

Peer-to-Peer Support in Mathematics Education: Its Effectiveness for College Students in Mindanao State University-Sulu

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Abstract. This study assessed the extent of effectiveness of peer-to-peer support for college students in Mindanao State University-Sulu in the context of study groups, peer review and mentoring. It employed descriptive-correlational research design with 100 student-respondents taken through simple random sampling method. Frequency distribution and percentage, mean and standard deviation, one-way analysis of variance (ANOVA) and Pearson product-moment correlation were the statistical methods used in the study. The following are findings of this study: Of the 100 student-respondents, majority are 20-21 years old, female, 2nd year level, and from the college of Arts and Sciences; The student-respondents agree on the extent of effectiveness of all three variables of peer-to-peer support for college students at Mindanao State University-Sulu; No significant difference in the extent of the effectiveness of peer-to-peer support for college students at Mindanao State University-Sulu when data are grouped according to their demographic profile in terms of age, gender, year level and course; And, generally, there is a significant positive correlation among the sub-categories subsumed under the extent of effectiveness of peer-to-peer support for college students in terms of study groups, peer review and mentoring. This study recommends the following: School heads should impose and support the implementation of peer-to-peer support programs in their institutions to improve the learning outcomes and academic performance of their students in mathematics; Mathematics Teachers should facilitate and implement the use of peer-to-peer support among their students to enhance their motivation and collaboration in learning mathematics; Mathematics teachers should practice their students on how to manage effective study groups, peer review, and peer mentoring sessions; Parents should support and encourage their children to participate in peer-to-peer support activities to help them develop their social skills; Students should actively engage in peer-to-peer support with their classmates to improve their understanding and confidence in learning mathematics; and Future researchers should conduct further studies on the effectiveness of peer-to-peer support for college students especially in different contexts and disciplines.

Keywords: Peer-to-peer support; Mathematics education; Study groups; Peer review; Mentoring.

1.0 Introduction

A support system from another person is known as peer-to-peer. You can get information, instruction, and direction from them; they might be your mentors, classmates, or fellow members of your group. Through sharing and working together, peer-to-peer assistance is a mutual aid system. In order to promote one another's success, peers might offer encouragement and firsthand knowledge to one another. Having good peer-to-peer support helps to foster a sense of community among students. According to Carmody and Wood (2009), peer tutoring in university mathematics improves both tutors' and students' education, bridging the budget gap and fostering independent learning and responsible learning.

Peer-to-peer learning is an educational approach that involves communication and interaction between students outside of the traditional classroom setting, where students gather to interact with one another and work toward academic goals. It is essentially learning support that facilitates student collaboration, learning, and connection. A peer who is more informed or has a better grasp of the subject than the peer provides the peer with an explanation. This peer must converse with them and speak the same language. As such, the practice lends a complimentary tone to traditional training. Instead of working against one another, they enhance one another. Peers are people who are in the same class as you and who are similar to you in terms of education, experience, and background in traditional educational contexts like universities or the workplace (LinkedIn, 2021).

According to Boud et al. (1999), peer learning is a teaching and learning approach where students learn alongside and from one another without the direct assistance of a teacher. By giving them more access to resources and information on higher order thinking, peers with experience can support the development and success of other students. According to Tipping et al. (2017), peer learning can support students in achieving academic achievement, forming cooperative connections with others, appreciating diversity, and exploring other viewpoints.

In both hospital and educational contexts, peer support has been established as a scalable strategy for growing the number of mental health professionals (King and Fazel, 2021; White et al., 2020). Studies show improvements in self-confidence, self-esteem, self-management, hope, empowerment, and loneliness in educational and medical environments. It has been discovered that peer work treatments enhance a number of important outcomes (White et al., 2020; Johnson et al., 2018; King and Fazel, 2021). In addition to encouraging empowerment, optimism, and rehabilitation, the two-way communication lessens social isolation (Mead et al., 2001).

According to Boud et al. (1999), peer learning is a teaching and learning approach where students learn alongside and from one another without the direct assistance of a teacher. By giving them more access to resources and information on higher order thinking, peers with experience can support the development and success of other students. Peer learning can support students in valuing diversity, exploring many points of view, forming cooperative connections with others, and achieving academic achievement (Topping et al., 2017).

Peers frequently help others by providing methodical behavioral treatments or adaptable mutual peer support (Repper & Carter, 2011; Byrom, 2018). In both hospital and educational contexts, peer support has been established as a scalable strategy for growing the number of mental health professionals (; White et al., 2020; King and Fazel, 2021). Studies show improvements in self-confidence, self-esteem, self-management, hope, empowerment, and loneliness in educational and medical environments. It has been discovered that peer work treatments enhance a number of important outcomes (Johnson et al., 2018; White et al., 2020; King and Fazel, 2021). By offering each other social, practical, and emotional support, the two-way relationship promotes empowerment, hope, and recovery (Mead et al., 2001).

According to Gershenfeld (2014) and Menzies and Baron (2014), peer mentoring and student organizations are often hierarchical and concentrate on the academic growth of the student mentee. Peer mentorship has been shown to enhance professional and academic achievements, while peer support has been shown in individual research to improve mental health and reduce depression and anxiety scores (Terrior and Leonard, 2007; Kilpela et al., 2016; Byrom, 2018; Leavitt et al., 2022). Research indicates that mentoring can help students feel less distressed psychologically, adjust more easily, and obtain better results (Grossman & Rhodes, 2002; Bernard et al., 2005; Harmon, 2006; Hurd et al., 2014; Hurd, Tan, & Loeb, 2016). University students attest to the benefits of mentoring programs for enhancing their academic performance, adjustment, retention, and accomplishment (Johnson et al., 2007; Jain et al., 2016; Yomtov et al., 2017).

On May 29, 2023, the national student clearinghouse reported that 76.3% of students were still enrolled in public four-year colleges. That approximately one in every four pupils left their school to pursue their studies elsewhere or not at all. A lack of support is one of the many reasons why students drop out of school. Without the necessary resources, academic difficulties might feel daunting and unachievable. Isolation, social issues, and financial difficulties are some other variables to consider. A number of academics believe that when students participate in informal learning, peer interaction helps them succeed and stay in higher education (e.g., Kahu & Nelson, 2018).

Many Higher Education Institutions (HEIs) have used peer support initiatives for students for several years. is widely used in higher education to promote student retention and success. When peer assistance is integrated into a supportive school-wide attitude or policy, it performs better (Cowie & Jennifer, 2007; Cowie & Smith, 2010).

Based on the articles stated above, it appears that peer-to-peer support is vital for the success of other students. Students frequently seek support from friends and family, especially when distressed, and this may or may not be a precursor to seeking additional aid (Mantzios, 2020). As a result, the researcher intends to address this issue by assessing the efficiency of peer-to-peer support and its indications using Vygotsky's Social Development Theory/Lev Vygotsky's Sociocultural Theory of Cognitive Development. Thus, this study examined the effectiveness of peer-to-peer support in mathematics education for college students in Mindanao State University-Sulu.

2.0 Methodology

2.1 Research Design

This study used the descriptive-correlational technique because it is most suited for gathering information on the specific issue at hand and assessing the research's hypotheses. Gay (1976) states that the descriptive-correlational technique involves data collection in order to test hypotheses and offer answers to the subject matter of the research as it stands at the moment.

2.2 Research Participants

Respondents to the poll were one hundred college students from Mindanao State University-Sulu selected using purposive sampling technique. Purposive sampling was the method and approach employed in this study, using a deliberately selected sample population of Mindanao State University-Sulu students. The sampling design was used since it made easier for the researcher to collect data from the respondents.

2.3 Research Instrument

This study employed a checklist-style survey questionnaire that was modified, patterned, and updated from Peer Support Is Effective! by Clark and Andrews (2011). The survey questionnaire was broken up into two parts. The questions in Part I pertain to the respondents' demographic profile. Three components make up Part II: peer mentoring (5 items), peer review (7 items), and study groups (6 items). The Andrews and Clark's (2011) research tool was altered, developed, and modeled. To make sure it was relevant for the current study and its local circumstances, the questionnaire was examined by a minimum of two experts from the Graduate Studies faculty at Sulu State College.

2.4 Data Gathering Procedure

The researcher started her questionnaire after receiving approval from the Dean's Office of Graduate Studies. Upon obtaining the authorization letter from the Graduate Studies Dean's Office, the researcher promptly moved on to request the Chancellor of Mindanao State University-Sulu for approval. The researcher gave the instruments to the sample respondents, who were listed, after consent of the authority from Mindanao State University-Sulu to administer the instrument.

2.5 Data Analysis

The statistical tools listed below were used to process the data:

1. Frequency distribution and percentage were the statistical methods employed to ascertain the study's demographic profile.
2. Mean and standard deviation were used to assess the degree of efficacy of peer-to-peer support in Mathematics.
3. One-way Analysis of Variance (ANOVA) was used to determine if there is a significant difference in the effectiveness of peer-to-peer support for college students at Mindanao State University-Sulu when data are grouped according to profile.
4. Pearson product-moment correlation was used to ascertain the significant correlation among the subcategories subsume under the effectiveness of peer-to-peer support in Mathematics.

3.0 Results and Discussion

3.1 Profile of the respondents

Table 1. Student-respondents' demographic profile

	FREQUENCY	PERCENTAGE
Age		
19 years old and below	22	22%
20-21 years old	60	60%
22 years old and above	18	18%
Gender		
Male	47	47%
Female	53	53%
Year Level		
1 st year	14	14%
2 nd year	58	58%
3 rd year	11	11%
4 th year	17	17%
Course		
College of Arts and Sciences	34	34%
College of Computer Studies	33	33%
College of Education	33	33%

Table 1 presents the demographic profile of the student-respondents at Mindanao State University-Sulu in terms of age, gender, year level and course. The table indicates that out of 100 student-respondents, it highly concentrated in the 20-21 years old group which makes up 60% (60), while 19 years old and below, and 22 years old and above account for 22% (22) and 18% (18), respectively. This implies that most of the student-respondents are in the typical age range for college and that there are fewer who are younger or older than the average. The table also indicates that out of 100 student-respondents, it slightly skewed toward females who make up 53% (53), while males account for 47% (47). This implies an even representation of male and female student-respondents in the surveyed group. Moreover, it indicates that out of 100 student-respondents, it highly concentrated toward 2nd year level who make up 58% (58), while 4th year level, 1st year level, and 3rd year level account for 17% (17), 14% (14), and 11% (11), respectively. This implies a higher participation or representation of 2nd year student-respondents in the surveyed group. In addition, it indicates that out of 100 student-respondents, it slightly favors the college of Arts and Sciences who make up 34% (34), while the college of Computer Studies and the college of Education have an equal representation accounting for 33% (33) each. This implies that there is no dominant or preferred course in the surveyed group.

3.2 Effectiveness of Peer-To-Peer Support

In terms of Study Groups

Table 2. Extent of effectiveness of peer-to-peer support in terms of study groups

INDICATORS	MEAN	SD	RATING
1. work in groups are better able to communicate with each other.	4.47	0.643	Agree
2. When I explain the lesson to my group, I get more knowledge.	4.26	0.812	Agree
3. I dislike working in groups because my group members engage in off-task activities (e.g., chatting, jokes).	3.19	1.143	Moderately Agree
4. I expect everyone in a group will contribute and learn.	4.28	0.726	Agree
5. Everyone in a group gets together on a specific day to have lunch, either one person presents a topic of interest to their peers about work-related challenges.	3.96	0.887	Agree
6. When I collaborate with others in a group, I anticipate that everyone will contribute to the discussion and that no one person will take center stage.	4.16	0.813	Agree
Overall Mean	4.053	.4469	Agree

Legend: 4.50-5.00 = Strongly Agree (SA), 3.50-4.49 = Agree (A), 2.50-3.49 = Moderately Agree (MA), 1.50-2.49 = Disagree (D), 1.00-1.49 = Strongly Disagree (SD)

Table 2 shows the extent of effectiveness of peer-to-peer support for college students at Mindanao State University-Sulu in terms in terms of study groups. The result shows that the total mean score is 4.053, which indicates an overall rating of "Agree". This means that on average, the student-respondents agree that study groups are effective as peer-to-peer support. The total standard deviation is 0.4469, which indicates that there is less variation among the student-respondents in their agreement with the statements.

The mean scores indicate that student-respondents agree that they work in a group facility, when they explain the lesson to their group they get more knowledge, anticipate everyone will contribute and learn, and contribute in the discussion, get together on a specific day to present topics about work-related challenges to their peers, but moderately agree that they dislike working in a group who participate in off-task activities. The highest mean score is 4.47, which corresponds to the statement "Working in a group facilitates effective communication with each other." This implies that the student-respondents agree that they value the chance to interact and exchange ideas with their peers in a group setting. The lowest mean score is 3.19, which corresponds to the statement "I dislike to work in a group because my group members engage in off-task activities (e.g., chatting, jokes)." This implies that the student-respondents moderately agree that they face difficulties in maintaining their focus and motivation in a group setting.

In terms of Peer Review

Table 3. Extent of effectiveness of peer-to-peer support in terms of peer review

INDICATORS	MEAN	SD	RATING
1. I develop social skill, When I work with other students (e.g., sharing, cooperating, responsibility, etc.)	4.34	0.831	Agree
2. I learn more if we have each other point of view.	4.43	0.685	Agree
3. When I receive explanation from a peer, I learn more.	4.28	0.780	Agree
4. When I work alone, I learn more.	3.78	0.905	Agree
5. I learn more from his/her point of view, rather than my own.	3.88	0.879	Agree
6. Working together can promote positive students' relationship with others.	4.39	0.680	Agree
Overall Mean	4.183	.5022	Agree

Table 3 shows the extent of effectiveness of peer-to-peer support for college students at Mindanao State University-Sulu in terms in terms of peer review. The result shows that the total mean score is 4.183, which indicates an overall rating of "Agree". This means that on average, the student-respondents agree that peer review is effective as peer-to-peer support. The total standard deviation is 0.5022, which indicates that there is less variation among the student-respondents in their agreement with the statements.

The mean scores indicate that student-respondents agree that they develop social skill, when they work with other students, learn more if they receive each other point of view, learn more when they work alone, and agree that working together can promote positive students' relationships with others. The highest mean score is 4.43, which corresponds to the statement "I learn more if we have each other point of view." This implies that the student-respondents agree that there is a diversity and richness of perspectives that they can gain from their peers in a group setting. The lowest mean score is 3.78, which corresponds to the statement "when I work alone, I learn more." This implies that the student-respondents prefer to work independently and at their own pace.

In terms of Peer Mentoring

Table 4. Extent of effectiveness of peer-to-peer support in terms of peer mentoring

INDICATORS	MEAN	SD	RATING
1. I like working one-on-one with students.	4.07	0.795	Agree
2. Studying mathematics with peer is more interesting than studying alone.	4.35	0.770	Agree
3. I feel that peer mentoring will help me get better marks.	4.18	0.672	Agree
4. Peer mentoring has made me more passionate about my field of study.	4.15	0.672	Agree
5. Peer mentoring has helped me learn on my own.	3.99	0.810	Agree
6. Working with a peer has been shown to be a beneficial learning experience.	4.33	0.682	Agree
Overall Mean	4.178	.5175	Agree

Table 4 shows the extent of effectiveness of peer-to-peer support for college students at Mindanao State University-Sulu in terms in terms of peer mentoring. The result shows that the total mean score is 4.178, which indicates an overall rating of "Agree". This means that on average, the student-respondents agree that peer mentoring is effective as peer-to-peer support. The total standard deviation is 0.5175, which indicates that there is less variation among the student-respondents in their agreement with the statements.

The mean scores indicate that student-respondents agree that they like working one-on-one with students, studying mathematics with peer is more interesting than studying alone, they feel that peer mentoring will help

them get better marks, Peer mentoring has made them more passionate about their field of study, Peer mentoring has helped them learn on their own, and working with a peer has been shown to be a beneficial learning experience. The highest mean score is 4.35, which corresponds to the statement "Studying mathematics with peer is more interesting than studying alone." This implies that the student-respondents agree that enjoy the social and collaborative aspects of studying mathematics with their peers. The lowest mean score is 3.99, which corresponds to the statement "Peer mentoring has helped me learn on my own." This implies that the student-respondents agree that they benefit from the guidance and feedback of their peers in developing their own learning.

3.3 Difference of Results in terms of Demographic Profile

Age

Table 5. Difference in the extent of the effectiveness of peer-to-peer support when data are grouped according to age

SOURCES OF VARIATION		SUM OF SQUARES	DF	MEAN SQUARE	F	SIG.	DESCRIPTION
Study Groups	Between Groups	0.6070	2	0.304	1.537	0.220	Not Significant
	Within Groups	19.164	97	0.198			
	Total	19.771	99				
Peer Review	Between Groups	0.0210	2	0.011	0.041	0.959	Not Significant
	Within Groups	24.951	97	0.257			
	Total	24.972	99				
Peer Mentoring	Between Groups	0.2120	2	0.106	0.390	0.678	Not Significant
	Within Groups	26.302	97	0.271			
	Total	26.514	99				

*Significant at alpha 0.05

Table 5 presents the difference in the extent of the effectiveness of peer-to-peer support for college students at Mindanao State University-Sulu when data are grouped according to age. The effects include Study Group, Peer Review, and Peer Mentoring. The table shows that the F-values and probability values for all effects are not significant at alpha 0.05. This means that the perceptions of student-respondents aged 20 to 21 years old on the extent of these effects do not differ from those of student-respondents aged below 19 years old, and above 22 years old, or vice versa. This implies that the student-respondents perceive the extent of effectiveness of peer-to-peer support in the same way regardless of their age. Therefore, the hypothesis which states that, "There is no significant difference in the extent of the effectiveness of peer-to-peer support for college students at Mindanao State University-Sulu when data are grouped according to age." is accepted.

Gender

Table 6. Difference in the extent of the effectiveness of peer-to-peer support when data are grouped according to gender

VARIABLES	GROUPING	MEAN	SD	MEAN DIFFERENCE	T	SIG.	DESCRIPTION
Study Groups	Male	4.138	0.400	0.160	1.811	0.073	Not Significant
	Female	3.978	0.476				
Peer Review	Male	4.188	0.473	0.009	0.086	0.932	Not Significant
	Female	4.179	0.531				
Peer Mentoring	Male	4.223	0.434	0.085	0.833	0.407	Not Significant
	Female	4.138	0.583				

*Significant at alpha 0.05

Table 6 presents the difference in the extent of the effectiveness of peer-to-peer support for college students at Mindanao State University-Sulu when data are grouped according to gender. The effects include Study Group, Peer Review, and Peer Mentoring. The table shows that the mean difference and probability values for all effects are not significant at alpha 0.05. This means that the extent of these effects does not affect the perceptions of male and female student-respondents differently. This implies that the student-respondents perceive the extent of effectiveness of peer-to-peer support in the same way regardless of their gender. Therefore, the hypothesis which states that, "There is no significant difference in the extent of the effectiveness of peer-to-peer support for college students at Mindanao State University-Sulu when data are grouped according to gender." is accepted.

Year Level

Table 7 presents the difference in the extent of the effectiveness of peer-to-peer support for college students at Mindanao State University-Sulu when data are grouped according to year level. The effects include Study Group, Peer Review, and Peer Mentoring.

Table 7. Difference in the extent of the effectiveness of peer-to-peer support when data are grouped according to year level

SOURCES OF VARIATION		SUM OF SQUARES	DF	MEAN SQUARE	F	SIG.	DESCRIPTION
Study Groups	Between Groups	1.8780	3	0.626	3.359*	0.022	Significant
	Within Groups	17.893	96	0.186			
	Total	19.771	99				
Peer Review	Between Groups	0.6540	3	0.218	0.860	0.465	Not Significant
	Within Groups	24.318	96	0.253			
	Total	24.972	99				
Peer Mentoring	Between Groups	1.2380	3	0.413	1.568	0.202	Not Significant
	Within Groups	25.276	96	0.263			

*Significant at alpha 0.05

The table shows that the F-values and probability values for all effects, except for study groups, are not significant at alpha 0.05. This means that the perceptions of 3rd year student-respondents on the extent of study group effects differ from those of 4th years student-respondents, or vice versa, as shown in table 3.3.1. However, there is no significant difference in the perception of peer review and peer mentoring. This implies that the student-respondents perceive the extent of effectiveness of peer-to-peer support differently depending on their year level, except for peer review and peer mentoring. Therefore, the hypothesis which states that, "There is no significant difference in the extent of the effectiveness of peer-to-peer support for college students at Mindanao State University-Sulu when data are grouped according to year level." is accepted.

Table 8. Multiple comparison of effectiveness of peer-to-peer support by year level

DEPENDENT VARIABLE	(I) GROUPING BY AGE	(J) GROUPING AGE	MEAN DIFFERENCE (I - J)	STD. ERROR	SIG.
Study Groups	3 rd year	1st Year	0.12771	0.17395	0.883
		2nd Year	0.28370	0.14198	0.196
		4th Year	0.48485*	0.16706	0.023

*The mean difference is significant at the 0.05 level

As shown in Table 8, a Post Hoc Analysis using Tukey test was conducted to identify which among groups classified according to year level have different levels of mean in the extent of study groups when data are grouped according to students-respondents' demographic profile in terms of year level. On study groups: It shows that 3rd year student-respondents obtained the mean difference of .48485* with the Standard Error of .16706 and p-value of .023 which is significant at alpha 0.05 over 4th year student-respondents.

Course

Table 9. Difference in the extent of the effectiveness of peer-to-peer support when data are grouped according to course

SOURCES OF VARIATION		SUM OF SQUARES	DF	MEAN SQUARE	F	SIG.	DESCRIPTION
Study Groups	Between Groups	2.887	2	1.443	8.293*	0.000	Significant
	Within Groups	16.884	97	0.174			
	Total	19.771	99				
Peer Review	Between Groups	1.802	2	0.901	3.772*	0.026	Significant
	Within Groups	23.170	97	0.239			
	Total	24.972	99				
Peer Mentoring	Between Groups	1.289	2	0.644	2.477	0.089	Not Significant
	Within Groups	25.226	97	0.260			

*Significant at alpha 0.05

Table 9 presents the difference in the extent of the effectiveness of peer-to-peer support for college students at Mindanao State University-Sulu when data are grouped according to course. The effects include Study Group, Peer Review, and Peer Mentoring. The table shows that the F-values and probability values for all effects, except for peer mentoring, are significant at alpha 0.05. This means that the perceptions of college of arts and sciences student-respondents on the extent of these effects differ from those of college of computer studies, and college of education student-respondents, or vice versa, as shown in table 3.4.1. However, there is no significant difference in the perception of peer mentoring. This implies that the student-respondents perceive the extent of effectiveness of peer-to-peer support differently depending on their year level, except for peer mentoring. Therefore, the hypothesis which states that, "There is no significant difference in the extent of the effectiveness of peer-to-peer support for college students at Mindanao State University-Sulu when data are grouped according to course." is rejected.

Table 10. Multiple comparison of effectiveness of peer-to-peer support by course

DEPENDENT VARIABLE	(I) GROUPING BY AGE	(J) GROUPING AGE	MEAN DIFFERENCE (I - J)	STD. ERROR	SIG.
Study Groups	College of Arts and Sciences	College of Computer Studies	0.3397*	0.10195	0.003
		College of Education	0.3750*	0.10195	0.001
Peer Review	College of Arts and Sciences	College of Computer Studies	0.3278*	0.11943	0.020
		College of Education	0.1712	0.11943	0.328

*The mean difference is significant at the 0.05 level

As shown in Table 10, a Post Hoc Analysis using Tukey test was conducted to identify which among groups classified according to course have different levels of mean in the extent of study groups and peer review when data are grouped according to students-respondents' demographic profile in terms of course.

On study groups: It shows that college of Arts and Sciences student-respondents obtained the mean difference of .33972* with the Standard Error of .10195 and p-value of .003 over college of Computer Studies student-respondents, and a mean difference of .37505* with the Standard Error of .10195 and p-value of .001 over college of education student-respondents which are both significant at alpha 0.05.

On peer review: It shows that college of Arts and Sciences student-respondents obtained the mean difference of .3278* with the Standard Error of .11943 and p-value of .002 over college of Computer Studies student-respondents which is significant at alpha 0.05.

3.4 Correlation Among the Sub-Categories

Table 11. Correlation analysis result

VARIABLES		PEARSON R	SIG.	N	DESCRIPTION
DEPENDENT	INDEPENDENT				
Study Groups	Peer Review	0.634*	.000	100	Moderate
	Peer Mentoring	0.622*	.000	100	Moderate
Peer Review	Peer Mentoring	0.713*	.000	100	Very High

*Correlation coefficient is significant at alpha .05

Correlation Coefficient Scales Adopted from Hopkins, Will (2002): 0.0-0.1 = Nearly Zero; 0.1-0.3 = Low; 0.3-0.5 = Moderate;

0.5-0.7 = High; 0.7-0.9 = Very High; 0.9-1 = Nearly Perfect

Table 11 presents the correlation among the sub-categories subsumed under the effectiveness of peer-to-peer support for college students at Mindanao State University-Sulu. The table shows that the computed Pearson correlation Coefficients (Pearson r) between these variables are significant at alpha 0.05. Specifically, the degree of correlations among the sub-categories subsumed under the effectiveness of peer-to-peer support for college students at Mindanao State University-Sulu are: a) High positive correlations between study groups and peer review, and peer mentoring, and b) Very high positive correlations between peer review and peer mentoring.

This indicates that the other variable tends to increase as one variable increases, and that these relationships are not likely to be random. The strongest correlation is between peer review and peer mentoring ($r = 0.713$, $p < 0.01$), which implies that these two variables of peer support have a very high degree of association and influence each other's effectiveness. The weakest correlation is between study groups and peer mentoring ($r = 0.622$, $p < 0.01$), which implies that these two variables of peer support have a moderate degree of association and influence each other's effectiveness to a lesser extent. Therefore, the hypothesis which states that, "There is no significant correlation among the sub-categories subsumed under the effectiveness of peer-to-peer support for college students at Mindanao State University-Sulu." is rejected.

4.0 Conclusion

The study concludes that:

- Of the 100 student-respondents, majority are 20-21 years old, female, 2nd year level, and from the college of Arts and Sciences. This means that the student-respondents at Mindanao State University-Sulu are a diverse and representative group of college students, with varying age, gender, year level, and course preferences.

- b) The student-respondents agree on the extent of effectiveness of all three variables of peer-to-peer support for college students at Mindanao State University-Sulu. The student-respondents at Mindanao State University-Sulu perceive peer-to-peer support as an effective way of enhancing their learning and academic performance. According to Collier (2017), the two most effective mentoring models for fostering college student achievement are peer (e.g., student-student) and hierarchical (e.g., student-adviser or faculty member).
- c) No significant difference *in the extent of the effectiveness of peer-to-peer support* for college students at Mindanao State University-Sulu when data are grouped according to their demographic profile. The student-respondents at Mindanao State University-Sulu have similar perceptions of the effectiveness of peer-to-peer support regardless of their age and gender. However, their perceptions vary depending on their year level and course. According to Gacosta (2022), regardless of gender, there is no significant difference in the four combinations' achievement levels; however, when partnered with male tutees, the female tutees scored the highest.
- d) Generally, there is a significant positive correlation among the sub-categories subsumed under the extent of effectiveness of peer-to-peer support for college students at Mindanao State University-Sulu. The student-respondents at Mindanao State University-Sulu perceive peer-to-peer support as an effective way where peer mentoring and peer review are the most complementary types of peer support, while study groups and peer mentoring are the least complementary types of peer support. According to Filade et al. (2019), undergraduate students' academic performance is significantly influenced by their peer group. Additionally, there is a strong correlation between students' academic achievement and their peer group.

A study conducted at Mindanao State University-Sulu (MSU-Sulu) revealed that students of various ages, genders, and academic years derived benefits from peer-to-peer support initiatives, such as mentoring and review sessions. Although all forms of support were beneficial, mentoring and review were found to be the most effective. The findings of the research indicated that MSU-Sulu can enhance student learning by promoting peer support programs, customizing them according to the students' academic year and program, and fostering a culture that fosters peer interaction.

The following are recommendations of this study:

- a) School heads should impose and support the implementation of peer-to-peer support programs in their institutions to enhance the learning outcomes and academic performance of their students in mathematics.
- b) Mathematics Teachers should facilitate and implement the use of peer-to-peer support among their students to enhance their motivation and collaboration in learning mathematics.
- c) Mathematics teachers should practice their students on how to manage effective study groups, peer review, and peer mentoring sessions.
- d) Parents should support and encourage their children to participate in peer-to-peer support activities to help them develop their social skills.
- e) Students should actively engage in peer-to-peer support with their classmates to improve their understanding and confidence in learning mathematics.
- f) Future researchers should conduct further studies on the effectiveness of peer-to-peer support for college students especially in different contexts and disciplines.

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7.0 Conflict of Interests

The author declare no conflicts of interest about the publication of this paper.

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