchical knowledge improvement-based representation learning approach is employed to carry out hierarchical progressive

learning of character level information, local information, and global information (Wang et al., 2020).

Game-based learning is now one of the most popular e-learning trends, and it appears to be growing in popularity. Doney (2019) recognized the NMC Horizon Project (2012) as one of six technologies that are expected to have a significant influence on learning. As applied in mathematics, mathematical enjoyment is the degree to which students enjoy doing and learning mathematics. Students' attitudes and conduct may be influenced by how much fun they are having while studying. Hence, the association of game-based learning and mathematics.

2.2 Learning Behavior in Mathematics

Learning behavior is a mental activity that takes place when a pupil is learning while learning is a moderately long-term modification of behavior brought about by prior experiences. Learning behavior is a mental/psychological process and results of active participation in the learning environment, leads to changes in knowledge, comprehension, abilities, and attitude values (Darari & Firdaus, 2020).

In this study, the assessment of the learning behavior in mathematics is based on the parameters which has four sub-variables: interest, confidence, motivation and usefulness. Sutarto et al. (2020) argues that interest plays an important role in learning. This desire motivates students to learn and help them achieve better results. On the other hand, confidence is one of the personality traits that might influence learning because confident individuals believe in their skills and maintain a positive attitude even when confronted with issues they have never encountered before (Yaniawati et al., 2020). Moreover, Cook and Artino (2016) describe motivation as the process of initiating and maintaining goal-directed behaviors. It is a result of the anticipation of success and perceived value, according to the expectancy-value hypothesis. In addition, Mathematics has a wide range of usefulness in human activity. This usefulness does not only refer to practical convenience, but rather to its foundation in a fundamental aspect of mathematics (Nakamura, 2017).

2.3. Theoretical Framework

This study is anchored from the concept and ideas about GameFlow and the study of Otoo et al. (2018). GameFlow is a game assessment, a collection of numerous criteria and a concise model of enjoyment based on research, accessibility and student's experience in games, which inspired the notion of enjoyment in e-learning games. Feedback, immersion, autonomy, goal clarity, challenge, and concentration are all factors suggested that might

generate flow, as well as the extra factor of player involvement. In addition, criteria are being developed to transform elements that may impact enjoyment into design guidelines for games (Fu et al., 2009). Meanwhile, the concept of learning behaviors in mathematics is extracted from the study entitled of Otoo et al. (2018). The study used the variables interest, motivation, confidence, and usefulness that have not previously been studied by academics. Success in mathematics and science has been linked to a variety of factors, including self-concept, self-efficacy, confidence in one's ability to learn math and science, interest in those subjects, and motivation. These characteristics also influence kids' avoidance of mathematics and science, which has an impact on long-term success and career ambitions in the math/science sector (Otoo et al., 2018). As a result, the students felt the effectiveness of e-learning games to boost their enjoyment implying that usage of e-learning games as an effective teaching tool can contribute to successfully improved students' learning behavior in studying mathematics.

3. Methodology

3.1. Research Design

This is a quantitative research that utilized a descriptive design in describing the enjoyment on E-learning games of Grade 6 Pupils and how it is related to their learning behavior in mathematics. Descriptive study is a type of research that aims to correctly describe existent phenomena. The phenomena discovered in the descriptive study have already been documented (Atmowardoyo, 2018). This study is more interested in what happened than how or why it happened (Nassaji, 2015).

3.2. Sampling Technique

The respondents of the study are the grade six students in a public elementary school in the Philippines conducting classes online during the academic year 2021-2022. There are 30 target students from the school who are considered using a purposive sampling technique to determine the sample. Since the goal is to choose a specific or specified sample, judgmental or purposive sampling is appropriate (Deshpande & Girme, 2019). The respondents are those who are currently conducting online learning or e-learning.

3.3. Research Instrument

Construction. The first questionnaire is the enjoyment of E-Learning Questionnaire. A 56-item survey questionnaire with a 4-point Likert scale is provided. This was intended to measure and evaluate students' enjoyment of e-learning games. This adapted-modified instrument from Fu et al. (2009). The second questionnaire is the Learning Behaviors in

Mathematics Questionnaire. This is also an adopted-modified instrument from Otoo et al. (2018) and uses a Likert scale ranging from 1-4, strongly disagree to strongly agree. This is divided into four components to investigate students' mathematical learning behavior including interest, confidence, motivation, and usefulness. The survey questionnaire for students' mathematical learning behavior consists of 20 items.

Validity and Reliability. The study's findings are dependent on the validity and reliability of the questionnaire used to assess the independent variable enjoyment of E-learning games and the dependent variable learning behaviors in mathematics.

Internal Consistency – Cronbach's alpha. The consistency with which test objects assess the same construct is referred to as internal consistency. Theoretically, there should be an obvious association between objects that claim to quantify the same construct (Estrella 2015).

Table 1

Result of Reliability Testing

Subscales	No. of Items	Cronbach's Alpha	Internal Consistency
Enjoyment of e-Learning Games			
Concentration	6	.914	Excellent
Goal Clarity	3	.876	Good
Feedback	6	.912	Excellent
Challenge	9	.951	Excellent
Freedom	6	.944	Excellent
Immersion	4	.933	Excellent
Social Interaction	4	.819	Good
Knowledge Improvement	4	.912	Excellent
Learning Behavior in Mathematics			
Interest	5	.929	Excellent
Confidence	5	.935	Excellent
Motivation	5	.940	Excellent
Usefulness	5	.918	Excellent

The degree of association between the test question items describing each of the independent and dependent variables was calculated using Cronbach's alpha. It takes numbers between 0 and 1, with 1 signifying perfect internal precision. Cronbach alpha values of 0.7 or higher indicate good internal accuracy in addition to values less than 0.7 (Taber, 2017). The study ensures that each question provided in the instrument is internally consistent by conducting a pilot testing survey. It is depicted from the given table that the items set in the given research instrument posted a Cronbach's alpha that is said to be greater than 0.70. This

indicates that the items are internally consistent from excellent to a good level. This implies that all items are retained to ensure an acceptable level of internal consistency.

3.4. Data Collection and Analysis

After the validation of the research instruments and approval of the requested permission to conduct the study from the school principal and respondents by following the separate procedure, the copy of the questionnaire was sent to the teacher via Google Form. The teacher sent the link to the survey questionnaire to the students and retrieved all the answered survey questionnaires after four days.

3.5. Data Analysis

The study used frequency count, weighted mean and correlation analysis to analyze the data using MS Excel Data Analysis Tool Pack.

3.6. Ethical Consideration

The personal information of the respondents was kept private. The respondent's name was also omitted from any document.

4. Findings and Discussion

Table 2

Extent of Enjoyment of e-learning Games in Learning Mathematics

Indicators	Mean	SD	Verbal Interpretation
Concentration	3.37	0.80	ME
Goal Clarity	3.63	0.59	GE
Feedback	3.58	0.61	GE
Challenge	3.56	0.60	GE
Autonomy	3.48	0.63	ME
Immersion	3.15	0.89	ME
Social Interaction	3.54	0.60	GE
Knowledge Improvement	3.61	0.54	GE
OVERALL	**3.49**	**0.66**	**ME**

Legend: 3.50 4.00 Great Extent (GE), 2.50- 3.49 Moderate Extent (ME), 1.50- 2.49 some Extent (SE), 1.00- 1.49 Not at all (NA)

Table 2 shows the overall mean of 3.49, indicating that enjoyment of e-Learning games is to a moderate extent. This means that enjoyment of e-Learning games is one of the factors that drive students to enjoy participating in learning activities, and also determines whether they will engage and learn even more. Goal clarity had the highest mean of 3.63 while,

knowledge improvement (3.61), feedback (3.58), challenge (93.56), and social interaction (3.54) are all interpreted as having a great extent of enjoyment. However, autonomy (3.48) and concentration (3.37) posted a moderate extent of enjoyment of e-Learning games which is also similar to immersion (3.15) that ranks last.

The conclusion backs up the findings of De Almeida and dos Santos Machado (2021) that educational serious games are frequently presented to students by their teachers, directing them to play rather than play willingly. As Maher et al. (2020) observe, gamification concept has recently been considered to motivate and engage learners to maximize learning outcomes. Thus, gamified adaptive educational systems can aid in engaging learners in the learning process at their own pace, allowing them to learn while having fun and developing skills based on their learning preferences. It is relevant to the results of this study showing that the overall mean demonstrates a very high level of learning behavior in terms of interest (table 3) of students in learning mathematics. This suggests that the respondents are interested in learning more about the subject and they can make use of that interest by turning their free time into something more useful. The highest mean was 3.63 with a standard deviation of 0.59 in which students strongly agreed with the indicators inferred that students are more interested in the mathematics subject and it also aids in their integration of the subject into a significant and more realistic viewpoint. The fact that students strongly agreed with the study's indicators and posted a high level suggests that interest is being observed. In addition to that, e-learning games become a useful educational tool for students learning Mathematics.

Table 3

Perceived Learning Behavior in Mathematics

Indicators	Mean	SD	Verbal Interpretation
Interest	3.51	0.73	VH
Confidence	3.39	0.75	H
Motivation	3.57	0.65	VH
Usefulness	3.50	0.70	VH
OVERALL	3.49	0.71	H

Legend: 3.50- 4.00 Strongly Agree/Very High (VH), 2.50- 3.49 Agree/High (H), 1.50- 2.49 Disagree/Low (L), 1.00- 1.49 Strongly Disagree/Very Low (VL)

The overall mean of 3.49 shown in Table 3 posted a high level of learning behavior indicating that the respondents have already figured out how to behave when learning mathematics in a way that will allow them to learn and interact with others. Motivation

exhibited the highest mean of 3.57 which also translates to a very high learning behavior when students were thought to observed it in themselves followed by interest, with a mean of 3.51 and usefulness with 3.50 interpreted as both very high. Contrarily, confidence has the lowest mean of 3.39 which only posted high, meaning that it was also observed in their behavior in the classroom when learning mathematics.

The results show that there is a clear connection between motivation and confidence that is similar to the study of Otoo et al. (2018) that confidence directly influences students' enthusiasm for learning mathematics. Students with mathematical confidence is more enthusiastic and motivated to learn more and be engaged in learning mathematics. Additionally, students desire to learn mathematics is heavily influenced by their understanding of its value.

Table 4

Relationship between the Enjoyment of e-learning games and Learning behavior

	Interest	Confidence	Motivation	Usefulness
Concentration	.535**	.598**	.672**	.654**
Goal Clarity	.700**	.621**	.720**	.619**
Feedback	.688**	.730**	.757**	.725**
Challenge	.582**	.638**	.619**	.682**
Freedom	.547**	.505**	.525**	.592**
Immersion	.597**	.653**	.634**	.545**
Social Interaction	.698**	.590**	.772**	.903**
Knowledge Improvement	.739**	.607**	.683**	.817**

**. Correlation is significant at the 0.01 level (2-tailed).

Table 4 shows that there is a positive significant relationship between enjoyment of e-learning games and the learning behavior of grade 6 pupils in mathematics. It is reflected that there is a positive significant relationship between concentration as an enjoyment description of e-learning games and the learning behavior of grade 6 pupils in mathematics. It only means that a moderate extent of concentration in the lessons that students need to understand, would lead and help them characterized the essentials of learning behavior by having a very high level of interest, confidence, motivation, and usefulness. It only shows that playing e-learning games wherein student is truly focused on the mechanics of the game and how they would be able to

capture the learning content in mathematics while enjoying it would help them to understand the certain problems that they need to explore (Mendoza et al. 2018).

Moreover, goal clarity as an enjoyment description of e-learning games has a positive significant relationship to the learning behavior. It only means that a great extent of goal clarity in learning mathematics subjects helps student to consider the fundamentals of learning behavior by having a high level of interest, confidence, motivation, and usefulness. It shows that playing e-learning games wherein students understand clearly the goals of the game are likely to participate, learn and engage in the learning process while still having a great time playing. There is also a positive significant relationship between feedback as an enjoyment description of e-learning games and the learning behavior. It only means that a great extent of feedback helps the students to be able to characterize the learning behaviors by showing a high level of interest, confidence, motivation, and usefulness. It shows that students are being notified regarding the progress they are having while using or playing e-learning games during mathematics class and how they can enhance their knowledge would help them to grasp the learning in mathematics subject. Challenge as an enjoyment description of e-learning games also posted a positive significant relationship to the learning behavior. It means that a great extent of challenge will help them characterize the importance of learning behavior by showing a high level of interest, confidence, motivation, and usefulness. It only shows that playing e-learning games with obstacles and challenges while having fun would develop their logical and critical thinking in completing and accomplishing mathematical tasks. Challenge plays an important role in experiencing enjoyment.

It is evident in the table that autonomy as an enjoyment description of e-learning games has a positive significant relationship to the learning behavior of grade 6 pupils in mathematics. It only means that a moderate extent of autonomy in lessons enables learner to determine the essentials of learning behavior posted a high level of interest, confidence, motivation, and usefulness. It shows that having the freedom on playing e-learning games, being able to express themselves and explore would help to improve their understanding and learning mathematics. Students claimed that they reconceptualized the skills they learned in the class in other DVGs to guess the meaning of unknown vocabulary (Ebrahimzadeh & Alavi, 2016). Similarly, there is a positive significant relationship between immersion as an enjoyment description of e-learning games and the learning behavior. It only means that a moderate extent of immersion in the lessons helped students to be exposed and aware and lead them to characterized the

essentials of learning behavior by having a very high level of interest, confidence, motivation, and usefulness. It only shows that playing e-learning games wherein a student truly feels a sense of belongingness, involvement in the game itself, and make real-time decision over long periods helps to capture the learning content in mathematics that would help and train students to solve hard problems while experiencing the simulation of real life (Kassymova et al., 2020).

There is a positive significant relationship between social interaction as an enjoyment description of e-learning games and the learning behavior. It only means that a great extent of social interaction in the lessons where students need to cooperate with peers to achieve the learning goals helped them characterized the essentials of learning behavior by having a very high level of interest, confidence, motivation, and usefulness. It only shows that playing e-learning games wherein a student feels that he or she is participating in a learning assignment through a game that requires teamwork with peers to achieve the learning goals helps to capture the learning content in mathematics while enjoying would help students to engage in mathematical activities which is similar to the findings of Retnowati et al. (2017).

It is also shown in the table that there is a positive significant relationship between knowledge improvement as an enjoyment description of e-learning games and the learning behavior. It only means that a great extent of knowledge improvement in the lessons would lead and help them to characterized the essentials of learning behavior by having a very high level of interest, confidence, motivation, and usefulness. It means that playing e-learning games wherein a student truly improved their knowledge of the game and how they would be able to capture the learning content in mathematics while enjoying it, helps them use games to broaden their knowledge and inspired to use what they have learned in games demonstrated significant knowledge improvement.

5. Conclusion

The findings reflect that all components of enjoyment of e-learning games is to a moderate extent which is considered as one of the factors that drive students to enjoy and participate in learning activities, also determines whether they will engage and learn even more. In terms of the perception as to how student describe their behavior in mathematics, their interest, confidence, motivation, and usefulness posted a high level indicates respondents have noticed that they have already figured out how to behave when learning mathematics in a way that will allow them to learn and interact with others. It was manifested in the findings that there is a significant relationship between the Enjoyment of e-learning games and the learning

behavior of Grade 6 in Mathematics. The more that students enjoy playing e-learning games, the more they learn and gain knowledge in the subject of mathematics. The variables under the enjoyment of e-learning games of the students have a positive significant relationship to the student's learning behavior in mathematics. It is shown that students felt the effectiveness of e-learning games to boost their enjoyment when it comes to the said subject which also implies that the usage of e-learning games as an effective teaching tool can contribute to successfully improved students' learning behavior in studying mathematics.

The outcome of the study recommends that the teacher may consider providing more activities wherein the discussion is in detail as well as activities wherein students will be more engaged and have the freedom to express their knowledge in the mathematics subject. It is also recommended that a certain learning task will be provided to the learners wherein they are the ones who will present their work to their classmates so that it can boost their confidence that they know something in line with mathematics. This study suggested among the teachers may consider the e-Learning games that are provided to the learners have an element of enjoyment since it would help learners to appreciate further mathematical concepts. Furthermore, a parallel study can be conducted to further the knowledge of teachers on whether the enjoyment of e-Learning games can be used and utilized in other subjects aside from mathematics or whether the learning behavior presented here can be modified.

Appendices

Appendix A

Extent of Enjoyment of e-learning Games in Learning Mathematics

Indicators	Mean	SD	Verbal Interpretation
Concentration			
1. Game grabs my attention	3.37	0.72	ME
2. Game provides content that stimulates my attention.	3.43	0.86	ME
3. Gaming activities are related to the learning task.	3.6	0.67	GE
4. I can stay focused on the game if I concentrate on the tasks that I should be concentrating on.	3.43	0.82	ME
5. It is easier for me to do tasks that seem unrelated.	3.03	0.93	ME
6. Workload in the game is appropriate.	3.33	0.8	ME
OVERALL	**3.37**	**0.8**	**ME**
Goal Clarity			
1. Overall game goals were clearly presented in the beginning of the game.	3.6	0.67	GE
2. Intermediate goals were clearly presented in the beginning of each scene.	3.63	0.56	GE
3. Learning goals were clearly understood through the game.	3.67	0.57	GE
OVERALL	**3.63**	**0.59**	**GE**
Feedback			

I receive…

1.	feedback on my progress in the game.	3.57	0.68	GE
2.	immediate feedback on my actions during the game.	3.47	0.68	ME
3.	new tasks immediately.	3.63	0.61	GE
4.	new events immediately.	3.47	0.68	ME
5.	information on my success (or failure) of intermediate goals immediately.	3.7	0.47	GE
6.	information on my status, such as score or level.	3.63	0.61	GE
	OVERALL	**3.58**	**0.61**	**GE**

Challenge

1.	I enjoy the game without feeling bored or anxious.	3.67	0.48	GE
2.	Challenge is enough and appropriate.	3.53	0.63	GE
3.	Game provides ''hints" that help me overcome the challenges.	3.53	0.68	GE
4.	Game provides ''online support" that helps me overcome the challenges.	3.6	0.5	GE
5.	My skill gradually improves through the course of overcoming the challenges.	3.57	0.57	GE
6.	I am encouraged by the improvement of my skills.	3.67	0.48	GE
7.	As my skills improved, the difficulty of challenges increases.	3.47	0.63	ME
8.	Game provides new challenges with appropriate pacing.	3.53	0.68	GE
9.	Game provides different levels of challenges suited to different players.	3.43	0.73	ME
	OVERALL	**3.56**	**0.6**	**GE**

Autonomy

1.	I have the control over the menu such as start, stop, save, etc.	3.57	0.57	GE
2.	I have control over interactions between roles or objects.	3.53	0.51	GE
3.	The game supports my recovery from errors.	3.5	0.63	GE
4.	I can use strategies freely.	3.4	0.77	ME
5.	I have a control and mastery over the game.	3.5	0.63	GE
6.	I know the next step in the game.	3.4	0.67	ME
	OVERALL	**3.48**	**0.63**	**ME**

Immersion

		3.23	0.9	ME
2.	I temporarily forget worries about everyday life while playing the game.	3.23	0.94	ME
3.	I am too exposed in the game.	3.03	0.93	ME
4.	I feel unconsciously involved in the game.	3.1	0.8	ME
	OVERALL	**3.15**	**0.89**	**ME**

1.	I feel cooperative toward other classmates.	3.43	0.68	ME
2.	I strongly collaborate with other classmates.	3.47	0.63	ME
3.	Teamwork in the game is effective for learning.	3.63	0.56	GE
4.	Game supports social interaction between players (chat, etc.)	3.63	0.56	GE
	OVERALL	**3.54**	**0.6**	**GE**

Knowledge Improvement

1.	Game increases my knowledge.	3.57	0.5	GE
2.	I applied the basic ideas of the knowledge taught in the game.	3.63	0.56	GE
3.	Game motivates me to integrate the knowledge taught.	3.63	0.56	GE
4.	I want to know more about the knowledge taught.	3.6	0.56	GE
	OVERALL	**3.61**	**0.54**	**GE**

Appendix B

Perceived Learning Behavior in Mathematics

Indicators	Mean	SD	Verbal Interpretation
Interest			
Playing e-learning games in Mathematics…			
1. makes the subject interesting to me.	3.53	0.73	SA
2. allows me to integrate the lesson to other subjects	3.47	0.78	A
3. helps me develop my critical thinking.	3.5	0.78	SA
4. makes my leisure time worth productive for the subject	3.53	0.63	SA
5. helps me apply lessons to real perspective.	3.53	0.73	SA
OVERALL	**3.51**	**0.73**	**SA**
Confidence			
Playing e-learning games in Mathematics makes me…			
1. think logically.	3.27	0.94	A
2. confident in learning the lesson.	3.47	0.73	A
3. follow the lesson.	3.37	0.61	A
4. good in problem-solving.	3.43	0.73	A
5. feel good in the subject	3.43	0.73	A
OVERALL	**3.39**	**0.75**	**A**
Motivation			
Playing e-learning games in Mathematics helps me…			
1. to learn the subject on my own.	3.7	0.65	SA
2. feel encouraged to learn the subject.	3.63	0.56	SA
3. to gain knowledge in Mathematics.	3.67	0.48	SA
4. develop myself more in learning the subject.	3.5	0.73	SA
5. to develop my reasoning ability.	3.37	0.85	A
OVERALL	**3.57**	**0.65**	**SA**
Usefulness			
Playing e-learning games in Mathematics makes me…			
1. realize the importance of the subject.	3.5	0.82	SA
2. apply the lesson in everyday life.	3.5	0.68	SA
3. learn other subjects.	3.67	0.55	SA
4. apply learning to solve real-life situations.	3.5	0.68	SA
5. engaged throughout the lesson.	3.33	0.76	A
OVERALL	**3.5**	**0.7**	**SA**

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Social Media Usage and The Academic Performance of Filipino Junior High School Students

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Abstract

Social media has become integral to people's lives; revolutionizing communication and providing opportunities to learn about societal trends and issues. This study aimed to examine the influence of social media on the academic performance of junior high school students in Marawi City, Lanao Del Sur, Philippines during the 2022-2023 academic year. It employed a descriptive-correlational research approach to explore the impact of social media usage on academic socialization, entertainment, and informative aspects and its association with academic performance. The study used simple random sampling to select junior high school students from the target school. The findings indicated that students utilized social media for various purposes, including conducting research, problem-solving, peer interaction, curriculum understanding, and collaborative learning. Participants agreed that social media positively influenced their academic, socialization, entertainment, and informative experiences. However, no significant correlation was found between social media usage and academic performance. As a result, educators encourage the responsible use of social media in students' learning processes. At the same time, school administrators should support teachers in integrating social media into their instructional approaches and classroom activities.

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1. Introduction

Social media have become a significant part of people's lives since its inception. It has revolutionized how people communicate and learn about societal trends and problems, making it one of the most potent tools for swaying and educating society. According to Kemp (2022), 92.05 million people used social media in the Philippines in January 2022, representing 82.4% of the country's population. However, it is essential to consider that this number may not accurately reflect the number of people using social media since some individuals may have multiple accounts on different platforms.

Social media can be conceptualized as a virtual platform that enables individuals to create, share, and exchange user-generated content and engage in online interactions. It has become an integral part of modern society, transforming communication, information sharing, and social interactions. Social media platforms such as Facebook, Twitter, Instagram, and YouTube have gained immense popularity, connecting people from diverse backgrounds and allowing them to express themselves in various forms (Kaplan & Haenlein, 2010; Boyd & Ellison, 2007). Further, social media platforms allow individuals to connect and interact with others, facilitating socialization, community building, and the exchange of ideas and information. Users can maintain social connections, share personal updates, photos, and videos, and participate in discussions on various topics of interest. These platforms offer opportunities for individuals to express their identities, showcase their talents, and engage in virtual communities with shared interests or goals (Ellison et al., 2007; Boyd, 2010).

The 2019 study of more than 6,500 12- to 15-year-olds in the U.S. found that those who spent more than three hours a day using social media might be at heightened risk for mental health problems (Williams, 2019). Another 2019 study of more than 12,000 13- to 16-year-olds in England found that using social media more than three times a day predicted poor mental health and well-being in teens (Kaneshiro, 2021). Other studies also have observed links between high levels of social media use and depression or anxiety symptoms. A 2016 study of more than 450 teens found that greater social media use, nighttime social media use, and emotional investment in social media — such as feeling upset when prevented from logging on — were each linked with worse sleep quality and higher levels of anxiety and depression (Woods & Scott, 2016).

Experts suggest that because of teens' impulsive nature, teens who post content on social media are at risk of sharing intimate photos or highly personal stories that can be resulted in teens being bullied, harassed, or even blackmailed. Teens often create posts without considering these consequences or privacy concerns. However, the impact of social media on education is also becoming increasingly relevant nowadays. As technology continues to develop, the way people acquire education constantly changes. Social media have the potential to complement traditional education methods, providing students with access to new educational opportunities.

While there are studies on the effects of social media usage on the academic performance of Filipino students (Cabral, 2016; Ditche, 2021; Kabigting et al., 2021), there are limited studies measuring its effect relative to different dimensions. Therefore, this study aimed to identify the impact of social media on the academic performance of junior high school students for the school year 2022-2023. The study used a descriptive-correlational research approach to analyze the impact of social media usage relative to academic, socialization, entertainment, and informative aspects on their academic performance.

2. Literature Review

2.1 Theoretical Framework

Several theories were used as the framework of this study, such as Constructivist Learning Theory (Bruner, 1966), Connectivism (Siemens, 2005), and Social Information Processing Theory (Walther, 2015).

Constructivist Learning Theory. This theory suggests that learners actively participate in constructing their knowledge through experiences. Each individual reflects on their experiences and integrates new ideas with prior knowledge. The central idea of constructivism is that students build on their current understanding by enhancing their experiences with new information (Bruner, 1966). Social media plays a role in students' learning experiences, as their use of it can impact how they learn. Therefore, it is essential to examine how students use social media, given its integration into their daily lives. By understanding the influence of social media on students, it can be regulated or strengthened its positive use.

Additionally, understanding students' experiences with social media can help teachers determine how to address them in the classroom. The constructivist learning theory emphasizes that learners construct knowledge based on their experiences. According to Bruner (1966), students build on their current understanding of a topic by integrating new information into their prior knowledge. Social media has become a significant part of student's lives and can influence their learning. As such, it is crucial to investigate how students use social media to determine its impact on their learning experiences. Understanding the role of social media in students' lives helps to determine how to encourage positive use and address any adverse effects in the classroom. In order to effectively address the impact of social media on students' learning experiences, it is essential to examine their use of social media. By understanding how students use social media, teachers can develop strategies to support their learning and mitigate any adverse effects. Additionally, this knowledge can inform school policies and regulations surrounding the use of social media in the educational setting. Thus, understanding students' experiences with social media is crucial for educators to develop effective teaching strategies and promote the positive use of social media.

Connectivism. Accessing information when needed but unknown is crucial in the age of continuous knowledge growth and evolution. Connectivism, a learning theory introduced by Siemens (2005), recognizes the significant impact of new learning tools and the changing environment in which learning occurs. This theory proposes that learning is no longer an individualistic activity but a collaborative effort where learners interact with information and other people to construct knowledge. In this digital era, students are encouraged to seek information online and express what they find, while learning may reside in non-human appliances. Social media is a new learning tool for students to connect with knowledge and information. The use of social media has been found to significantly impact academic performance, particularly students' learning motivation, and engagement (Kirschner & Karpinski, 2010). Social media can allow students to engage in collaborative learning activities and access and share knowledge and information beyond the classroom. However, the impact of social media on academic performance is only sometimes positive, as it can also lead to distraction and time-wasting behaviors (Kirschner & Karpinski, 2010). Therefore, educators need to understand how to regulate or strengthen the positive use of social media in the learning process. Connectivism theory can provide insight into the learning skills and tasks needed for

students to flourish in the digital era and to make the most of the learning opportunities provided by social media.

Social Information Processing Theory. The social information processing theory explains how people use computer-mediated communication to establish and develop interpersonal relationships over time online. The theory acknowledges the absence of nonverbal cues in text-based communication and how this affects how communicators adapt to the medium. According to Walther (2015), individuals require more time to process information in such code systems than in face-to-face communication to achieve the same level of interpersonal development. The theory suggests that the more students use social media, the more likely they are to be influenced by their peers on social media, which can impact their academic performance.

2.2 Social Media Usage

Social media has become integral to modern society, shaping various aspects of human life. Its usage can be conceptualized concerning academic, socialization, entertainment, and informative purposes. Regarding academics, social media platforms offer opportunities for knowledge sharing, collaboration, and access to educational resources. Students and educators can engage in online discussions, join academic communities, and follow relevant pages and accounts to stay updated on research and developments in their field (Raut & Patil, 2016). However, it is essential to note that social media's impact on academic performance is a topic of debate, as excessive usage can lead to distractions and decreased focus on studies (Kirschner & Karpinski, 2010). Socialization is another significant aspect of social media usage. Platforms like Facebook, Twitter, and Instagram allow individuals to connect with friends, family, and colleagues, regardless of geographical distance. These platforms enable people to share life updates, communicate through messaging and video calls, and maintain social connections (Boyd & Ellison, 2007). However, there are concerns regarding the impact of excessive social media use on mental health, as it can lead to feelings of social comparison, isolation, and anxiety (Kross et al., 2013).

Regarding entertainment, social media platforms offer a wide range of content, including memes, videos, music, and games. Users can follow their favorite celebrities, influencers, and content creators, engaging with their posts and participating in discussions.

Social media has transformed the entertainment industry by providing new content consumption and production avenues, allowing individuals to discover and share entertainment-related content easily (Kim, 2019). Lastly, social media serves as a valuable source of information. News outlets, organizations, and individuals use Twitter and LinkedIn to share news updates, articles, and professional insights. Social media has democratized information dissemination, allowing users to access diverse perspectives and discuss current events (Bruns et al., 2012). However, it is essential to critically evaluate the information shared on social media, as misinformation and fake news are prevalent (Pennycook & Rand, 2018).

The proliferation of social media applications such as Facebook, YouTube, and others has led to a global phenomenon of online communication and entertainment (Mowafy, 2018). This trend has been especially popular among young people who are comfortable with technology and have easy access to various social networking platforms. Advances in information and communication technologies (ICT), such as smartphones and tablets, have provided further motivation for using social media (Oguguo et al., 2020). Social media has permeated almost every sector of human life. It has become a common practice for people to spend significant time using these networks due to their speed and durability. This has led to social media changing the public discourse and setting trends and agendas across various industries, including politics, education, technology, and entertainment. Individuals need to stay informed and connected with modern society's latest news and trends. However, social media use is primarily dominated by younger generations (Oguguo et al., 2020).

Social media has become one of the most important communication channels in recent years. The primary purpose of social networking is to facilitate communication between people across distances, allowing individuals to easily share information, files, pictures, and videos and engage in real-time conversations. These systems are called social because they enable effective communication with friends and colleagues while enhancing social ties. Facebook, Twitter, and other social networking sites and forums are their favorite internet sites as they allow individuals to communicate directly with others in a social media context. They play a significant and influential role in decision-making in the global world, particularly in economic, political, social, and educational contexts (Al-Rahmi, 2013). Social media has exploded as a category of online discourse where people create content, share it, bookmark it, and network at an astonishing pace. Social media is rapidly changing public discourse and

setting trends and agendas in various topics, including the environment, politics, technology, and the entertainment industry, due to its ease of use, speed, and reach (Asur & Huberman, 2010).

2.3 Social Media Usage and Academic Performance

While studies have examined the relationship between social media usage and academic performance, some argue that more comprehensive research in this area still needs to be done. Several factors contribute to this argument. Firstly, using social media is a multifaceted activity encompassing various platforms, purposes, and modes of engagement. It is challenging to isolate the impact of social media usage on academic performance, as it often coexists with other factors such as study habits, time management, and personal characteristics. The complex nature of social media usage necessitates a nuanced understanding of its effects on academic performance (Junco, 2015). Secondly, the dynamics of social media are constantly evolving, making it challenging for researchers to keep up with the rapid changes and advancements in platforms and usage patterns. Many studies have focused on specific social media platforms or a limited timeframe, which may not capture the full scope of social media's impact on academic performance (Muralidharan et al., 2017). Moreover, the existing literature on social media and academic performance often relies on self-reported data or subjective measures, which can be biased and inaccurate. Objective measures, such as tracking actual time spent on social media or using digital trace data, are necessary to accurately assess social media usage and its relationship with academic performance (Madge et al., 2009).

However, it is worth noting that some studies have found correlations between excessive social media use and lower academic performance. For example, a study by Kirschner and Karpinski (2010) found that students who reported spending more time on Facebook had lower GPAs. Another study by Junco and Cotton (2012) revealed a negative relationship between time spent on Facebook and academic achievement. Thus, while some studies have examined the link between social media usage and academic performance, there is a lack of comprehensive research in this area. The multifaceted nature of social media usage, the rapid changes in platforms and usage patterns, and the limitations of existing research methods contribute to the need for further investigation.

Even though social media has a negative reputation, students frequently spend their free time on popular platforms such as Facebook, Twitter, and Instagram. While social media

can have positive and negative effects, research shows a significant correlation between social media use and academic performance. A study by Hasnain et al. (2015) evaluated the impact of social media usage on students' academic performance and found an inverse relationship between the two variables. Although social media allows students to gain knowledge and social skills outside of the university, excessive use can negatively impact their academic activities. However, technology can be beneficial when used productively, according to Elias et al. (2021), especially during the current pandemic when mobile phones are critical in academic activities worldwide. Social media has become popular worldwide due to technological development, and students, in particular, spend a considerable amount of time on social media sites, as Celestine and Nonyelum (2018) reported. Their study found that excessive social media use can negatively affect students' academic activities, and they suggest minimizing the time spent on social media to increase productivity.

In a study by Tus et al. (2021), the impact of social media usage on students' academic performance was examined in the context of the new normal of education. The researchers analyzed the mean scores of each subscale in the questionnaire to determine the influence of social media usage. The overall mean scores of the subscales indicate that social media usage positively impacts students' academic performance. Despite the widespread use of social media among university-age students, the positive effects of social media outweigh the adverse effects. Additionally, the study found no significant difference between social media's positive and negative impact on student's academic achievements. Thus, educators and students can utilize social media as a tool for information and communication to enhance the learning process (Mushtaq & Benraghda, 2018).

There has been a linear relationship between academic achievement and the widespread increase in social media use among postsecondary students. As it rises, social media use will inevitably become more prevalent among tertiary students. It became increasingly vital to consider how it affected academic performance. Researchers' findings were conflicting; some discovered that social media use had little to no impact on academic performance, while others discovered both good and negative effects. The use of social media for education has a good relationship with academic achievement. It also proved that using social media can have a negative impact on academic performance (Boahene et al., 2019).

Furthermore, it was crucial to ascertain how social media affected students' academic achievement. The younger generations were those who were being caught up in this quick transformation as technology continued to grow rapidly year after year. To determine whether social media impacted student academic achievement, questionnaires were disseminated via Facebook and emails. The results showed no connection between social media use and academic achievement, and their aggregate grade average made this conclusion very evident (Hashem, 2015).

Moreover, Olutola et al. (2016) also looked at how college students in Katsina State used social media and their study habits. It was impossible to overstate social media use and study habits' importance to kids' academic success. The study found that students study habits improved in direct proportion to their use of social media. It was also deduced that the students who regularly use social media also had superior study habits. They concluded that social media use significantly predicted students' study habits. Our college students study habits and academic performance would improve because of wise social media use. Greater study habits would also result in better academic performance, whereas bad habits would lead to academic failure. In order to improve student performance and ease their study habits in Nigerian tertiary institutions, positive social media use should be strengthened.

3. Methodology

This study utilized a descriptive-correlational research design to investigate the effect of social media usage on the academic performance of junior high school students. The study employed a descriptive design to present the demographic profile of the respondents in terms of age, gender, parents' educational attainment, social media platforms used, hours spent using social media, and weekly allowance as intervening variables. The independent variable was social media usage, categorized into academics, socialization, entertainment, and information. In contrast, the dependent variable was the academic performance of selected junior high school students from one of the schools in Marawi City, Lanao Del Sur, Philippines. for the School Year 2022-2023. Additionally, the study used a correlational design to determine the relationship between social media usage and the respondents' academic performance. The study population included 380 students and the sample size comprised 341 junior high school students selected through simple random sampling.

Table 1

Distribution of the Population and Sampled Students

Year Level	Population	Sample
Grade 7	112	101
Grade 8	84	72
Grade 9	105	95
Grade 10	79	73
Total	**380**	**341**

The participants, majority of the respondents were aged 15-16 years old (n=181 or 53.1%), followed by 13-14 years old (n=90 or 26.4%), and lastly, 19-20 years old (n=8 or 2.3%). This study found more female respondents (n=199 or 58.4%) than male respondents (n=142 or 41.6%). The majority of the fathers of the respondents were college graduates, and 51.9% of the mothers of the respondents were college graduates, followed by 14.4% of college level. Facebook was the respondents' most used social media site, followed by Tiktok, YouTube, Instagram, and others. Most respondents spent at most 6 hours on social media. Most respondents had a weekly allowance of 200-499php.

The study utilized a questionnaire adapted from the study of Gupta and Bashir (2018), to gather data for the study. The questionnaire had two parts, with the first part focusing on the respondents' profiles, including sex, civil status, parents' educational attainment, hours spent using social media, and weekly allowance. The second part of the questionnaire contained questions about social media usage regarding academics, socialization, entertainment, information, and constraints. The Likert-type instrument had four response options, ranging from strongly agree to disagree strongly. The questionnaire was validated using Cronbach's alpha, which indicated good internal reliability ($\alpha= 0.830$). The respondents' academic performance was measured by their first-quarter grades for the School Year 2022-2023.

The researcher obtained necessary approvals for the conduct of the study. The researcher introduced the study objectives to the respondents before distributing the questionnaire. Participants were given 10-15 minutes to complete the questionnaire at their convenience, and their responses were kept strictly confidential. After gathering the questionnaires, the data were summarized and analyzed using descriptive and inferential

statistics such as frequency, percentages, mean and standard deviation, and Regression analysis (with dummy coded variables).

4. Findings and Discussion

This section presents the results of the statistical analysis in tabular form and the discussions.

4.1 Social Media Usage of the Respondents

This section presents the descriptive statistics results of the social media usage of the respondents in terms of academic, socialization, entertainment, and informative.

Table 2

Consolidated Findings of the Influences of Social Media Usage on the Respondents

Influences of Social Media	M	SD	Description
Academic	2.98	.39	*Agree*
Socialization	2.79	.38	*Agree*
Entertainment	2.92	.55	*Agree*
Informative	2.89	.45	*Agree*
Total Measure	**2.89**	**.32**	***Agree***

Legend: 1.00-1.49 Strongly Disagree; 1.50-2.49 Disagree; 2.50-3.49 Agree; 3.50-4.00   Strongly Agree

M-Mean; SD-Standard Deviation

Table 2 presents consolidated findings of the influences of social media usage on the respondents in terms of their academic, socialization, entertainment, and informative aspects. The mean scores for all four categories are above 2.5, implying that the respondents believe social media usage positively impacts their lives. Regarding academic influence, the respondents have a mean score of 2.98, which indicates a relatively high level of agreement that social media usage positively affects their academic performance. The respondents agreed that they utilize social media to research, solve academic problems, and communicate with peers to prepare for exams. Additionally, they agreed that they use social media for collaborative learning, to learn about their curriculum, and to seek teacher assistance. The skewness measures reveal that the respondents' academic perspectives follow a normal distribution. Hamat et al. (2012) conducted a qualitative research study on using social networking platforms among undergraduate and postgraduate students in Malaysian higher

education institutions. They collected data from 6358 student respondents via a self-administered questionnaire. They analyzed the data to observe the students' use of networking sites and their opinions on the impact of social media on their academic performance. The study found that most respondents use SNSs as an informal learning tool to connect with peers and obtain assistance with their studies.

The mean score for socialization is 2.79 (SD=.38), indicating that social media usage helps the respondents become more sociable and maintain interpersonal relationships. The results indicate that social media usage facilitates the creation of social identity and enhances sociability, although the respondents do not prefer to attend social gatherings through these sites. Moreover, social media strengthens interpersonal relationships, stays in touch with relatives, and keeps updated about current social events. Social media has become an essential communication tool, allowing people to communicate and share information, files, pictures, and videos regardless of distance. This communication is social because it facilitates easy and effective communication with friends and colleagues, strengthening their ties. Facebook, Twitter, and other social forums are their favorite among these websites, offering direct social and media communication with others. These platforms have a significant and influential role in decision-making across various economic, political, social, and educational spheres (Al-Rahmi, 2013).

The mean score for entertainment is 2.92 (SD=.55), indicating that social media usage provides them with entertainment. The results show that social media is commonly used to share pictures, watch movies, look at funny content, and relieve academic stress. This study sheds light on the widespread use of social media due to technological advancements in recent years. Not only are celebrities using these platforms, but the general public has also become substantial social media users. This study aimed to examine the academic outcomes of students who spend a significant amount of time on social media. The findings were primarily positive, as students could share and generate new ideas related to their studies and use social media for entertainment while completing their academic work. Social media has become a routine habit for students, and they spend a significant portion of their time on these sites for entertainment and academic purposes. Students are valuable assets to any country, and through these social media platforms, they can enjoy their academic work (Amin et al., 2016).

The mean score for informative is 2.89 (SD=.45), indicating that social media usage provides them with current information, news, and new ideas. The respondents acknowledged using social media sites to read news, share new ideas, and obtain current information. While the widespread use of social media provides learners with multiple reading opportunities, educators have raised concerns about the excessive use of social media that may lead to compromised reading competence and academic performance (Gagalang, 2021). This study aimed to investigate how social media usage affects university students' reading attitudes and competence (N=101), which are crucial for academic success. The findings showed that social media platforms were primarily used for non-educational purposes. Although the students had positive attitudes towards reading, they showed ineptitude in reading competence, and there needed to be more interest in productive reading attitudes, such as finding time to read during vacant hours and having enthusiasm towards advanced reading and reading with friends. Thus, social media usage may have a negative impact on students' reading competence, which may ultimately affect their academic performance.

The total measure mean score is 2.89 (SD=.32), which indicates an agreement with the positive influence of social media usage on the respondents' lives. These findings suggest that social media usage has become essential to the respondents' daily lives and is considered a valuable tool for academic, social, entertainment, and informative purposes. These findings are consistent with a study by Tus et al. (2021) that found that social media usage could affect students' academic performance.

4.2 Academic Performance of the Respondents

This section presents the distribution of the academic performance of the respondents.

Table 3

Respondents' Academic Performance (General Average)

General Average	Performance Level	Frequency	Percentage
Below 74	Did not meet expectation	2	0.6
75-79	Fairly Satisfactory	15	4.4
80-84	Satisfactory	84	24.6
85-89	Very Satisfactory	107	31.4
90-100	Outstanding	133	39.0
Total		**341**	**100.0**

Note: Mean (SD) = 87.57 (4.92)   Skewness = -.297

Table 3 displays the respondents' academic performance in their first grading period based on their general average. The results indicate that 39% of the respondents obtained an outstanding performance with a general average of 90-100, followed by 31.4% of the respondents having an average grade of 85-89, 24.6% with a general average grade of 80-84, 4.4% with a general average grade of 75-79, and only 0.6% of the respondents received below average grades of 74 or lower. These findings are consistent with the study conducted by Amin et al. (2016) that examined the effect of social media usage on the academic performance of college and university students. The results of the study showed that social media can have a positive effect on academic performance and it can encourage the careers and future of students. The study found that social media sites like Facebook, Twitter, Google+, and Skype can capture students' attention for academic study and positively impact their academic performance.

4.3 Relationship between Social Media Usage and Academic Performance

This section presents the test of the relationship between social media usage and the respondents' academic performance using Multiple Regression Analysis with Simultaneous Entry.

Table 4

Regression Analysis with Simultaneous Entry Relating Academic Performance by Social Media Usage

Predictors	Unstandardized Coefficient		Standardized Coefficients	t-value	P-value
	B	Std. Error	Beta		
Academic	1.239	.778	.097	1.593	.112
Socialization	-1.481	.937	-.116	-1.581	.115
Entertainment	.251	.611	.028	.410	.682
Informative	-.046	.657	-.004	-.070	.944

Note: ANOVA for Regression: F(4,336)=1.008, p=.403 R-square = 0.012

Table 4 presents the regression analysis with simultaneous entry relating to academic performance by social media usage. The result showed that social media usage relative to academic (*B=.097, t=1.593, p=.112*), socialization (*B=-.116, t=-1.581, p=.115*), entertainment (*B=.028, t=.410, p=.682*) and informative (*B=-.004, t=-.070, p=.944*) were not

significantly influence the academic performance of the respondents. This result implied that the perceived social media usage of the respondents did not affect their academic performance. The ANOVA for regression was not significant ($F=1.008, p=.403$), which suggested that the regression model fit significantly predicts the respondents' academic performance. Also, only 1.2% of the variance in the respondents' academic performance was explained by social media usage. Thus, social media usage only significantly influences their academic performance.

Several studies have explored the relationship between social media usage and academic performance. Junco (2012) found that high levels of Facebook use were negatively correlated with academic outcomes, indicating a potential negative influence on student performance. Similarly, Kirschner and Karpinski (2010) discovered a negative association between Facebook use and GPA among college students. However, Pasek et al. (2009) emphasized that the impact of Facebook on academic performance is context-dependent and not universally negative. They argued that high levels of Facebook use do not necessarily lead to lower academic achievement. Additionally, Kuznekoff and Titsworth (2013) demonstrated that mobile phone usage during class time, which often includes social media engagement, negatively affects student learning and academic performance. Lastly, Wang et al. (2012) found that high levels of social media use were associated with lower academic performance and increased multitasking tendencies among college students. These studies highlight the need for a nuanced understanding of the relationship between social media usage and academic performance, considering contextual factors, individual differences, and the potential distractions posed by excessive social media engagement during academic activities.

According to Phulpoto (2017), the popularity of social media among higher education students is ever on the rise and is frequently associated with deteriorated academic performance. Correlation analysis showed a significant negative relationship between social media usage and academic performance. Hierarchical multiple regressions demonstrated that personality traits moderated the relationship between social media usage and academic performance. Specifically, the relationship's significant moderators were extraversion, conscientiousness, and openness. Therefore, it was concluded that increased social media usage was associated with decreased academic performance. However, personality traits such as consciousness and openness may render helpful in neutralizing the adverse effects. As an effort to highlight the underlying mechanisms of the relationship, findings suggest a need to

sensitize students and educators about the potential academic risks associated with high-frequency social media use.

5. Conclusion and Recommendation

The findings indicate that the respondents employed social networking sites to research, find solutions to academic challenges, and communicate with friends in preparation for exams. Social media platforms were also used for educational purposes, such as seeking assistance from teachers, accessing curriculum information, and collaborating with peers. The respondents disagreed that they preferred social media over attending social gatherings but acknowledged using social media to enhance their sociability and develop their social identity. In addition, they utilized social media to strengthen interpersonal relationships, stay connected with family, and keep up-to-date with societal developments. Social media sites were used for leisure to share photos, view entertaining posts, watch movies, and decompress from academic pressures. Respondents also employed social media to read news, share new ideas, and obtain current information. The results showed that social media use positively influenced their academic, socialization, entertainment, and informative aspects. Furthermore, the study found that social media usage was not significantly associated with the respondents' academic performance. This result implies that the students' perceived social media usage did not significantly impact their academic performance.

This study recommends that educators promote the positive use of social media in students' learning. School administrators should encourage teachers to integrate social media into their teaching methods and classroom activities. Curriculum planners should acknowledge the role of social media in students' lives and consider including it in the curriculum. Guidance counselors should raise awareness among students and parents about responsible social media use and ways to harness its positive effects. Moreover, future research should explore other ways social media can benefit students' academic performance and investigate how educators can effectively leverage social media for learning.

The study has several limitations that must be considered when interpreting its findings. Firstly, the sample size is moderate, which may hinder the generalizability of the results to a broader population. Secondly, the data collected relies on self-reports from the respondents, which could be subject to social desirability bias and not accurately reflect their actual

behavior. Thirdly, the study's cross-sectional design makes establishing causality between social media usage and academic performance difficult. Fourthly, the study was conducted in a single location, limiting the generalizability of the results to other contexts. Lastly, the study did not control for other potential factors that could influence academic performance, such as the quality of teaching, family support, and socioeconomic status.

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