Perceptions of Allied Health Students about lecture and peer-assisted learning

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Background. Students' perceptions of the educational methodology are valuable for improving the quality of the educational environment. However, there is limited literature on students' perceptions of lectures and peer-assisted learning (PAL) within the School of Biomedical and Allied Health Sciences.
Objectives. To determine the perceptions of allied health students across different study levels regarding the effectiveness of lectures and PAL as educational strategies.
Methods. This cross-sectional study involved 213 Allied Health students from levels 200 to 400 at the University of Ghana. Data were collected using an adopted perceptions questionnaire. Perceptions of lectures and PAL were analysed using means and mean percentages. A one-way ANOVA test was performed to compare differences in perceptions among students at various study levels, while the independent sample *t*-test was used to compare differences in perceptions between male and female students.
Results. PAL had the highest mean scores, with a global rating of 4.1 (standard deviation (SD) 0.8) compared with 3.5 (SD 0.8) for lectures ($p<0.00$). There were no differences in perceptions about lectures and PAL among levels 200 to 400 students. Female students had a more positive perception of PAL, while both male and female students had the same positive perceptions about lectures.
Conclusions. Students generally had positive perceptions about lectures and PAL; however, PAL was acknowledged as an alternative that provides students with active educational experiences. PAL may be incorporated into the standard curriculum alongside lectures.
Keywords. Lecture, peer-assisted learning, perceptions, cooperative learning, allied health students.

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Learning depends on the integration of a student's preferential learning method and the teaching style used. For effective learning to take place, the teaching method must be appropriate and take into account the characteristics of the learner, the type of learning and the nature of the subject matter.[1] Educational programmes apply appropriate teaching strategies to prepare students with the necessary knowledge, skills and attitudes. These enable trainees to act with a high level of competency and performance when they encounter real workplace situations.[2] Scholarly recommendations suggest improving medical education standards to develop health professionals with qualities such as self-directed and life-long learning, teamwork, competence, good clinical communication and teaching skills to overcome these challenges.[3] The objective of teaching is to urge learners to broaden their horizons and stimulate them to gain knowledge.[4] Lecturing is still the most extensively used teaching method in higher education institutions (HEI).[5] Marmah[6] defines a lecture as one person speaking, more or less continuously, to a group of people on a particular subject or theme, and it is based on the transmissive teaching model – that is, knowledge is an object that can be transferred from the teacher to the learner. Lecturing is a core activity within HEIs, and students' perceptions of how well this activity is undertaken will have an impact on the overall rating of any institution.[7] Peer-assisted learning (PAL) is a cooperative and collaborative learning strategy, where students learn with and from each other without the direct mediation of a teacher.[8] PAL is a method of reciprocal learning in either formal or informal environments.[9] Topping[10] defined PAL as 'the acquisition of knowledge and skill through active helping and supporting among status equals or matched companions'. In the School of Biomedical and Allied Health Sciences, there are numerous examples of PAL where students engage their peers or are assisted through group discussions, assignments, and presentations, as well as one-on-one interaction with peers after lectures to explain topics further. Students play a vital role in choosing the appropriate teaching-learning method to maximise knowledge and understanding.[11] Moreover, the coronavirus (COVID-19) changed the way students are taught around the world. Those changes offer a glimpse into the future of education. The advent of COVID-19 compelled the University of Ghana to extensively adopt online teaching and learning, highlighting the importance of PAL, which students had been using informally. Thus, formalising PAL as a tool for teaching and consolidating information and practical skills should be considered, as it benefits both tutors and learners.[12]

Previous research emphasises that evidence supporting PAL is nonspecific and lacks comparative rigour. Therefore, it recommends more robust research to quantify the benefits of PAL, specifically among allied health students.[13] Students are undoubtedly in the best position to comment on the effectiveness of any teaching system, making them the best judges to assess the teaching and evaluation methods.[14]

To date, several scholars have highlighted the benefits of including PAL and its variants in the acquisition of disciplinary knowledge. Students' perceptions of the educational methodologies are a valuable basis for modifying and improving the quality of the educational environment.[14] Hence, it is important to know the perceptions of allied health students at the University of Ghana regarding the PAL concept. The current research was carried out to evaluate students' opinions of PAL compared with lectures. The primary goal of the study was to assess the educational applicability of PAL in terms of learner satisfaction and acceptance as an adjunct to lectures within the standard allied health course, with the aim to positively impact their learning experience.

Methods

This cross-sectional study was conducted at the School of Biomedical and Allied Health Science, University of Ghana, Korle-Bu. The total number of students under consideration was 451, comprising 158 students in level 200, 156 in level 300 and 137 in level 400 (second, third and final year, respectively). A sample size of 212 was determined using Taro Yamane's formula.[25]

Levels 200 to 400 allied health students who had experienced PAL in addition to lectures were included in this study. First-year (level 100) allied health science students were excluded because they only engaged in theoretical lectures with clinical observations.

Instrument for data collection

A questionnaire (Appendix I, insert link), scored on a 7-point Likert scale developed by Daud and Ali,[15] was adopted to assess the perceptions of allied health students regarding their learning experience with both lectures and PAL. The questionnaire consists of 22 statements that reflect learner perceptions grounded in the theoretical framework of PAL. The main domains are concept building and comprehension (questions 1 - 7), learning skills development (questions 8 - 11), interactive and cooperative learning (questions 12 - 15) and learning environment (questions 16 - 22). The inter-item reliability of the study tool was 0.94. A self-designed data capture form was used to obtain demographic data, including sex, level and programme of study from the participants.

Procedure for data collection

The study was carried out in the School of Biomedical and Allied Health Sciences campus. As a result of the COVID-19 pandemic, the questionnaire was converted to an online copy using Google Forms. Ethical approval was obtained from the Ethics and Protocol Review Committee of the School of Biomedical and Allied Health Sciences, University of Ghana (ref. no. SBAHS/AA/PT/10658262/2020-2021). Those who agreed to take part in the study signed an electronic consent form, which was included in the Google Form. Phone numbers were obtained from the class representative, and copies of the questionnaire were distributed to participants via WhatsApp and all class social media platforms. Follow-ups were conducted through calls and text messages once every week after distributing the questionnaire to the participants. An automatic response was received on a spreadsheet once the questionnaire was completed and submitted by a participant. Data were collected between July and August 2021, during which online learning remained predominant.

Data analysis

Data were recorded and stored electronically. Statistical analysis was performed using the Statistical Package for the Social Sciences (version 27.0). Frequencies were used to summarise participants' socio-demographic data. A one-way ANOVA was used to compare perception differences among students at different levels of study regarding lectures and PAL. An independent sample *t*-test was used to compare differences in perceptions between male and female students.

Results

The socio-demographic characteristics of the participants are presented in Table 1.

The results for perceptions of lectures v. PAL indicated differences across the various components identified on the questionnaire.

Concept building and comprehension

Concept building and comprehension were statistically higher in PAL than in lectures, except for knowledge of course expectations (Table 2).

Learning skills development

Students' perception was more positive about developing learning skills: planning their learning activities (p=0.00) and developing self-study (p=0.02) during PAL compared with lectures. However, no significant difference was noted in the 'use of multiple study resources' between PAL and lectures (Table 2).

Interactive and cooperative learning

The domain of interactive and cooperative learning revealed a statistically significant difference in perception between PAL and lectures, as observed in the mean score of all statements, indicating a preference for PAL.

Learning environment

Regarding the learning environment, a statistically significant difference between PAL and lectures is evident, indicating a preference for PAL (Table 2).

Global rating

PAL had a statistically significant overall agreement with statements on the questionnaire, with a global rating of 4.1 (0.8) compared with 3.5 (0.8) for lectures (p<0.00).

Table 1. Background characteristics of the participants

Variable	Frequency (N=213), n (%)
Sex	
Male	107 (50.2)
Female	106 (49.8)
Study programme	
Dietetics	23 (10.8)
Medical Lab Science	67 (31.5)
Occupational Therapy	15 (7.0)
Physiotherapy	42 (19.7)
Radiography	50 (23.5)
Respiratory Therapy	16 (7.5)
Level of study	
200	73 (34.3)
300	57 (26.8)
400	83 (39.0)

Difference in perception about lectures and PAL among the study levels

An ANOVA showed no significant differences in perceptions of lectures (F=0.47, p=0.628) v. PAL (F=0.19, p=0.824) among the various study levels (Table 3).

Perception differences between male and female students

The analysis showed no significant difference (t=0.923, p=0.357) between male and female students concerning their perceptions of lectures. However, perceptions of PAL were significant (t=2.51, p=0.013) (Table 4).

Discussion

In this study, students perceived concept building and comprehension to be better in PAL, possibly because peers can relate and understand things better among themselves. Although students were using PAL pre COVID, the pandemic resulted in many educators adapting their traditional classroom-based teaching to online formats, which increased the informal use of PAL by students. Alibabaee *et al.*[16] reported that peers are sometimes better suited to explain and build on class topics, using shared connections and perspectives, compared with teachers. Students engaging and discussing with their peers could enhance their comprehension.[17]

Students in the School of Biomedical and Allied Health Science assist their peers to succeed academically using PAL, which they perceive significantly improved their learning skills compared with lectures. Additionally, students use PAL to create self-study and group study programmes. This suggests that PAL is viewed as more effective for developing learning skills than lectures. This corroborates the findings by Daud and Ali,[15] who reported that students use PAL in proper scheduling and control of learning tasks, as well as assisting and involving one another in the learning process.

Lectures and PAL provide students with the opportunity to learn collaboratively. In lectures, interactions between students and lecturers are often limited, as emphasised by Velanayagem,[18] who was of the view that lectures are largely a one-way process. In contrast, PAL allows for more interactive and cooperative learning experiences among students. This study found that interactive and cooperative domain scores were much higher in PAL than in lectures. This may be because PAL allows students to learn from their peers' perspectives and modes of reasoning, which they can analyse alongside their own. This opportunity for diverse viewpoints and discussion likely enhances interest in concepts and supports learning.[19] Students are more willing to open up to their friends and express their challenges and concerns.[20]

The learning environment greatly contributes to the performance of any activity. The social and environmental features were mostly endorsed in PAL. This result could be because students can ask questions freely

Table 2. Student perceptions regarding lectures and PAL teaching methods

	Lectures, mean (SD)	PAL, mean (SD)	p-value
Concept building and comprehension			
Awareness of course expectation	5.3 (1.4)	5.1 (1.6)	0.09
Understanding the subject matter of the course	5.1 (1.3)	5.5 (1.5)	0.01**
Opportunity to clarify basic concepts of the course	5.1 (1.3)	5.5 (1.4)	0.00***
Opportunity to clarify complex concepts of the course	5.0 (1.3)	5.4 (1.4)	0.00***
Motivated me to learn more about the course	4.9 (1.5)	5.4 (1.5)	0.00***
Better preparation for solving workbook and assignment	4.7 (1.4)	5.4 (1.4)	0.00***
Solving previous exam questions	4.6 (1.5)	5.7 (1.4)	0.00***
Learning skill development			
Planning my own learning activities	4.9 (1.5)	5.3 (1.4)	0.00***
Use multiple study resources	5.0 (1.5)	5.2 (1.4)	0.07
Develop self-study skills	4.9 (1.5)	5.2 (1.4)	0.02*
Develop group study skills	4.9 (1.6)	5.5 (1.5)	0.00***
Interactive and cooperative learning			
Improve communication skills	4.4 (1.6)	5.4 (1.5)	0.00***
Obtains others' perspectives on the course	4.6 (1.5)	5.7 (1.3)	0.00***
To take part in discussions	4.3 (1.3)	5.5 (1.3)	0.00***
Opportunity for learning with others	4.6 (1.6)	5.9 (1.3)	0.00***
Learning environment			
Sessions were informal	3.2 (2.0)	5.4 (1.6)	0.00***
Sessions made learning enjoyable	4.3 (1.6)	5.8 (1.4)	0.00***
Reassurance about course-related problems	4.6 (1.4)	5.3 (1.3)	0.00***
Session was comfortable and relaxed	4.6 (1.5)	5.7 (1.4)	0.00***
Air concerns away from teaching staff	3.9 (1.8)	5.4 (1.5)	0.00***
Ask questions whenever required	5.2 (1.4)	5.9 (1.3)	0.00***
The environment was conducive to discussions on course-related questions and explanations of answers with peers	4.4 (1.7)	5.9 (1.3)	0.00***
Global rating	3.5 (0.8)	4.1 (0.8)	0.00***

*p<0.05.
**p<0.01.
***p<0.001.
PAL = peer-assisted learning, SD = standard deviation.

and feel comfortable among their peers. 'The informal and relaxed learning environment was also a considerably greater source of pleasure in PAL compared to lectures. This increased learner satisfaction and active participation in learning and offered a forum for students to express concerns away from staff personnel and freely address academic challenges with peers'. [15]

Concept building and comprehension, interactive and cooperative learning, learning skills development and learning environment are all vital areas to consider for the teaching and learning of students. The current study shows that solving previous examination questions during lectures and PAL gave students more understanding of the concepts associated with the course, despite PAL having higher scores. This could be because students put in much effort to solve past questions since they could be repeated in forthcoming examinations. Hence, students make use of PAL to bring everyone on board. Shankar *et al.*[21] showed that after attending PAL sessions, learners felt more confident in attempting questions and preparing for examinations. The study indicated that interactive and cooperative learning and the learning environment were perceived more positively by students. These findings are supported by those of Coliñir *et al.*[22] According to this study's outcomes, peer-assisted learning and lectures are both significant educational strategies which satisfy the different educational needs of allied health students. A similar study among health students reported higher global ratings for PAL compared with lectures.[15]

This study found no significant differences among the various levels of study regarding perceptions of lectures and PAL. This indicates that levels 200 to 400 students have similar perceptions of lectures and PAL. Most of the lecturers in the School of Biomedical and Allied Health Science teach levels 200 to 400 students, hence the same approach was used based on the syllabus. This could be the reason why there was no statistically significant difference among the levels of study. Outside the classroom and away from clinical settings, most students endorse PAL since they organise their own sessions to suit their goals, which could be the reason why students from various study levels all have similar perceptions about PAL. A similar study conducted in Kumasi showed that the level of health students did not have any significant difference in their perception of lectures and PAL.[23]

Lectures seem to suit both male and female students, as indicated by the lack of differences in their perceptions of lectures. Marmah[6] showed that both male and female students have similar perceptions about lectures as a method of instruction.

Both male and female students endorsed PAL. However, female students had higher scores, showing a greater endorsement of PAL than their male counterparts. This can be attributed to the fact that female students tend to use and prefer teaching and learning techniques that are more interactive, such as class discussions, small-group discussions and group projects.[20] Tai *et al.*[24] reported that female students may identify greater advantages to PAL.

Conclusion

This study showed that students' perceptions of PAL were more positive than their perceptions of lectures. There were no differences in perceptions among students in levels 200 to 400 regarding lectures and PAL. Students generally had positive perceptions of both lectures and PAL. However, PAL was acknowledged as an alternative that provides students with the opportunity for active, self-directed, enjoyable and relaxing educational experiences as well as fostering a sense of accountability. Students perceived PAL to be an effective educational and learning strategy. Therefore, it can be used as an adjunct to lectures within the standard allied health course, aligning with the primary goal of the study. Further research should employ a qualitative method to elaborate on perceptions about PAL and lectures.

Table 3. Differences among study levels in perceptions of lectures and PAL

	Mean (SD)	F	*p*-value
Perceptions of lectures			
Level 200	14.06 (4.34)	0.47	0.628
Level 300	14.25 (2.39)		
Level 400	13.67 (2.76)		
Perceptions of PAL			
Level 200	115.78 (30.0)	0.19	0.824
Level 300	117.85 (0.40)		
Level 400	115.29 (17.43)		

PAL = peer-assisted learning, SD = standard deviation.

Table 4. Differences in perception of PAL and lectures between male and female students

	Mean (SD)	t	*p*-value
Perceptions of lectures			
Female	14.17 (3.56)	0.923	0.357
Male	13.70 (3.04)		
Perception of PAL			
Female	17.21 (3.02)	2.51	0.013*
Male	16.0 (3.38)		

*$P<0.05$.
PAL = peer-assisted learning, SD = standard deviation.

Declaration. None.

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Data availability statement. Data obtained for this study will be made available upon reasonable request.

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