International Journal of Modern Education
IJMOE
EISSN: 2637-0905
Volume 6 Issue 22 (September 2024) PP. 91-100
DOI: 10.35631/IJMOE.622008

INTERNATIONAL JOURNAL OF MODERN EDUCATION (IJMOE)
www.ijmoe.com

GLOBAL ACADEMIC EXCELLENCE

THE EFFECTIVENESS OF COLLABORATIVE LEARING IN HIGHER EDUCATIONAL SYSTEM: A STUDY CASE IN UITM KELANTAN BRANCH

Nurul Suhada Aziz[1*], Mardhiyah Ismail[2], Mohd Faiez Suhaimin[3], Wan Nurul Husna Wan Nordin[4], Firdawati Mohamed[5]

[1] Mathematical Sciences Studies, College of Computing, Informatics and Mathematics, Universiti Teknologi MARA (UiTM) Kelantan Branch, Kelantan, Malaysia
Email: nurulsuhada@uitm.edu.my
[2] Mathematical Sciences Studies, College of Computing, Informatics and Mathematics, Universiti Teknologi MARA (UiTM) Kelantan Branch, Kelantan, Malaysia
Email: mardhiyah2264@uitm.edu.my
[3] Mathematical Sciences Studies, College of Computing, Informatics and Mathematics, Universiti Teknologi MARA (UiTM) Kelantan Branch, Kelantan, Malaysia
Email: mdfaeiz821@uitm.edu.my
[4] Mathematical Sciences Studies, College of Computing, Informatics and Mathematics, Universiti Teknologi MARA (UiTM) Kelantan Branch, Kelantan, Malaysia
Email: husna78@uitm.edu.my
[5] Mathematical Sciences Studies, College of Computing, Informatics and Mathematics, Universiti Teknologi MARA (UiTM) Kelantan Branch, Kelantan, Malaysia
Email: firdawati02@uitm.edu.my
[*] Corresponding Author

Article Info:

Article history:
Received date: 16.08.2022
Revised date: 01.09.2022
Accepted date: 07.08.2024
Published date: 15.09.2024

To cite this document:

Aziz, N. S., Ismail, M., Suhaimin, M. F., Nordin, W. N. H. W., & Mohamed, F. (2024). The Effectiveness of Collaborative Learning in Higher Educational System: A Study Case in UiTM Kelantan Branch. *International*

Abstract:

The onset of the COVID-19 pandemic prompted universities, including UiTM, to adopt Online Distance Learning (ODL) as a necessary measure to ensure the safety of students. However, the introduction of the first ODL initiative has been observed to have a demotivating effect on students, as they perform poorly on assessments. The E-peer mentoring programme was implemented to help UiTM students excel in their Mathematics courses as well as to provide emotional support through collaborative learning among peers. This programme was conducted to assess the programme's effectiveness based on three contributing factors: student motivation, problem-solving skills, and knowledge skills as perceived by the mentee. E-peer mentoring is an online initiative that connects students who struggle with Mathematics with those who excel in the same subject. Participants are divided into small groups consisting of a mentor and five mentees. The program specifically involves 80 students from the Diploma in Mathematical Sciences (CS143) and Diploma in

International Journal of Modern Education
EISSN: 2637-0905
IJMOE
Volume 6 Issue 22 (September 2024) PP. 91-100
DOI: 10.35631/IJMOE.622008

Journal of Modern Education, 6 (22), 91-100.

DOI: 10.35631/IJMOE.622008

Computer Science (CS110) enrolled in Calculus 1 at the Faculty of Computer Science and Mathematics (FSKM), Universiti Teknologi MARA (UiTM) Cawangan Kelantan during semester Mac – October 2021. The notable findings are tested using a variety of statistical analyses, including a normality test (skewness), reliability test (Cronbach's Alpha), and descriptive and inferential statistics tailored to the students' gender. The study demonstrates that the E-peer mentoring programme works equally well for students of different genders. Stereotypes about how students perceive peer mentoring are not applicable here. Furthermore, the study discovered a strong relationship between students' motivation, problem-solving skills, and knowledge skills, indicating that the E-peer mentoring programme is effective (all p-values less than 0.05). Specifically, student motivation and knowledge skills are the most important factors influencing programme effectiveness.

Keywords:

Effectiveness, E-Peer Mentoring, Gender, Knowledge Skills, Problem-Solving Skills, Student Motivation.

Introduction

The current novel coronavirus, COVID-19, has caused significant changes in the global education system. All educational institutions, including UiTM, have made significant efforts to ensure that this industry can continue to provide services in the face of the COVID-19 epidemic. To prevent virus transmission, UiTM proposed an alternative of switching from classroom learning to open and distance learning (ODL), which was implemented in March 2020.

This change was viewed as a positive development for UiTM's educational system. However, this system cannot avoid the crisis of ensuring that no student falls behind due to limited interactions and connectivity between educators and students via the online platform. So, FSKM took the initiative to conduct an E-peer mentoring programme to provide effective assistance to their students' learning for selected courses that are considered challenging for FSKM students, namely Pre-Calculus and Calculus 1.

E-peer mentoring is one of the programmes that takes a collaborative learning approach. The concept of collaborative learning, which involves pairing and grouping students to achieve a learning goal, has been extensively researched and supported. Collaborative learning is an instructional strategy in which students of varying performance levels work in small groups to achieve a common goal. Students are responsible for both their own and their peers' learning. As a result, the success of one learner benefits all students (Laal & Ghodsi, 2012).

Collaborative learning fosters reflective practice skills. Collaboration among students allows them to actively participate in the learning process. Additionally, collaborative learning provides an environment that promotes active, involved learning. Collaborative learning has the potential to help people acquire useful knowledge and skills. It also encourages integrated and differentiated learning. Mentors can use collaborative learning to interact with mentees one-on-one or in small groups, fostering intimacy and collaboration between the two parties (Sidgi, 2022).

International Journal of Modern Education
IJMOE
EISSN: 2637-0905
Volume 6 Issue 22 (September 2024) PP. 91-100
DOI: 10.35631/IJMOE.622008

University students now have the option to study from home and are not required to physically attend classes thanks to a new hybrid and flexible learning system that was recently implemented by the Ministry of Higher Education (MOHE) in Malaysia. This collaborative skills quality became increasingly important as a support system for students' academic survival in the higher education system with the rapid evolution of teaching and learning in the global higher education system from traditional instructional methods and face-to-face learning to e-learning.

The aim of this research paper is to identify the effectiveness of E-peer mentoring programme conducted. The focus factors measured in this paper includes improvement of motivation, problem solving skills and knowledge skills of mentees that participated in the program. This research was conducted based on the feedback obtained from the E-peer mentoring programme to determine three objectives which are first, to determine the significant mean difference between E-peer mentoring programme effectiveness and gender, second, to determine the relationship between student motivation, problem solving skills and knowledge skills towards E-peer mentoring program effectiveness and third, to determine the most important factors that affect the E-peer mentoring program effectiveness.

Literature Review

According to Ambrose et al. (2010), motivation is the desire and behaviour to complete a task in order to achieve a specific goal. Given that the E-Peer mentoring activity employed collaborative teaching and learning among students, each participant must be intrinsically motivated to teach and learn from others. Consequently, positive individual motivation is one of the factors that can generate competencies in teaching and learning practices. Successful collaboration and cooperation among students in a group setting is directly related to student motivation and will directly contribute to the programme's effectiveness. The positive attitude of motivated students to participate in the programme will increase group orientation to achieve goals, strengthen ties between students, and improve collaborative and cooperative skills among students to deal with any problems that arise in the group environment.

In the E-peer mentoring programme, both peer mentors and peer mentees have a responsibility to teach others. Peer mentors teach their peer mentees, who then share with other mentees. The teaching process in this type of collaborative learning can be challenging for students. Despite the difficulties that students must face, this learning process is thought to be more effective because the student who teaches will have a deeper and clearer understanding of the content discussed (Fiorella & Mayer, 2014). The effectiveness of learning is determined by the teacher’s knowledge and problem-solving abilities. Problem solving abilities were identified as the top ten skills required by students in the fields of science, technology, engineering, and mathematics, as well as in interdisciplinary learning contexts. Problem solving skills are defined in the context of collaborative learning as the ability to effectively engage with others to construct essential knowledge to solve problems by sharing knowledge and skills in order to reach a solution. It required the ability to mentor as well as be mentored. Individuals who can perform their roles well and achieve the desired goal are said to have excellent problem-solving abilities. With this ability, any problems or difficulties encountered during the process of peer teaching and learning can be addressed appropriately, contributing to the programme’s effectiveness and success.

International Journal of Modern Education
IJMOE
EISSN: 2637-0905
Volume 6 Issue 22 (September 2024) PP. 91-100
DOI: 10.35631/IJMOE.622008

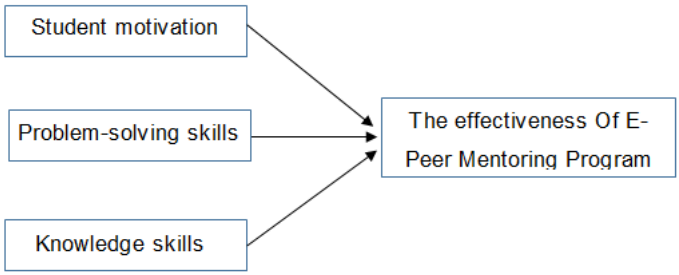

Figure 1: A Conceptual Framework between Student motivation, Problem-solving Skills and Knowledge Skills Towards The effectiveness of E-peer Mentoring Program

Mentoring is regarded as an excellent teaching and learning strategy that promotes student success and serves as an effective mechanism to positively influence students (Eby & Dolan, 2015). Abdelkarim and Abuiyada (2016) discovered that a peer teaching strategy is an active tool for increasing mathematical achievement among undergraduate students in Oman. Other studies on peer mentoring have yielded promising results and have had a positive impact on students' achievement in Mathematics courses (Eby & Dolan, 2015; Lim, 2014). Based on the questionnaires conducted by Lim (2014) on pre and post tests on the peer-teaching activities for the mathematics course on Complex Analysis found that the student's learning motivation and performance also improved after the peer teaching activity was conducted.

Peer tutoring can be an effective strategy that provides students with individual assistance, allowing them to approach syllabus content at their own learning level. This type of tutoring makes the mentee feel more at ease and less hesitant to ask their mentor questions (Ali et al., 2015). This is because the mentor is on the same level as them and can relate to their difficulties and confusion with the course they are taking. However, mentees' willingness to receive mentorship and desire to improve their academic performance play an even more important role in producing high-quality mentoring relationships. The committed and motivated mentees can find joy and will actively engage in the learning process (Andrews & Manning, 2015). According to Colvin & Ashman (2010), connecting link, peer leader, learning coach, student advocate, and trusted friend were identified as predominant roles enacted by mentors.

The impact on peer mentee motivation and achievement can be used to assess the success of a peer teaching strategy (Olalekan, 2016). According to Pechinthorn (2017)'s research, peer mentees are more motivated by peer mentoring activities than by teacher lectures in university classes, and they want to use the peer teaching method again in the future. This learning strategy also was proven effective to improve student's practical skills (Comfort, 2011), improving confidence (Dee, 2015), have positive impact on retaining knowledge (Pechinthorn et al., 2020) and mastering the content of the academic courses (Pascarella & Terenzini, 2005).

To maintain the programme's effectiveness, mentors and mentees are expected to network not only during the programme but also afterward. It is hoped that mentees will benefit from what mentors have to offer and open up about their difficulties to mentors. This will increase the positive impact on the mentee's academic success. If mentees are exposed to and understand the intention of the programme, they will be more interested in following the program and thus achieving the programme's objectives as planned.

International Journal of Modern Education
IJMOE
EISSN: 2637-0905
Volume 6 Issue 22 (September 2024) PP. 91-100
DOI: 10.35631/IJMOE.622008

According to Elbers & Streefland (2000), students must learn to regulate their learning in collaborative learning and acquire knowledge skills. Traditionally, the teacher is responsible for regulating classroom behavior. However, collaborative learning has partly delegated responsibility for learning to students. The effectiveness of the learning process is determined by students' ability to propose knowledge and critically discuss arguments. Therefore, learners develop knowledge skills by collaborating to resolve intricate problems, which involves individually contributing to the solution, engaging in discussions about individual contributions, and arriving at joint solutions (Roschelle & Teasley, 1995). Mentorees can benefit from collaborative learning by sharing specific concepts with their peers and achieving its effectiveness.

Methodology

The methodology for this study is based on Rasat et al.'s (2023) four phases of collaborative learning introduced in e-peer mentoring. Each phase consists of five groups of mentors who are assigned to corresponding mentees. These mentees are responsible for each problem in their group, which is then divided into new groups based on the same topics. Then, all peer mentees return to their original group to share solutions to problems and discussions between mentees, which are monitored by the previously assigned peer mentor. Finally, peer mentors will move from one group to another until all five assigned topics have been completed for all groups.

Population and Method of Data Collection

The respondents for this study are 83 FSKM students at UiTM Cawangan Kelantan who participated in the E-peer mentoring programme, which included students from the Diploma in Mathematical Sciences (CS143) and Diploma in Computer Science (CS110) who enrolled in Calculus 1 (MAT183). This research uses all E-Peer Mentoring participants as a census study due to the small population of only 83 students. The primary data for this study was gathered from questionnaires adapted from Schmedlen et al. (2019). The questionnaire was designed using 5-point Likert scale; strongly disagree (1), disagree (2), neutral (3), agree (4) and strongly agree (5).

Result

Normality Test

The normality test determines whether a data set is normally distributed by measuring skewness, which is the asymmetry of the probability distribution of a random variable about its mean. The skewness value can be either positive or negative, or even undefined. According to Pallant (2011), -1 to 1 is an acceptable range for normal distribution of data.

Table 1: Skewness Result

	Skewness Value
Skewness	-0.311

The research can infer that the data distribution is normally distributed, as the measure of skewness in Table 1 is -0.311 and falls within the range of -1.0 to 1.0.

Reliability Test

Cronbach's Alpha was calculated for each of these four sections to conduct the reliability analysis. In the ability test case, an alpha value of 0.7 is considered acceptable in reliability

International Journal of Modern Education
EISSN: 2637-0905
IJMOE
Volume 6 Issue 22 (September 2024) PP. 91-100
DOI: 10.35631/IJMOE.622008

analyses. Table 2 shows that the Cronbach's Alpha values for all variables exceed 0.837. This indicates that the variable questions in the questionnaires are valid.

Table 2: Cronbach's Alpha Values

Variables	Cronbach's Alpha	No. of Question
E-peer mentoring program effectiveness	0.923	3
Student Motivation	0.837	3
Problem Solving Skills	0.909	3
Knowledge Skills	0.939	3

Descriptive Statistics

This study's descriptive analysis includes the genders of the participants. Table 3 displays the percentages of frequency distribution for the item gender. The total number of samples is 83, with 60.2% (50) of respondents being female and the remaining 39.8% (33) being male.

Table 3: Gender

Gender	Frequency	Percent (%)
Male	33	39.8
Female	50	60.2
Total	83	100

Inferential Statistics

A series of tests must be completed in order to address all of the listed objectives. The independent sample t-test is being used to determine the significant mean difference in the effectiveness of the E-peer mentoring programme based on the student's gender. Table 4 shows that the effectiveness of the E-peer mentoring programme is equal for both genders. The Levene test yields a p-value of 0.630 ($p>0.05$), indicating no significant mean difference. This shows that the variability of the two groups, male and female, is equal. This finding suggests that the students' gender had no bearing on the effectiveness of the E-peer mentoring programme. According to the findings of this study, gender stereotypes about the effectiveness of E-peer mentoring programmes do not apply to the respondents.

Table 4: T-test Results for Student's Gender

		F	Sig
Gender	Equal Variances Assumed	0.233	0.630

Then, a correlation test is used to determine the relationship between student motivation, problem solving skills, and knowledge skills and the effectiveness of the E-peer mentoring programme.

Table 5: Pearson Correlation Result

Variable	E-peer mentoring program effectiveness		Level
	Pearson Correlation	Significant	
Student Motivation	0.608	0.000	High
Problem Solving Skills	0.462	0.000	Moderate
Knowledge Skills	0.663	0.000	High

International Journal of Modern Education
EISSN: 2637-0905
IJMOE
Volume 6 Issue 22 (September 2024) PP. 91-100
DOI: 10.35631/IJMOE.622008

The research found in Table 5 above, which is based on Guilford's Law Correlation (Tredoux & Durheim, 2002), that there is a significant positive relationship between the effectiveness of e-peer mentoring programmes and student motivation, problem-solving skills, and knowledge skills ($p<0.05$). The r-values for student motivation and knowledge skills are 0.608 and 0.663, respectively. Both variables demonstrated a strong positive correlation with the efficacy of the E-peer mentoring programme. However, for problem solving skills, the positive relationship with the E-peer mentoring program effectiveness was moderate since the r-value obtained is 0.462.

Table 6 provides a summary of the regression model. The R Square value of 0.505 indicates a 50.5% variation in E-peer mentoring programme effectiveness due to the independent variables student motivation and knowledge skills.

Table 6: Model Summary

Model Summary				
Model	**R**	**R Square**	**Adjusted R Square**	**Std. Error of the Estimate**
2	0.711[b]	0.505	0.493	0.43570

b. Predictors: (Constant), student motivation and knowledge skills

F-statistics were used to determine the overall strength of the model. Table 7 shows that the F-Statistic value is 40.834, and the p-value is less than 0.05, indicating that the data used in the study fits the model.

Table 7: Anova Result

ANOVA[a]						
Model		Sum of Squares	df	Mean Square	F	Sig.
2	Regression	15.504	2	7.752	40.834	0.000[b]
	Residual	15.187	80	0.190		
	Total	30.691	82			

a. Dependent Variable: E-peer mentoring programme effectiveness
b. Predictors: (Constant), student motivation and knowledge skills

Table 8 displays the regression model's findings, which indicate that student motivation and knowledge skills are the sole independent variables that significantly influence the effectiveness of the E-peer mentoring programme ($p<0.05$).

Table 8: Regression Model Result

Coefficients[a]						
Model		**Unstandardized Coefficients**		**Standardized Coefficients**	**t**	**Sig.**
		B	**Std. Error**	**Beta**		
2	(Constant)	0.452	0.398		1.812	0.074
	Student Motivation	0.387	0.119	0.324	3.255	0.002
	Knowledge Skills	0.509	0.109	0.465	4.675	0.001

a. Dependent Variable: E-peer mentoring program effectiveness

International Journal of Modern Education
EISSN: 2637-0905
IJMOE
Volume 6 Issue 22 (September 2024) PP. 91-100
DOI: 10.35631/IJMOE.622008

Only the Problem Solving Skills variable was removed from the model using a stepwise selection method because the p-value was greater than 0.05. Thus, the final regression model is depicted below.

$$Y = B_0 + 0.387\ X_1 + 0.509\ X_2$$

$$\text{E-peer mentoring program effectiveness} = 0.452 + 0.387\ X_1 + 0.509\ X_2$$

Where X_1 is Student Motivation and X_2 is Knowledge Skills

Conclusion

The findings of this study revealed that the effectiveness of E-peer mentoring programmes among students of all genders is equal, and that gender stereotypes about how they perceive peer mentoring programmes do not apply to these students. The results also show that there is a significant positive relationship between student motivation (high level), problem-solving skills (medium level), and knowledge skills (high level) and the effectiveness of the E-peer mentoring program, with all p-values less than 0.05. Furthermore, only student motivation and knowledge skills are viewed as the most important factors influencing the effectiveness of the E-peer mentoring programme. This suggests that peer motivation has increased since the programme's completion, and that they fully understand the value of knowledge skills. This was employed to enhance student motivation and knowledge skills by conducting an additional programme, such as a motivation programme, as the discovery indicates that student motivation and knowledge skills are influenced.

Furthermore, the study not only offers useful insights for improving mentoring programmes, but it also emphasises the importance of tailoring support to mentees' specific needs. Mentors can provide personalised assistance by taking into account a variety of factors, thereby improving key characteristics in their mentees. The assessment of program effectiveness, which considers a variety of factors, promotes a holistic mentoring approach, encouraging institutions and mentors to implement comprehensive strategies beyond academics

The research lays the groundwork for ongoing evaluation and improvement of mentoring programmes, ensuring alignment with changing mentee needs. Mentors can use these insights to improve their strategies, recognising the importance of student motivation, problem-solving abilities, and knowledge acquisition for a more effective mentor-mentee relationship. Identifying these key factors highlights mentoring's role in building resilience and empowering mentees, contributing to their overall development.

Future research could use larger samples from different courses, such as Calculus II, and include all students to improve the results' generalisability. Another variable to consider is self-efficacy and mentor credibility.

In summary, the study extends beyond evaluating a specific programme, guiding the development of mentoring initiatives by emphasizing the importance of addressing motivational, problem-solving, and knowledge-related aspects from the mentee's perspective. Continuous research and evaluation are recommended to optimize mentoring programs for sustained positive outcomes in student development.

International Journal of Modern Education
EISSN: 2637-0905
IJMOE
Volume 6 Issue 22 (September 2024) PP. 91-100
DOI: 10.35631/IJMOE.622008

Acknowledgement
The author would like to extend their gratitude and appreciation to all the individuals who participated by taking their time and providing feedback for all the conducted activities.

References

Abdelkarim, R. & Abuiyada, R. (2016). The Effect of Peer Teaching on Mathematics Academic Achievement of the Undergraduate Students in Oman, *International Education Studies*, 9(5). 124 – 132. ISSN 1913-9020 E-ISSN 1913-9039

Ali, N. Anwer, M. & Abbas, J. (2015). Impact of Peer Tutoring on Learning of Students, Journal for Studies in Management and Planning. 1(02), 61-65.

Ambrose, S. A.,Bridges, M. W., DiPietro, M., Lovett, M. C. and Norman, M. K. (2010), How Learning Works: Seven Research-Based Principles for Smart Teaching. *John Wiley & Sons*.

Andrews, M. & Manning, N. (2015). Peer Learning In Public Sector Reforms. *Effective Instituitions Platform (EIP).* www.effectiveinstituitions.org

Colvin, J. W. & Ashman, Marinda. (2010). Roles, Risks, and Benefits of Peer Mentoring Relationships in Higher Education. *Mentoring & Tutoring: Partnership in Learning*. 18. 121-134. 10.1080/13611261003678879.

Comfort, P. (2011). The Effect of Peer Tutoring On Academic Achievement During Practical Assessments In Applied Sports Science Students. *Innovations in Education & Teaching International*, 48(2), 207-211. http://dx.doi.org/10.1080/14703297.2011.564015.

Dee, B. A. (2015). A Peer Tutoring Model For Small School With Limited Funding And Resources. Proceedings of 46th ACM Technical Symposium on Computer Science Education.514-513. 10.1145/2676723

Eby, L.T., and Dolan, E.L. (2015). Mentoring in postsecondary education and organizational settings. *APA Handbook of Career Intervention*,(2), pp. 383–95.

Elbers, E. & Streefland, L. (2000). Collaborative learning and the construction of common knowledge. *European Journal of Psychology of Education*, 15, 479–490. https://doi.org/10.1007/BF03172989

Fiorella, L. & Mayer, R. E. (2014). Role of Expectations and Explainations in Learning by Teaching, *Contemporary Educational Psychology*. 39(2), 75 – 85. https://doi.org/10.1016/j.cedpsych.2014.01.001

Kline, P. (1999). The Handbook of Psychological Testing (2nd ed.). London: Routledge.

Laal, M. and Ghodsi, S. M. (2012). Benefits of Collaborative Learning. *Procedia – Social and Behavioral Sciences*. 31, 486 – 490. https://doi.org/10.1016/j.sbspro.2011.12.091

Lim, L. L. (2014). A case study on Peer Teaching. *Open Journal of Sciences*. 2, 35-40. http://dx.doi.org/10.4236/jss.2014.28006

Olalekan, A. B. (2016). Influence of peer group relationship on the academic performance of students in secondary schools: A case study of selected secondary schools in Atiba Local Government Area of Oyo State. *Global Journal of Human-Social Science*, 16(4). 35-47

Pallant, J. (2011). *SPSS survival manual: A Step-by-Step Guide to Data Analysis Using the SPSS Program*. Berkshire: Open University Press.

Pascarella, E. T., & Terenzini, P. T. (2005). How College Affects Students: A Third Decade Of Research. San Francisco, CA: John Willey and Sons, Inc. ISBN: 978-0-787-91044-0

Pechinthorn, K. (2017). Increasing Student Improvement: Giving Autonomy To Students of International College At Rajamangala University of Technology Krungthep In

International Journal of Modern Education
EISSN: 2637-0905
IJMOE
Volume 6 Issue 22 (September 2024) PP. 91-100
DOI: 10.35631/IJMOE.622008

Thailand: The Complete Peer Teaching Method To Their Peers In C. International Institute of Social and Economic Sciences. *34th International Academic Conference*, 174 - 187. https://doi. org/10.20472/iac.2017.034.039

Pechinthorn, K., Samarkjarn, J. & Irawan, N. (2020). Factors in Controlling the Successful Peer Teaching Method in Higher Education. *Journal of English Language, Literature and Teaching*, Volume 5 (1), 1-7. doi: 10.32528/ellite.v5i1.3126.

Rasat, N. A. M., Ismail, M., Othman, S. A., Suhaimin, M. F., & Abd Manaf, F. M. (2023). Student's Emotional Willingness In A New Collaborative Learning Strategies. *International Journal of Modern Education*, 5 (18), 148-160.

Roschelle, J. & Teasley, S. D., (1995). The Construction of Shared Knowledge in Collaborative Problem Solving. *Computer Supported Collaborative Learning*. 69 -97.

Schmedlen, R., Lee, J. W., Shekhar, P., & Stegemann, J. (2019), The Clinical Peer Mentors Program: Student Motivations, Skills and Knowledge Acquisition, and Influence on Career Path Paper presented, *2019 ASEE Annual Conference & Exposition* , doi: 10.18260/1-2--33376

Sidgi, L. F. S. (2022). The Benefits of Using Collaborative Learning Strategy in Higher Education. *International Journal of English Literature and Social Sciences*, 7(6), 217 – 224.

Tredoux, C.T., & Durheim, K. (2002). *Numbers, hypotheses and conclusions: A course in statistics for the social sciences.* Cape Town: UCT Press.