

# THE INFLUENCE OF PROBLEM-BASED LEARNING ON ACADEMIC PERFORMANCE OF HIGHER LEARNING INSTITUTION STUDENTS

Sarah Sabir Ahmad<sup>1\*</sup>  
Azfahanee Zakaria<sup>2</sup>  
Mhd Azmin Mat Seman<sup>3</sup>

<sup>1</sup> Faculty of Business Management, Universiti Teknologi MARA, Malaysia, (E-mail: sarah342@uitm.edu.my)

<sup>2</sup> Faculty of Business Management, Universiti Teknologi MARA, Malaysia, (E-mail: azfa292@uitm.edu.my)

<sup>3</sup> Politeknik Sultan Abdul Halim Muadzam Shah, Malaysia, (E-mail: mhdazmin\_76@yahoo.com)

Corresponding author: sarah342@uitm.edu.my

## Article history

**Received date** : 18-3-2023

**Revised date** : 19-3-2023

**Accepted date** : 2-5-2023

**Published date** : 15-5-2023

## To cite this document:

Ahmad, S. S., Zakaria, A., & Mat Seman, M. A. (2023). The Influence of Problem-Based Learning on Academic Performance of Higher Learning Institution Students. *International Journal of Accounting, Finance and Business (IJAFB)*, 8(47), 198 - 205.

---

**Abstract:** *Problem-based learning (PBL) has been widely discussed as a teaching approach to enhance learning by pushing students to work together in groups to resolve real-world problems while strengthening their subject-matter expertise, critical thinking skills, and interpersonal skill. Recognizing this, the goal of this study is to examine the impact of problem-based learning (PBL) on academic performance among students at higher learning institution. This study discusses the factors of PBL which consist interpersonal competence, analytical skill, learning assessment, and interdisciplinary learning and how it significantly affect students' academic success. In order to determine this, a sample of 116 students were selected as the respondents for this study and the data was gathered using self-administered questionnaires. Using SPSS statistical software, the results were examined and the findings showed three variables of PBL has significant effects on the students' academic performance. Therefore, the governing body should take action to integrate PBL in classroom learning activities since it will improve students' comprehension, encourage improved communication skills, increase student involvement, and hold their interest for a longer period of time than traditional teaching and learning techniques.*

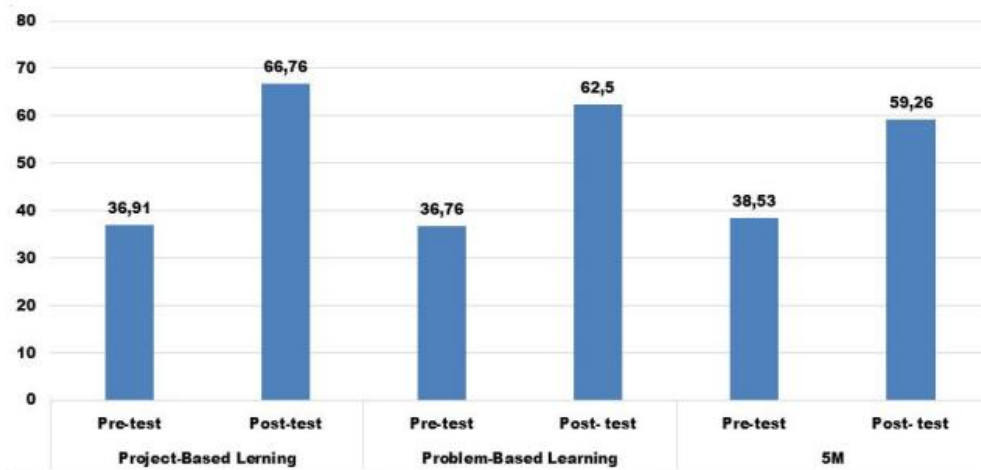
**Keywords:** *Problem-Based Learning, Interpersonal Competence, Analytical Skill, Learning Assessment, Interdisciplinary Learning, Academic Performance*

---

## Introduction

The purpose of education is to develop students' potential for autonomous growth, making heuristic teaching even more important. Teaching based on sustainability competences brings new challenges for university instructors as well as a chance to advance students' capacity for independent learning (Leicht, Heiss, & Byun, 2018). This is due to the fact that prior research has demonstrated a positive correlation between academic success and post-graduation salaries, work performance, psychological empowerment, resilience, and spiritual wellbeing (Aluko, Daniel, Oshodi, Aigbavboa, & Abisuga, 2018). In this setting, problem-based learning (PBL)

has been widely adopted as a teaching strategy to improve learning by requiring students to work in groups to solve real-world problems while enhancing their subject-matter expertise, critical thinking abilities, and interpersonal skills (Tortorella & Cauchick-Miguel, 2018).



**Figure 1: Statistic of effect after applying Problem-Based Learning and Project-Based Learning enhance students' creativity and critical thinking.**

Source: R. D. Anazifa & Djukri (2017)

The study discovered a substantial difference in students' creativity and critical thinking before and after project-based learning and problem-based learning were implemented, as seen in Figure 1 above. According to the research, Project-Based Learning (PrBL) and Problem-Based Learning (PBL) both are similar with being cross-disciplinary, combining many ideas from various disciplines into a single learning experience. Both PBL and PrBL are effective methods for fostering the growth of fundamental abilities like information literacy, creativity, empathy, and problem-solving. The research by Anazifa, R. D. and Djukri (2017) exhibit both methods have a highly good rise among students. This illustrates how PBL and PrBL are for enhancing academic success in learning sessions compared to the traditional methods.

PBL has been used in Malaysia in a number of higher education sectors, including engineering, information technology and multimedia, medical and dental education, physics, and teacher preparation, in line with this trend. It is important to discuss the problems that develop during implementation and any practical and workable solutions because implementing PBL necessitates a considerable change in class management and the roles of students and teachers (Borhan, 2012). Based on their perceptions, attitudes, opinions, and motivation, the study concluded that Malaysian undergraduate students who are using PBL in their learning are doing so positively.

Abid, Samuel, Ali, Shoab, and Warraich (2022) proposed that interpersonal skills among students have an impact on their academic performance even if these behaviours are also essential for long-term success. Samson (2015) found that the use of analytical skills in the context of critical thinking skills significantly increased student learning. Since evaluation is the primary focus of student development in higher education, learning assessment is a crucial factor in determining a student's academic success, claims Basera (2019). According to Hubert (2021), interdisciplinary learning helps students gain a deeper comprehension of particular subjects or ideas, which might enhance their academic performance.

Since academic performance is focal for a students' overall achievements, therefore the goal of this study is to determine the influence of the constructs of PBL on students' academic performance. The primary aim of this study is to identify which factor of PBL had bigger influence and which has the least on students' academic performance. By identifying this, it is hope to shed some light in the literature and assist the practitioners in implementing the best academic approach for the students' success.

### **Academic Performance**

Academic performance, according to Kamara and Dadhabai (2022), is the ability to assess pupils' talents through the accomplishment of desired goals. Referring to the study done by Chileya and Shumba (2020), their findings suggest that problem-based learning can, when implemented effectively, enhance students' academic performance, promote the growth of their problem-solving skills, and engage them in the scientific process.

Besides that, according to Su et al. (2017), effective student engagement improves their participatory behaviours, which are linked to students' learning outcomes and allow them to gain a deeper comprehension of the material being learned. Therefore, a good learning skill with analytical capabilities will ensure better academic performance of the students (Sarah Sabir Ahmad et al., 2021).

### **Interpersonal Skill, Analytical Skill, Learning Assessment and Interdisciplinary Learning**

Interpersonal skills are the students' cooperative learning behaviours as well as communicative abilities that enable them to effectively express, communicate, aid, share, and compliment others in educational contexts, claimed Abid, Shoaib, and Ali (2022). To add on, according to Song, Lee, Liew, Ho, and Lin (2022), the case method in problem-based learning encouraged interactions and stronger bonds between students and teachers as well as between students themselves, which led to an increase in student involvement. Additionally, case discussion with peers and lecturers in class boosted emotional involvement, which had a good impact on group interaction and individual learning performance, according to a study by Nkhoma et al. (2017) on undergraduate students in a related course.

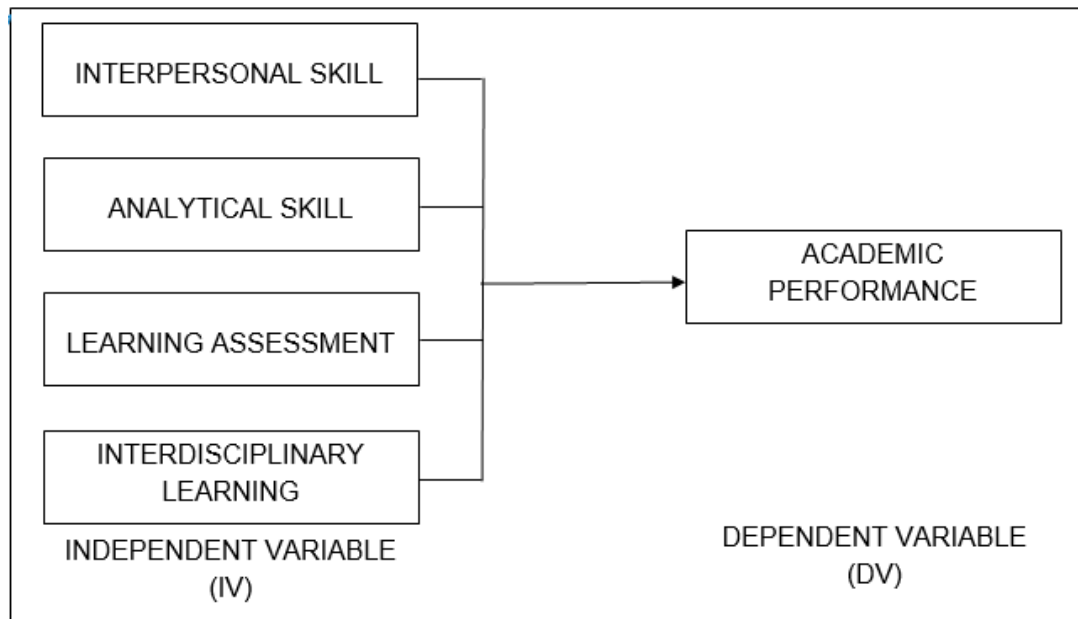
When a student is required to find or construct a problem to address in an ambiguous scenario, analytical thinking is necessary. It incorporates an additional element of inquiry and situations with less clearly defined boundaries and consequences (Robbins, 2011). Therefore, it is a step in the problem-solving process, which is regarded as crucial for teaching kids the skills they need to get ready for a more complex life and workplace in the twenty-first century (Song et al. 2022). Thus, PBL, which places an emphasis on student-centered learning, encourages students to work in groups to solve problems that are vague and open-ended by using the following learning steps: analysing problems, setting goals, gathering resources, summarising ideas, and reflecting on problem-solving experiences (Tortorella & Cauchick-Miguel, 2018).

Moreover, higher education assessment is any method that evaluates a person's knowledge, understanding, talents, or skills, according to the Quality Assurance Agency (2011). Traditional teacher-centered learning approaches are reportedly being replaced by student-centered approaches, such as those undertaken within the context of constructivist teaching-learning theories (e.g., design thinking, experiential learning, or challenge-based learning) according to (Colombelli et al. (2022); O'Brien & Hamburg, (2019). So, in comparison to other educational approaches like role-plays or simulations, it can be argued that evaluations from problem cases

through case methods have given students greater skills in the identification of gaps and accomplishing learning goals.

Besides that, interdisciplinary studies, according to Ivanitskaya, Primeau, Clark, & Montgomery (2002), combine knowledge from various academic domains around a main programme subject or emphasis. Interdisciplinary PBL can improve interdisciplinary proficiency, reflective conduct, and other interdisciplinary skills required for growth and employment (Brasler & Dettmers, 2017). A multidisciplinary approach can thereby improve student learning. Studies show that interdisciplinary instruction improves students' knowledge of particular subjects or ideas (Hubert, 2021).

From the literature and findings discussed above, the theoretical framework in Figure 2 was developed. The constructs consists of four independent variables which are interpersonal skills, analytical skills, learning assessment and interdisciplinary learning. And one dependent variable which is the focal of this research is academic performance.



**Figure 2: Theoretical Framework**

### Data Collection and Analysis Method

Due to time constraint, the sample employed in this study was made up of UiTM Kedah students. The total number of students in the campus consists of 8196 students who are spread over seven faculties. For this investigation, 200 samples in total were collected. Convenience sampling was employed as the sample technique for this quantitative study in order to gather the data. The unit of analysis was individual where the students represented themselves during the data collections.

A descriptive research design was adopted in this study, employing a quantitative method. A descriptive study's objective is to provide the researcher with a profile of the phenomenon of interest or to describe pertinent features of it from personal, organisational, business-focused, or other perspectives. On interpersonal ability, analytical ability, learning assessments, interdisciplinary abilities, and academic achievement, a cross-sectional survey was conducted. This is in reference to how PBL influences students' academic achievement.

This study uses a questionnaire to collect data from respondents who are UiTM Kedah students by combining adaptations from several previous studies. There are five demographic questions, 20 questions about independent factors, and 6 questions about dependent variables in the three sections of the questionnaire.

The data for this study were analysed using SPSS statistical software, version 26.0. In this study, the researcher employed reliability analysis to check on the goodness of data, frequency analysis for the demographic data, correlation analysis, and multiple regression analysis to test the relationships as well as the influence of each factor on the dependent variable.

## Results and Discussions

### Frequency Analysis

There were 116 number of observations with a total response rate of 58% that could be used for data analysis. According to the respondents' demographic information on gender, the sample consisted of more women (71.6%) than men (28.4%). The majority of the respondents consisting 30.2%, were within the age range of 20 and under, according to the age factor. The outcomes differ across all categories in terms of semesters. According to the data, 43.1% of the respondents were from semester 5. The bulk of respondents, or 53.4% overall, were from the department of business and management, while the faculty of accountancy had the fewest responses, or only 6.0%.

### Reliability Analysis

The reliability analysis was conducted using Cronbach Alpha to determine the internal consistency of the item evaluating the variables with subjective measures. The Cronbach Alpha was used to examine the reliability of the item variable of this study which are Analytics Skills, Interpersonal Skills, Learning Assessments, Interdisciplinary Skills, and Academic Performance.

Table 1 indicate reliability analysis results and all of the Cronbach Alpha values was greater than 0.7, indicating that the overall measure was acceptable. Therefore, each item for this variable is preserved.

**Table 1: Reliability Analysis**

Variable	Total Items	Items Deleted	Cronbach's Alpha
Analytical Skills	5	None	0.901
Interpersonal Skills	5	None	0.873
Learning Assessments	5	None	0.890
Interdisciplinary Skills	5	None	0.888
Academic Performance	6	None	0.860

**Table 2: Multiple Regression Analysis**

Model	Standardized Coefficients Beta	Sig.
Analytical Skills	0.374	0.000
Interpersonal Skills	0.330	0.001
Learning Assessments	0.216	0.051
Interdisciplinary Skills	-0.023	0.833

Dependent Variable: Academic Performance

$R^2 = 68.4\%$

Sig: 0.00

The results of the multiple regression analysis are shown in Table 2. To determine whether there is a significant correlation between the variables of PBL influencing the academic performance, a multiple regression analysis was carried out. The  $R^2$  score of 68.4% indicates that independent variables have a higher potential to explain dependent variables (academic performance). Additionally, this study emphasised how the independent variables of analytical skills, interpersonal skills and learning assessments have a big impact on how students' academic performance. Analytical skills is the most important independent variable influencing academic performance, according to the highest standardised beta value of 0.374. Table 3 shows the summary of hypotheses and its results.

**Table 3: Summary of Hypotheses**

Hypothesis	Result
H <sub>1</sub> : There is a relationship between analytical skills and students' academic performance.	Accepted
H <sub>2</sub> : There is a relationship between interpersonal skills and students' academic performance.	Accepted
H <sub>3</sub> : There is a relationship between learning assessments and students' academic performance.	Accepted
H <sub>4</sub> : There is a relationship between interdisciplinary skills and students' academic performance.	Rejected

### Discussion and Conclusion

In this rapidly growing world economy, the demand by organizations for competent and independent staff is high. Therefore, aligned with the research by Song, Lee, Liew, Ho, and Lin (2022) that highlighted that students that has the analytical skills will show better performance in their academic and life, this study indicated that hypothesis 1 was accepted. Analytical skills showed the strongest influence on students' academic performance with the beta value of 0.374 and this indicate that the respondents agreed that the emphasis on student-centered learning, encourages students to work in groups to solve problems was indeed an important factor affecting their academic performance. Students prefer to work in groups and think of solutions rather be given step-by-step instructions that do not challenge them to think creatively.

Besides that, the second hypothesis related to interpersonal skills also showed a significant influence on academic performance. This findings is aligned with the studies by Abid, Shoab, and Ali (2022); Song et al. (2022) and Nkhoma et al. (2017) which all indicated that interpersonal skills is a much needed skills among students as it encourage interactions between peers and with lecturers that enhances students' involvement, communication abilities and boosted emotional involvement which had a positive impact on students' academic performance. Therefore, developing students' interpersonal skill is vital as it positively influence students' academic performance and later their work life.

In addition, the findings also showed that hypothesis 3 related to learning assessments has a significant influence on academic performance too. This is in line with the research done by Colombelli et al. (2022); and O'Brien & Hamburg, (2019) which has proven that the none traditional learning assessment such as e.g., design thinking, experiential learning, or challenge-based learning, has given students with greater skills in the identification of gaps and

accomplishing learning goals. This is important for students to be able to think outside of the box and explore the possibilities in solving problems and issues.

The final hypothesis 4 related to interdisciplinary skills however has showed insignificant influence to academic performance. This findings is contradict to the study by Ivanitskaya, Primeau, Clark, & Montgomery (2002) and Hubert (2021). This may be due to interdisciplinary skills is more related to working life instead of academic performance of the students. As in work life, employees are expected to be able to jive work from different field and areas, unlike in universities, students are focused on their specified course or subject which may be the reason this hypothesis was found insignificant towards their academic performance.

However, from the findings of this present study, it can be inferred three hypotheses were identified to have significant and positive influences on academic performance of students and therefore, the governing body should take actions in implementing PBL in classroom learning activities as it will enhance students' understanding, promote better communication skills, enhance students involvements and capture their interest longer compare to traditional teaching and learning methods. This will not only enhance the students' academics but will ensure better quality employees for the organizations for the future.

## References

- Abid, N., Samuel, A., Ali, R., Shoaib, A., & Warraich, W. Y. (2022). Students' interpersonal skills and its association with their academic achievement in secondary school of Pakistan. *International Journal of Evaluation and Research in Education*, 11(1), 143-151.
- Aluko, R. O., Daniel, E. I., Oshodi, O. S., Aigbavboa, C. O., & Abisuga, A. O. (2018). Towards reliable prediction of academic performance of architecture students using data mining techniques. *Journal of Engineering, Design and Technology*, 16(3), 385-397.
- Anazifa, R. D., & Djukri. (2017). Project- Based Learning and Problem-Based Learning: Are They Effective to Improve Student's Thinking Skills? *Jurnal Pendidikan IPA Indonesia*, 6(2), 346-355.
- Basera, C. H. (2019). Learners' Perceptions of Assessment Strategies in Higher Education. *Journal of Education and e-Learning Research*, 6(2), 76-81.
- Borhan, M. T. (2012). Problem Based Learning (PBL) in Malaysian Higher Education: A Review of Research on Learners' Experience and Issues of Implementation. *ASEAN Journal of Engineering Education*, 1(1), 48-53.
- Brasler, M., & Dettmers, J. (2017). How to Enhance Interdisciplinary Competence— Interdisciplinary Problem-Based Learning versus Interdisciplinary Project-Based Learning. *Interdisciplinary Journal of Problem-based Learning*, 11(2).
- Chileya, M. E., & Shumba, P. O. (2020). The Impact of Problem Based Learning on Learners' Academic Achievement in Chromatography and Science Learning Activation. *International Journal of Research and Innovation in Social Science (IJRISS)*, 4(9) 778-785.
- Colombelli, A., Loccisano, S., Panelli, A., Pennisi, O. A., & Serraino, F. (2022). Entrepreneurship Education: The Effects of Challenge-Based Learning on the Entrepreneurial Mindset of University Students. *Administrative Sciences*, 12(1), 1-12.
- Hubert, C. (2021). Interdisciplinary Learning and the Effects on Students. Master's Theses & Capstone Projects.
- Ivanitskaya, L., Clark, D., Montgomery, G., & Primeau, R. (2002). Interdisciplinary Learning: Process and Outcomes. *Innovative Higher Education*, 27(2), 95-111.

- Kamara, S. S., & Sundari Dadhabai. (2022). Assessment Factors Influencing Students' Performance. *Journal of Management Information and Decision Sciences*, 25(1), 1-13.
- Leicht, A., Heiss, J., & Byun, W. (2018). Issues and Trends in Education for Sustainable Development. UNESCO Publishing.
- Nkhoma, M., Sriratanaviriyakul, N., & Quang, H. L. (2017). Using case method to enrich students' learning outcomes. *Active Learning in Higher Education*, 18(1), 37-50.
- O'Brien, E., & Hamburg, I. (2019). A critical review of learning approaches for entrepreneurship education in a contemporary society. *European Journal of Education*, 54(4), 525-537.
- Samson, P. L. (2015). Fostering student engagement: Creative problem-solving in small group facilitations. *Collected Essays on Learning and Teaching*, 8, 153-164.
- Sarah Sabir Ahmad, Azfahanee Zakaria & Mhd Azmin Mat Seman (2021). The Challenges Faced By Educators in Online Teaching during the Covid-19 Pandemic Outbreak. *Journal of English Teaching (JET) Adi Buana*, 6(2), 125-133.
- Song, B. L., Lee, K. L., Liew, C. Y., Ho, R. C., & Lin, W. L. (2022). Business students' perspectives on case method coaching for problem-based learning: impacts on student engagement and learning performance in higher education. *Education and Training*, 64(3), 416-432.
- Su, Y. S., Ding, T. J., & Lai, C. F. (2017). Analysis of students' engagement and learning performance in a social community supported computer programming course. *Eurasia Journal of Mathematics, Science and Technology Education*, 13(9), 6189-6201.
- The Quality Assurance Agency for Higher Education. (2011). Understanding assessment- its role in safeguarding academic standards and quality in higher education: a guide for early career staff.
- Tortorella, G., & Cauchick-Miguel, P. A. (2018). Teaching lean manufacturing at a postgraduate level: Integrating traditional teaching methods and problem-based learning approach. *International Journal of Lean Six Sigma*, 9(3), 301-323.