

Original Article

The Psychoeducational Analysis of Peer-Assisted Learning in Achieving Effective Educational Outcomes

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Abstract

Background: Peer-assisted learning (PAL) is gaining popularity as a teaching strategy where students serve as peer teachers, helping others learn while enhancing their own understanding through teaching. PAL fosters cognitive and psychomotor growth but also enhances knowledge and skills, leading to better exam performance.

Objective: To conduct a psychoeducational analysis of Peer-Assisted Learning (PAL) and evaluate its effectiveness in achieving desired educational outcomes.

Methodology: An 8-week prospective quantitative study was conducted on 45 undergraduate students learning Pathology at a Dental college in Islamabad, following ethical approval. The students were divided into 5 groups of 8, each led by a tutor who conducted PAL sessions based on provided learning objectives and instructions. A pretest and posttest were used to evaluate the effectiveness of PAL. Tutees' perceptions were gathered through structured questionnaires on a 5-point Likert scale. Quantitative data were analyzed using SPSS 22.

Results: Learners, including both tutors and tutees, reported high satisfaction with PAL. About 62.5% of students felt that it provided a safe learning environment, while 82.5% agreed that peer learning helped clarify the subject matter. Additionally, 82.5% of students mentioned that the sessions motivated them to actively participate (1.92 ± 0.730). A comparison of pre- and post-intervention test scores showed a significant improvement, with the mean score rising from 22.1 ± 6.9 to 68.5 ± 11.7 , a statistically significant difference ($p < 0.001$).

Conclusion: Students found Peer-Assisted Learning valuable, recognizing its role in enhancing communication and leadership skills. The relaxed environment facilitated the achievement of learning objectives effectively, leading to noticeable improvements in their scores.

Key words: Peer-Assisted Learning, Psychoeducational Analysis, educational Outcomes

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Introduction

Peer-assisted learning is a strategy in Medical education where people from alike social groups who are non-professional facilitators, help each other in teaching and learning.¹

History of utilization and success of peer-assisted learning can be traced back to 1996, when the researchers suggested implementation of PAL in health education to enhance or supplement the role of

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instructors.¹ Many educational, social and psychological theories have been recommended to explain the utility of PAL. ² In medical and basic science education, PAL has been shown to improve communication skills, self-efficacy, teamwork, and professional identity formation, demonstrating that its benefits extend beyond cognitive gains to psychosocial development.³ Additionally, PAL promotes a supportive learning climate in which students feel comfortable asking questions, reducing anxiety and fostering active participation—factors particularly relevant in demanding undergraduate medical programs.⁴ Therefore, a psychosocial analysis is necessary to understand how interpersonal dynamics, motivation, and emotional safety contribute to the effectiveness of PAL, ensuring that its implementation maximizes both academic and professional development outcomes. The concept of cognitive congruence is based on the idea of sharing similar educational and organizational challenges due to close proximity in age. The language used by the peer-tutor is easily understood and the tutors are benefited by consolidating their own knowledge and experience.⁵

The knowledge is achieved through the support by “status equals or matched companions. ² Status equal teaching and learning is effective in the areas of communication and the learning outcomes achieved are comparable forming the basis of cognitive congruence and social constructivism.

While the efficacy of PAL has been widely accepted in clinical subjects, paucity is noticed in the studies regarding the teaching of basic medical sciences.^{3,6}

While descriptions of PAL in the literature are frequently seen, there remains limited literature about formal attempts to facilitate the understanding of basic concepts of Pathology using PAL in adjunct with Multiple Integrated Basic Assessments (MIBAs). ⁴

The aim of this study is to conduct a psychoeducational analysis of Peer-Assisted Learning (PAL) and evaluate its effectiveness in achieving desired educational outcomes. The study seeks to explore how PAL influences cognitive, affective, and social dimensions of learning, and to assess the impact of peer interactions on knowledge retention, skill development, and learner satisfaction.

Methodology

A prospective interventional study was conducted over 8 weeks with 45 second-year dental students at the Department of Pathology, Rawal Medical and Dental

College, Islamabad. All regular students were included, and supplementary students were excluded from the study. Approval was taken from the research and ethical committee for the study.

After informed verbal consent from the tutors, the tutors were accustomed to the learning objectives, aims, and methodology in an introductory session. These training sessions were conducted by the principal researcher and a co-researcher medical educationist.

Data were collected using a structured questionnaire about their participation, communication, self-learning, coordination among group members, content delivery, and interest-creating environment by the tutor.

The questionnaires were developed in accordance with AMEE Guide No. 7 for educational research. A pilot study was conducted prior to the main study to refine the tool which was modified by the principal investigator, and internally validated by the Medical Education Department. The internal consistency of the questionnaire was assessed using Cronbach's alpha.⁽⁷⁾

Pre- and post-intervention knowledge assessments using 100 MCQs, were done to measure participants' knowledge acquisition, addressing the research question. Mean scores of pre and post tests were compared by application of paired sample t-test.

Statistical Package for the Social Sciences (SPSS) software version 22.0 was used to obtain descriptive statistics for the analysis

Results

The study included 45 students in total with 27 (60%) males and 18 (40%) females. As per the primary study objective, the student's assessment scores pre and post-intervention with peer-assisted learning were compared. The average test score pre-intervention was 22.1 ± 6.9 whereas post-intervention it was noted to be 68.5 ± 11.7 . The difference in the two means was statistically highly significant (p-value, <0.001). Table I

Table I: Comparison of pre and post-test results in peer-assisted learning. (n=40)

	Pre-intervention	Post intervention	p-value (Paired sample t-test)
Test scores (%)			
Mean $\pm$ SD	22.1 $\pm$ 6.9	68.5 $\pm$ 11.7	<0.001

The perception of the students regarding PAL is shown in the table II. Regarding the overall learning

Table I: Perceptions of peers-learners regarding Peer Assisted Learning. (n=40)

Statements	Peer Strongly Disagree	Peer Disagree	Peer Neutral	Peer Agree	Peer Strongly Agree	Median
The sessions were informal	0 (0.0%)	0 (0.0%)	12 (30.0%)	17 (42.5%)	11 (27.5%)	3.97
The sessions were enjoyable	0 (0.0%)	0 (0.0%)	12 (30.0%)	20 (50.0%)	8 (20.0%)	3.90
The sessions provided reassurance about course related concerns	0 (0.0%)	0 (0.0%)	7 (17.5%)	18 (45.0%)	15 (37.5%)	4.22
The environment was conducive for the activities	0 (0.0%)	0 (0.0%)	15 (37.5%)	14 (35.0%)	11 (27.5%)	3.86
The sessions were focused on the topic	0 (0.0%)	0 (0.0%)	11 (27.5%)	21 (52.5%)	8 (20.0%)	3.93
The sessions clarified concepts of the topic	0 (0.0%)	0 (0.0%)	7 (17.5%)	22 (55.0%)	11 (27.5%)	4.09
The sessions encouraged active participation	0 (0.0%)	0 (0.0%)	14 (35.0%)	18 (45.0%)	8 (20.0%)	3.83
The sessions were effective in retaining new skills	0 (0.0%)	0 (0.0%)	7 (17.5%)	22 (55.0%)	11 (27.5%)	4.09
The sessions encouraged to use multiple study resources	0 (0.0%)	7 (17.5%)	7 (17.5%)	21 (52.5%)	5 (12.5%)	3.79
The sessions stimulated to use latest technology/computer	0 (0.0%)	5 (12.5%)	7 (17.5%)	22 (55.0%)	6 (15.0%)	3.86
The sessions aided to promote self-study skills	0 (0.0%)	1 (2.5%)	6 (15.0%)	22 (55.0%)	11 (27.5%)	4.09
The sessions motivated to develop group study skills	0 (0.0%)	0 (0.0%)	14 (35.0%)	18 (45.0%)	8 (20.0%)	3.83
The sessions did not require added work outside of the college	0 (0.0%)	2 (5.0%)	10 (25.0%)	20 (50.0%)	8 (20.0%)	3.90
The tutors were well prepared to conduct the peer-assisted activities	0 (0.0%)	0 (0.0%)	14 (35.0%)	18 (45.0%)	8 (20.0%)	3.83
The activity sessions aided in refining communication skills	0 (0.0%)	2 (5.0%)	10 (25.0%)	20 (50.0%)	8 (20.0%)	3.90
The sessions assisted in teaching leadership skills	0 (0.0%)	0 (0.0%)	5 (12.5%)	20 (50.0%)	15 (37.5%)	4.25
The sessions motivated to take active part in the discussions	0 (0.0%)	0 (0.0%)	7 (17.5%)	22 (55.0%)	11 (27.5%)	4.09
It was overall a constructive experience	0 (0.0%)	0 (0.0%)	14 (35.0%)	18 (45.0%)	8 (20.0%)	3.83

environment, in the first session, the response for query 'session was informal', 28 students (70%) agreed.

Over all 70% of the students found the PAL sessions enjoyable 82.5% students agreed that the sessions "provided the reassurance about the course content".

Regarding the query that the sessions of peer-teaching and learning provided a conducive environment, 25 students (62.5%) agreed.

Majority of students (72.5%) mentioned that the PAL was focused on the topics that were being discussed. The students strongly agreed or agreed in all sessions that peer assistance provided an opportunity to clarify the concepts of the topic (82.5%).

Similarly, 65% of the students mentioned that the sessions motivated them to actively participate in the activities. When asked about new learning skills development, most students though agreed initially but 17.5% agreed to remain neutral regarding participating

in the peer-assisted activities mainly helped retain new concepts and skills.

On the question regarding motivation to use different study resources, 65% agreed. Most of the PAL students (70%) strongly agreed or agreed that the sessions inspired them to use the latest computer technology.

Regarding motivation for self-study and active participation, 82.5% students reported encouragement in the PAL sessions. When asked about PAL sessions enhanced team dynamics and group study skills in them, 65% students agreed.

When asked that whether peer-guided activities require additional work or time outside of the college activities 30% remained neutral and 70% students agreed.

After four PAL sessions, 65% of the students agreed that their peer-tutor was well prepared to run the peer-assisted activities.

The students agreed that the activity sessions helped improve their communication skills (70%). 87.5% students agreed that PAL sessions helped them in gaining leadership skills. PAL students felt motivated to take an active part in the activities and discussions reported by 82% students.

Most of the students found peer-assisted learning activities as a useful program to interact and learn with their peers. 70% took it as a good opportunity to learn from others. 65% it as a productive experience.

When asked about whether the students found peer-assisted activities more interactive than previous faculty-assisted small group sessions, 82% students agreed.

Table III shows that significant improvements in knowledge scores were observed after each of the four Peer-Assisted Learning (PAL) sessions. The mean pre-intervention scores ranged from 18.75 ± 6.31 to 25.25 ± 6.01 , whereas the corresponding post-intervention scores increased to 68.00 ± 19.8 – 71.50 ± 9.16 . All four sessions demonstrated statistically significant improvements in post-test scores compared with pre-test scores ($p < 0.001$), indicating a consistent positive educational effect of PAL across all sessions.

Table III: Comparison of pre and post-test results according to the sessions. (n=40)

	Pre-intervention	Post intervention	p-value (Paired sample t-test)
Session	(Mean $\pm$ SD)	(Mean $\pm$ SD)	
1	18.75 ± 8.53	71.50 ± 9.16	<0.001
2	25.25 ± 6.01	68.00 ± 19.8	<0.001
3	18.75 ± 6.31	68.62 ± 13.7	<0.001
4	23.88 ± 6.68	70.88 ± 5.41	<0.001

Discussion

As per the primary study objective, the student's assessment scores pre and post-intervention with peer-assisted learning were compared. The average test score pre-intervention was 22.1 ± 6.9 whereas post-intervention it was noted to be 68.5 ± 11.7 . The difference in the two means was statistically highly significant (p -value, <0.001). Our findings are consistent with local and international studies showing improvement in overall grades of the students after PAL intervention.^{8,9}

Marked improvement in the grades and overall experience of the sessions are informal was reported by Siefert et al with PAL.¹⁰

In our study, 70% of the students approved that the sessions of peer-teaching and Peer assisted learning provided a conducive environment (62.5%). Castelyn et al also reported that the PAL environment supported participants well and enhanced their enthusiasm for learning.¹¹ The author reported that the students develop critical thinking skills in an engaging and supportive environment and learn to work collaboratively as a team to approach and solve challenging problems commonly encountered in practice.

Regarding focus of the PAL on the topics that were being discussed (72.5%) students agreed and 82.5% agreed that it clarified the subject. However, in the study by Jahan et al, almost half (51.4%) of the students mentioned that the sessions were appropriate to clear the concepts.¹²

The active learning in these sessions also enhanced their interest, commitment, and coordination among students, the findings like the experience by Tayler et al. The participants experienced that adding various teaching-learning methods enhanced their retention and understanding. Active participation of all 240 students contributed effectively to self-directed learning and together as a team, they worked together to solve the challenging problems encountered during the learning process.¹³

Out of all the PAL students 70% strongly agreed or agreed that the sessions inspired them to use the latest computer technology. Grover et al. also reported competency-based learning by the use of different teaching strategies.¹⁴ Use of latest recourses added in creating interest, involvement of the participants, and added value to the teaching.

82.5% students agreed that the sessions motivated them to actively participate in the activities. Jawhari et al where more than 80% reported the effectiveness of Peer-assisted learning inactive learning and as an effective tool in retaining new knowledge and skills.¹⁵

65% students while going through PAL sessions reported developing team dynamics and group study skills in them. Results are comparable to Malika et al and Al-Kawas et al where the use of various tools like team-based learning have drastically increased the participation and group dynamics among the students.¹⁶

When asked that whether peer-guided activities require additional work or time outside of the college activities, 30% remained neutral in response. Siddiqi et al also

experience this feedback from the students reporting extra time and energy being required for the preparation and discussions during peer activities.⁴ Another author however associate this “extra effort” as essential for the learning of the students helping achieve the required knowledge and examination scores.¹⁸

In the study 70% of the students agreed that the activity sessions helped improve their communication skills. Zoraya et al also reported the perceived benefits of PAL on the students including strategic thinking, planning and organizing and analytical decision making.¹⁹

PAL promoted teamwork, collaboration, and coordination among participants. Callese et al. also valued PAL for a deeper understanding of concepts by interacting with peers in a friendly environment.²⁰ All the students were open-minded, and quieter members felt their voices are heard. Socialization added interest in the learning sessions.

After experiencing the PAL sessions, 65% of the students agreed that peer-tutor were well prepared to run the peer-assisted activities. However, 25% students remained neutral. As reported by Bhattacharya et al. the students found difficulty in maintaining group dynamics.²¹ Weak leadership was considered as the cause that paved the way for a dominant team member to take over.

As per the primary study objective, the student's assessment scores pre and post-intervention with peer-assisted learning were compared. The average test score pre-intervention was 22.1 ± 6.9 whereas post-intervention it was noted to be 68.5 ± 11.7 . The difference in the two means was statistically highly significant (p-value, <0.001) similar to the findings by Siddiqi et al showing significant improvement in the achievement of learning objectives after exposure to the Peer-assisted learning unit.⁴ Different studies have shown that a better understanding of concepts during the PAL program, peers being closer in education level, the concepts of the subject are explained appropriately.²² According to Friel et al and Hill et al the intended outcomes of improving academic performances in the defined courses were generally met using PAL strategy.^{23,24} Due to the global upsurge in medical student intake, limited teaching resources and increase professional attributes required at a graduate level, PAL can be utilized in adjunct with the expert assisted learning to achieve the educational outcomes while facilitating increase feelings of student belonging and engagement.

Conclusion

Peer Assisted learning has had numerous beneficial effects on the knowledge, attitude, and educational outcomes of the students. There was marked improvement in the post intervention assessment scores supporting our primary objective. The main advantages emerged are improved cognitive development, motivation, and increase confidence levels of the students

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