Effectiveness Of Peer Mentoring Program On Academic Performance Of Grade VII Bhutanese Students

Abstract

The study explored the effectiveness of peer mentoring program on academic performance of class VII Bhutanese students. It employed mixed method approach with purposive sampling method. A total of 62 students from grade VII participated in the study. The study found out the mean of the differences (pre-test and post-test) was 5.14 (*SD* = 3.42) and the paired-samples *t*-test indicated that this mean of the differences is significantly greater than zero ($t = 8.36$, $p = .00$, 95% CI[6.39, 3.88]). This indicated that the peer mentoring program had positive impact on academic performance of students. The peer mentoring program also helped students to enhance their communication skills. However, some mentor students mentioned that it was quite hectic when mentees do not cooperate with them.

It is recommended that peer mentoring program should be carried out in schools to improve students' academic performance as well as their communication skills. Further, the present study focused on only some students of grade VII, a study may be carried out across schools to get a deep understanding of the subject.

Keywords: Peer-mentoring, academic, performance, mentee, mentor

Introduction

Education is the key to transform every individual to become a better citizen. The constitution of Bhutan, Article 9, section 16 states "The State shall provide free education to all children of school going age up to tenth standard and ensure that technical and professional

education is made generally available and that higher education is equally accessible to all on the basis of merit" (The Constitution of kingdom of Bhutan, 2008). The promotion of students to next level of education solely depends on the merits that they scored in their respective subjects (Thobchog, 2022). Further, for different levels of classes there are different major and minor category of subjects which are combined to see whether the students are eligible to go to next level or not.

Mathematics is one of the indispensable subjects in this modern era. Moreover, it plays an important role in daily lives of an students, by helping students carry out scientific studies and also in studying other subjects. In Bhutan also, mathematics is considered as important subject in school curriculum and in daily lives of individual students. So, for grade VI to VII, mathematics is a considered as compulsory subject for them to get promoted to next class. However, most of the students do not score very high marks in mathematics and most do not like it too. The liking and disliking of subjects are related to learners' cognitive, affective, psychomotor attributes, tutors' instruction and the learning environment (Gafoor & Kurukkan, 2015).

Peer tutoring is one of an approaches which helps students to improve academic skills as well as social behavior (Olulowo et al., 2020). Moreover, peer tutoring is widely used in teaching and learning in a variety of forms for the benefit of students (Topping, 1996). Further, Collier (2017) also mentioned that peer mentoring is recognized as best-practice for promoting students' success. However, the literatures were all based on students outside Bhutan, thus, the purpose of this study is to explore the effectiveness of peer mentoring program on academic achievement of grade VII Bhutanese students.

Literature Review

Peer mentoring is one of the effective ways to help those students who are not doing well in academics. Researchers have also found that peer mentoring program helped students to develop study skills and other social skills such as sense of belongingness, emotional connection and involvement in social activities (Ashman & Colvin, 2011). Further a study by Bonin (2016) mentioned that peer mentors create safe environment for their mentees to open up with their concerns. Additionally, peer mentoring can improve the student's communication skills and leadership skills (Spaulding et al., 2020). Moreover, the benefits of peer mentoring in terms of academic and other skills were also seen in a study done by Yomtov et al. (2017). Additionally, according to Dennehy and Dasgupta (2017), female peer mentoring also has positive impact on academic performance of the students.

Moreover, peer mentoring benefits mentors as well. Mentors are benefitted in area such as guiding, taking responsibility, academic performance and sense of satisfaction (Abrahamson et al., 2019). Further, according to Zevallos and Washburn (2014), peer mentoring has positive impact to both mentee and mentors in terms of social and emotional well beings, communication and self-esteem of both the students. Also, in a study by Bunting and Williams (2017) found out that though the primary focus of the study was mentees, however, peer mentors were also affected positively. The similar findings were also found by some researchers including Kiyama and Luca (2014).

Further according to Spaulding et al. (2020), peer mentoring not only benefitted the mentees rather it also benefitted peer mentors as well. However, in some literatures, the researchers has pointed out that due to lack of cooperation from mentees, the mentors get disappointed (Ashman & Colvin, 2011).

Thus, by going through the literatures, it is confirmed that peer mentoring benefited the students both in terms of academics and in social lives. So, this study will find out the Effectiveness of peer mentoring program on academic performance of class vii Bhutanese students.

Research Question

Primary Question: How effective is peer mentoring on students' academic performance?

Secondary Questions:

1. What are some factors of students scoring low marks in math's?
2. What impact do peer mentors have on students' success in academic?

Methodology

The study adopted a mixed method approach. The qualitative method was employed to determine the attitude of students towards the peer mentoring program. The quantitative method was employed to find out the impact of peer mentoring program on students' academic performance. For quantitative data collection and analyzing, the tools used were pre-test (unit test marks) and Post-test (unit test marks), which was analyzed by using SPSS 22. For qualitative data, semi-structured interview was conducted, the interview data were transcribed, color coded and was thematically analyzed.

Mentee and mentors were assigned based on their marks secured in unit tests, the students who scored less marks are identified as mentees and the students who scored high marks were identified as mentors. The mentees selected their own mentors from the list of mentors based on their closeness, relationship and comfortableness.

The study used purposive sampling method where researcher purposively selected a total of 62 students from class vii for quantitative data collection. For interview session, a total of 5 mentees and 5 mentors were randomly selected.

Findings and Discussion

Quantitative data analysis

In this section the researcher analyzed the pre-test data gathered from first- and second-unit test, the data were the averaged marks scored by students in their first- and second-unit test. For the post-test data all the mentees were conducted test after a week. The pre-test and post-test data were analyzed by paired-sample t test.

Pre-data analysis

Table 1: *Pre-test marks of mentees and mentors*

Sl. No	Mentee	Marks secured (20 Marks)	Mentor	Marks secured (20 Marks)
1	S1	5	M1	15
2	S2	8.7	M2	15.75
3	S3	9	M3	17.5
4	S4	9	M4	17
5	S5	7	M5	17
6	S6	2.5	M6	15
7	S7	10	M7	15.75
8	S8	12.5	M8	15.5
9	S9	11.75	M9	15

10	S10	11.5	M10	18.5
11	S11	10.5	M11	17
12	S12	11	M12	18.5
13	S13	12.5	M13	19.5
14	S14	11.25	M14	15
15	S15	13	M15	15
16	S16	13	M16	15
17	S17	9	M17	20
18	S18	6.5	M18	16
19	S19	6.5	M19	16.5
20	S20	10	M20	16.5
21	S21	4	M21	17
22	S22	8.5	M22	18
23	S23	8.25	M23	18
24	S24	9	M24	17
25	S25	7	M25	16
26	S26	8.5	M26	15
27	S27	10.5	M27	17
28	S28	11.5	M28	16
29	S29	11.25	M29	17
30	S30	11.5	M30	16
31	S31	11.5	M31	15

Table 2: *Mean difference of mentees and mentors*

Paired Samples Statistics

	Mean	N	Std. Deviation	Std. Error Mean

Pair 1	Mentor	16.5484	31	1.38507	.24877
	Mentee	9.4097	31	2.64189	.47450
Mean difference		7.13871			

The above table 1 indicated the marks scored by mentees and mentors during first- and second-unit test conducted in the academic year 2022. The Table 2 is the mean difference of mentees and mentors, which clearly showed that the mean marks scored by mentees were quite less compared to mentors. So, the study intends to find whether the peer mentoring program would help the low achiever students to perform well in next test.

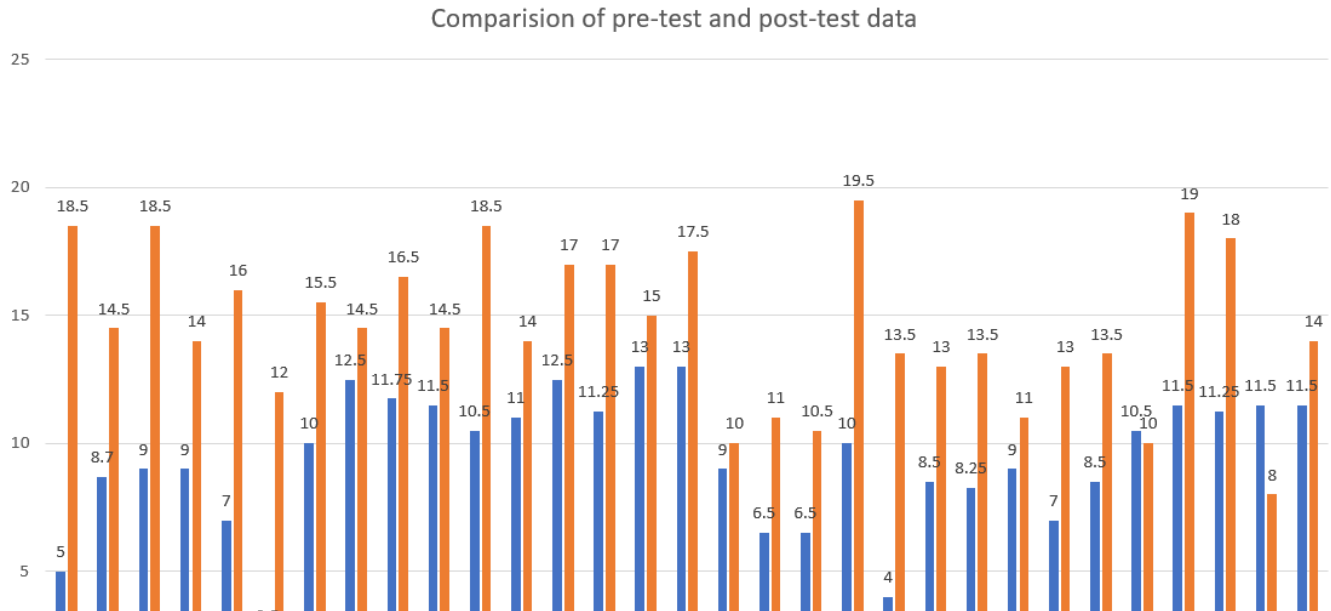
For the post data, mentees and mentors were made shoulder partners in class, so that whenever they are free, the mentors can guide the mentees. The program was conducted for a week, in which mentee and mentors were seated together and were given 50 minutes every day for a week to indulge in teaching and learning. After a week, a test was conducted only for mentees to find out whether the program had any influence on their academic performance. Mentors were excluded from the test, so that they take full responsibility of mentees academic performance.

Table 3: *Comparison of pre-test and post-test data*

SL. No	Mentee	Pre – test	Post-test
1	S1	5	18.5
2	S2	8.7	14.5
3	S3	9	18.5
4	S4	9	14
5	S5	7	16
6	S6	2.5	12
7	S7	10	15.5

8	S8	12.5	14.5
9	S9	11.75	16.5
10	S10	11.5	14.5
11	S11	10.5	18.5
12	S12	11	14
13	S13	12.5	17
14	S14	11.25	17
15	S15	13	15
16	S16	13	17.5
17	S17	9	10
18	S18	6.5	11
19	S19	6.5	10.5
20	S20	10	19.5
21	S21	4	13.5
22	S22	8.5	13
23	S23	8.25	13.5
24	S24	9	11
25	S25	7	13
26	S26	8.5	13.5
27	S27	10.5	10
28	S28	11.5	19
29	S29	11.25	18
30	S30	11.5	8
31	S31	11.5	14

Figure 1: *Graph of comparison of pre-test and post-test data*



The table 2 and figure 1 showed that except for 2 mentees rest of the mentees' performance were exceptionally high compared to the pre-test performance. This indicates peer mentoring helped students to perform well academically. The findings were similar to Ashman and Colvin (2011), where the researchers have also found that peer mentoring had a positive impact on students' academic learning.

Further to validate the result of the study, a paired-samples t-test was used.

Table 4: *Paired samples Test*

Paired Samples Test

		Paired Differences					t	df	Sig. (2-tailed)
		Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference				
					Lower	Upper			
Pair 1	Pre_test - Post_test	-5.13871	3.42196	.61460	-6.39389	-3.88353	-8.361	30	.000

The **paired-samples *t*-test was used** to compare the mean differences between two sets of dependent data to some population mean (generally set to zero) (*Caughlin, n.d)*. The test tells whether there is significant increase in the means of the data or not. If the mean is statistically significantly different the t value should be larger than critical value (C.V), the p value should be less than .05 and the 95% confidence interval (CI) should not include 0 (Research by Design, 2017).

From the Table 4, the degree of freedom (df) is 30 which have the critical value (CV) of 2.042 (t-table, attached in appendix) and the t value of the study was 8.361 which is larger than C.V of 2.042. Further, the p value of the study is .000 which is less than .05 and finally, the 95% confidence interval (- 6.39, - 3.88) does not include 0.

Therefore, the mean of the differences (pre-test and post-test) for 31 participants was 5.14 (*SD* = 3.42), and possible test scores could range from 4 to 19 points, and the paired-samples *t*-test indicated that this mean of the differences is significantly greater than zero ($t = 8.36$, $p = .00$, 95% CI[6.39, 3.88]). Thus, peer mentoring program were found to be effective in increasing students' academic performance.

The findings of the study were in line with the findings of Dennehy and Dasgupta (2017); Yomtov et al. (2017) that peer mentoring have positive impact on students learning. Thus, it is proved that the peer mentoring program is also effective to Bhutanese students in boosting their academic performance.

Qualitative data analysis

In this section, 5 mentors and 5 mentees were selected randomly to have an interview session.

From the interview session, mentees revealed that being considered as mentee was quite exciting and interesting. Moreover, the mentees felt happy and felt like studying. Also, most of the mentors felt good and happy to help their peers. However, some mentors felt irritated and wanted to stop mentoring when the mentees are not cooperating. The findings were in line with Ashman and Colvin (2011) that lack of cooperation from mentees affects the smooth flow of the peer-mentoring program.

Moreover, all the mentees liked being helped by their peers as they understood better from friends and they could ask doubts freely, which was also seen in the study by Bonin (2016) that peer mentors create safe environment for their mentees to open up with their concerns. Additionally, all the mentors agreed that they like to help their peers. Some mentors mentioned that they feel good if their mentees perform well, which indicates mentors felt a sense of responsibility and satisfaction in helping their friends to learn. Further, some mentors shared that they want their mentee friends to qualify to next grade together. The findings were in line with

Abrahamson et al. (2019) where they found out that mentors were benefitted in area such as guiding, taking responsibility, academic performance and sense of satisfaction.

Most of the mentees pointed out that they gained more knowledge when helped by peers. Further, some mentees mentioned that apart from academic improvement, they could also improve their communication skills. Moreover, the mentor felt that the program helped them gain extra knowledge and helped save time as there was no need for them to study again. Further, it helped build good relationship among the peers and it also helped improves communication skills. The findings were also in line with the findings of Spaulding et al. (2020); Yomtov et al. (2017), that peer mentoring helps students in academic as well as in other skills such as communication.

Lastly, all the mentee and mentors' interviewees hope to have this type of program in future, as it helped both the mentor-mentee academically as well as in communication skills. However, some mentees mentioned that they feel pressurized due to constant reminder from the mentors.

Conclusion and Recommendation

The study found that peer mentoring program was effective in boosting academic performance of class VII Bhutanese students. The study found that the students (mentees) academic performance had improved significantly with t value greater than C.V and p value less than .05, which indicates that the program had positive impact on academic performance of the students. The program not only benefitted the mentees but also it had a positive impact on mentors with regards to their academic as well as in communication skills.

Based on the findings, it is recommended that peer mentoring program should be carried out in schools to improve students' academic performance as well as their communication skills. Further, the present study focused on only some students of grade VII, a study may be carried out across schools to get a deep understanding of the subject.

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Appendix A

Interview questions

For mentee

1. How did you feel as a mentee?
2. Do you like being helped by your peer? Why?
3. What are some advantages of being mentee academically and in other social skills?
4. What are some challenges you have faced during this mentee-mentor program?
5. Would you like to have this type of program in future? Why?

For mentors

1. How did you feel as a mentor?
2. Do you like to help your peer? Why?
3. What are some advantages of being mentor academically and in other social skills?
4. What are some challenges you have faced during this mentee-mentor program?
5. Would you like to have this type of program in future? Why?

Appendix B

Abbreviations

Sl. No	Abbreviations	Meaning	Abbreviations	Meaning
1	S1	Mentee Student 1	M1	Mentor Student 1
2	S2	Mentee Student 2	M2	Mentor Student 2
3	S3	Mentee Student 3	M3	Mentor Student 3
4	S4	Mentee Student 4	M4	Mentor Student 4
5	S5	Mentee Student 5	M5	Mentor Student 5
6	S6	Mentee Student 6	M6	Mentor Student 6
7	S7	Mentee Student 7	M7	Mentor Student 7
8	S8	Mentee Student 8	M8	Mentor Student 8
9	S9	Mentee Student 9	M9	Mentor Student 9
10	S10	Mentee Student 10	M10	Mentor Student 10
11	S11	Mentee Student 11	M11	Mentor Student 11
12	S12	Mentee Student 12	M12	Mentor Student 12
13	S13	Mentee Student 13	M13	Mentor Student 13
14	S14	Mentee Student 14	M14	Mentor Student 14
15	S15	Mentee Student 15	M15	Mentor Student 15
16	S16	Mentee Student 16	M16	Mentor Student 16
17	S17	Mentee Student 17	M17	Mentor Student 17
18	S18	Mentee Student 18	M18	Mentor Student 18
19	S19	Mentee Student 19	M19	Mentor Student 19
20	S20	Mentee Student 20	M20	Mentor Student 20

21	S21	Mentee Student 21	M21	Mentor Student 21
22	S22	Mentee Student 22	M22	Mentor Student 22
23	S23	Mentee Student 23	M23	Mentor Student 23
24	S24	Mentee Student 24	M24	Mentor Student 24
25	S25	Mentee Student 25	M25	Mentor Student 25
26	S26	Mentee Student 26	M26	Mentor Student 26
27	S27	Mentee Student 27	M27	Mentor Student 27
28	S28	Mentee Student 28	M28	Mentor Student 28
29	S29	Mentee Student 29	M29	Mentor Student 29
30	S30	Mentee Student 30	M30	Mentor Student 30
31	S31	Mentee Student 31	M31	Mentor Student 31

APPENDIX C

T-Table

t Table

cum. prob	$t_{.50}$	$t_{.75}$	$t_{.80}$	$t_{.85}$	$t_{.90}$	$t_{.95}$	$t_{.975}$	$t_{.99}$	$t_{.995}$	$t_{.999}$	$t_{.9995}$
one-tail	0.50	0.25	0.20	0.15	0.10	0.05	0.025	0.01	0.005	0.001	0.0005
two-tails	1.00	0.50	0.40	0.30	0.20	0.10	0.05	0.02	0.01	0.002	0.001
df											
1	0.000	1.000	1.376	1.963	3.078	6.314	12.71	31.82	63.66	318.31	636.62
2	0.000	0.816	1.061	1.386	1.886	2.920	4.303	6.965	9.925	22.327	31.599
3	0.000	0.765	0.978	1.250	1.638	2.353	3.182	4.541	5.841	10.215	12.924
4	0.000	0.741	0.941	1.190	1.533	2.132	2.776	3.747	4.604	7.173	8.610
5	0.000	0.727	0.920	1.156	1.476	2.015	2.571	3.365	4.032	5.893	6.869
6	0.000	0.718	0.906	1.134	1.440	1.943	2.447	3.143	3.707	5.208	5.959
7	0.000	0.711	0.896	1.119	1.415	1.895	2.365	2.998	3.499	4.785	5.408
8	0.000	0.706	0.889	1.108	1.397	1.860	2.306	2.896	3.355	4.501	5.041
9	0.000	0.703	0.883	1.100	1.383	1.833	2.262	2.821	3.250	4.297	4.781
10	0.000	0.700	0.879	1.093	1.372	1.812	2.228	2.764	3.169	4.144	4.587
11	0.000	0.697	0.876	1.088	1.363	1.796	2.201	2.718	3.106	4.025	4.437
12	0.000	0.695	0.873	1.083	1.356	1.782	2.179	2.681	3.055	3.930	4.318
13	0.000	0.694	0.870	1.079	1.350	1.771	2.160	2.650	3.012	3.852	4.221
14	0.000	0.692	0.868	1.076	1.345	1.761	2.145	2.624	2.977	3.787	4.140
15	0.000	0.691	0.866	1.074	1.341	1.753	2.131	2.602	2.947	3.733	4.073
16	0.000	0.690	0.865	1.071	1.337	1.746	2.120	2.583	2.921	3.686	4.015
17	0.000	0.689	0.863	1.069	1.333	1.740	2.110	2.567	2.898	3.646	3.965
18	0.000	0.688	0.862	1.067	1.330	1.734	2.101	2.552	2.878	3.610	3.922
19	0.000	0.688	0.861	1.066	1.328	1.729	2.093	2.539	2.861	3.579	3.883
20	0.000	0.687	0.860	1.064	1.325	1.725	2.086	2.528	2.845	3.552	3.850
21	0.000	0.686	0.859	1.063	1.323	1.721	2.080	2.518	2.831	3.527	3.819
22	0.000	0.686	0.858	1.061	1.321	1.717	2.074	2.508	2.819	3.505	3.792
23	0.000	0.685	0.858	1.060	1.319	1.714	2.069	2.500	2.807	3.485	3.768
24	0.000	0.685	0.857	1.059	1.318	1.711	2.064	2.492	2.797	3.467	3.745
25	0.000	0.684	0.856	1.058	1.316	1.708	2.060	2.485	2.787	3.450	3.725
26	0.000	0.684	0.856	1.058	1.315	1.706	2.056	2.479	2.779	3.435	3.707
27	0.000	0.684	0.855	1.057	1.314	1.703	2.052	2.473	2.771	3.421	3.690
28	0.000	0.683	0.855	1.056	1.313	1.701	2.048	2.467	2.763	3.408	3.674
29	0.000	0.683	0.854	1.055	1.311	1.699	2.045	2.462	2.756	3.396	3.659
30	0.000	0.683	0.854	1.055	1.310	1.697	2.042	2.457	2.750	3.385	3.646
40	0.000	0.681	0.851	1.050	1.303	1.684	2.021	2.423	2.704	3.307	3.551
60	0.000	0.679	0.848	1.045	1.296	1.671	2.000	2.390	2.660	3.232	3.460
80	0.000	0.678	0.846	1.043	1.292	1.664	1.990	2.374	2.639	3.195	3.416
100	0.000	0.677	0.845	1.042	1.290	1.660	1.984	2.364	2.626	3.174	3.390
1000	0.000	0.675	0.842	1.037	1.282	1.646	1.962	2.330	2.581	3.098	3.300
z	0.000	0.674	0.842	1.036	1.282	1.645	1.960	2.326	2.576	3.090	3.291
	0%	50%	60%	70%	80%	90%	95%	98%	99%	99.8%	99.9%
	Confidence Level										