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Academic Stress Levels of Students in Project-Based Learning

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A B S T R A C T

This study aims to analyze the level of academic stress among new students in the Electronic Engineering Technology Study Program at Batam State Polytechnic in the project-based learning (PBL) process. Academic stress often arises due to complex learning demands and significant changes in the learning environment for new students. The research method used was a quantitative descriptive design, involving 37 first-year student respondents. Data were collected through a questionnaire covering 10 aspects of academic stress. The results showed that most students (78.4%) experienced moderate stress, while the rest (21.6%) experienced low stress. The main factors causing stress included social anxiety (78.4%), time constraints (75.7%), and high task loads (70.3%). Meanwhile, dependence on teamwork (24.3%) and an unsupportive learning environment (29.7%) were the factors that caused the lowest levels of stress. These findings indicate that implementing PBL should be balanced with emotional support, effective time management, and faculty guidance to help new students adapt well.

Keywords: *Academic Stress, Project-Based Learning, New Students*

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INTRODUCTION

Every individual experiences a transitional period during developmental stages. This begins with childhood, progressing to adolescence, and then from adolescence to adulthood. Transitions occur not only during developmental stages but also during school, with the most crucial phase occurring from high school to college (N.N.I.P. Wistarini & A. Marheni, 2019)

First-year students, when assessed by general developmental stages, are typically between 18 and 21, or in late adolescence and early adulthood. At this stage of development, individuals experience unstable emotions when faced with problems. For first-year students, the early stages of college are a period of orientation, during which they must adapt to a new educational environment. Although many students can go through the adaptation process and successfully adjust to the college environment, many also experience stress. Stress is pressure that occurs due to a mismatch between a person's abilities and the demands of the environment or their own demands, which actually exceed their capabilities (Mufadhal Barseli dkk, 2018)

The stress experienced by students in educational settings is also known as academic stress. This stress usually arises from the pressure of adapting to the learning environment in higher education, which is full of new experiences. Students are pressured by various tasks, whether individual,group, or practical assignments (Siregar & Putri, 2020). In the long term, unresolved stress can affect students' mental health in the form of mental fatigue and discouragement, which can lead to behavioral problems, such as causing trouble in class, self-harm, passivity, emotional outbursts, antisocial behavior, isolation, and consumption of cigarettes, drugs, and alcohol (Mufadhal Barseli dkk, 2018). Additionally, behavioral impacts include destructive behavior, avoidance, defiance, insults, procrastination in completing

school assignments, laziness in attending school, and involvement in excessive and risky activities in pursuit of pleasure.

In the context of vocational education, project-based learning (PBL) is one of the methods used to improve critical thinking, collaboration, and problem-solving skills. Through PBL, students explore important and meaningful questions through investigation and collaboration (Yustiani et al., 2025)

Batam State Polytechnic is the only vocational campus in Indonesia to implement Project-Based Learning (PBL) through the CDIO (Conceive, Design, Implement, Operate) approach. This method is applied to meet the important needs of graduates, not only for technical skills but also for practical problem-solving, adaptability, and teamwork (Ahmad hammim, 2024). In the process, students will be involved in projects of increasing complexity each semester, starting from the first semester to the final industrial project, where in each project students are accompanied by a lecturer who acts as the project manager. This aims to ensure a smooth transition from acquiring basic knowledge to applying advanced technical concepts in real-world scenarios for students.

However, this method can also cause academic stress because it requires students to complete complex tasks within a limited time and with a high level of responsibility. If not managed properly, stress can negatively impact students' achievement, motivation, and psychological well-being. Therefore, analyzing first-year students' stress levels is important for understanding how they respond to project-based learning and the factors that most contribute to stress.

METHOD

This study used a quantitative descriptive method. The research population consisted of new students enrolled in the Electronic Engineering Technology Study Program at Batam State Polytechnic who participated in Project-Based Learning (PBL) in their first semester. The total research population consisted of 58 students spread across two classes. Sampling was conducted using *simple random sampling,* with the sampling criterion being students willing to serve as respondents. In this study, the total sample consisted of 37 students.

The data used in this study are primary data collected through questionnaires administered to respondents. The questionnaire consists of 30 statements that describe a person's academic stress. The questionnaire assessed the level of academic stress based on ten aspects that cause stress (stressors): high workload, time constraints, unclear objectives and instructions, dependence on teamwork, limited skills, assessment pressure, lack of lecturer support, limited access to resources, social anxiety, and an unsupportive learning environment. The data were analyzed using descriptive statistics, including frequencies and percentages of low, moderate, and high stress levels for each aspect.

The measurement scale uses an ordinal scale. After obtaining the measurement results, stress levels were grouped into low, moderate, and high categories using the Sturgen formula, with the following variable categories:(1)Low:40- 80; (2) Moderate: 81-121; (3) High: 122-150.

Table1. Measurement Scale

Scale	Description
1	Strongly disagree
2	Disagree
3	Neutral
4	Agree
5	Strongly agree

FINDINGS AND DISCUSSION

Student Stress Levels

Based on the results of a study of 37 respondents who were students at the Batam State Polytechnic who participated in the Problem-Based *Learning (PBL*) method of learning in October 2025, data was obtained showing that most students (78.4%) had moderate academic

stress levels, while 21.6% of students had low stress levels. Overall, there were no students with high stress levels.

Table 2. Stress Levels of Respondents

Stress Level	Number of Students	Percentage
Low	8	21.6%
Moderate	29	78.4%
High	0	0%
Total	**37**	**100**

The results show that the majority of new students experience moderate levels of stress when participating in project-based learning. This indicates that although PBL is effective in improving student competence, it also causes considerable psychological pressure, especially during the initial adaptation phase.

Stress it self can be influenced by anindividual's response to the pressure they experience. Responses to stress are categorized into four parts: physiological responses, cognitive responses, emotional responses, and behavioral responses (Rizkia Dwina Rahmayani, 2019). The factor that can be cause differences in the level of stress an individual experiences is their coping mechanism. To deal with stress, a good coping mechanism is needed (Irwansyah et al., 2021). Poor coping mechanisms can exacerbate stress, and vice versa. If someone can counteract the stress they feel by using the right coping mechanisms, then that stress can be reduced or even eliminated (Nasir A, 2011)

Student Stress Levels Based on Stressors.

This study assessed respondents' academic stress levels across ten aspects of the causes. From the results of the study, the respondents ' social anxiety factor was the highest cause of stress, at 78.4%. In addition, time constraints (75.7%) and heavy workloads (70.3%) were also causes of stress for respondents. The factors that had the least influence on respondents' stress were dependence on teamwork (24.3%) and an unsupportive learning environment (29.7%).

Table 3. Stress Levels Based on Stressors.

Aspect	Low	Medium	High	Percentage of Moderate- High Stress
High workload	11	26	0	70.3
Time constraints	9	26	2	75.7
Unclear objectives and instructions	15	21	1	59.5
Dependence on teamwork	28	7	2	24.3
Limited skills	15	20	2	59.5
Assessment pressure	15	21	1	59.5
Lack off lecturer support	16	19	2	56.8
Limited access to resources	13	24	0	64.9
Social anxiety	8	25	4	78.4
Unsupportive learning environment	26	9	2	29.7

The most prominent factor causing academic stress is social anxiety. Anxiety is triggered by respondents' lack of confidence in their ability to complete academic tasks (Prawitasari, 2012). Form social anxiety can be seen when students experience difficulties in interacting with others, such as not having the courage to ask questions, being afraid to express their opinions, rarely speaking, having difficulty socializing, being nervous, and tending to avoid social situations (Yudianfi, 2022)

In an academic context, social anxiety can be detrimental to academic performance, hinder active participation in class discussions, and reduce the ability to build social networks that support learning (Ayu et al., n.d.). Peer social support is crucial during the adjustment period to a new environment to ensure individuals survive and avoid experiencing social anxiety (Febriana & Rahmasari, 2021). Forms of social support can be in the form of information, certain behavior, appreciation, emotions or materials that can make individuals who receive assistance feel loved, cared for and valued. Individuals receiving social support will experience positive feelings when faced with difficult situations. These positive feelings will help individuals overcome their problems (Hidayat & Darmawanti, 2022). In the study, 78.4% of respondents experienced social anxiety. This is understandable for new students as they are still adapting to high academic demands and project-based assessments that emphasize group results and performance. Social anxiety arises due to the demands of presentations, teamwork, and comparisons of individual performance.

In addition, 75.7% of respondents in this study felt stressed due to their inability to manage time. This finding is in line with research by (Marsya Nurhariza & Karimah, 2023), which states that difficulty in managing time is the main cause of academic stress, so that time management can be a very important behavioral factor in preventing academic stress in students.

Time management is a set of activities and steps to organize and manage time as effectively as possible, leading to the achievement of targeted goals (savira et al., 2023). Good time management behaviors, such as setting goals and prioritizing activities, can make work easier, minimize stress and excessive workloads, and are therefore necessary for achieving better academic results (Hanafi & Widjaja, 2021).

In practice, PBL has shortcomings in terms of time consumption, so it is important for students to use their time more efficiently in implementing PBL through good time management (Kiay Demak et al., 2018) . In project-based learning, time management skills are essential, as students must plan, prioritize, and organize teams to complete complex projects with minimal guidance from lecturers. Time management is a series of decisions that gradually impact your life. If you make the wrong decisions, or don't make any at all, your activities can become chaotic, which can lead to frustration, stress, reduced endurance, and impact academic performance (Hillary Zega & Ester Kurniawati, 2022)

A heavy workload is also a major factor contributing to academic stress. Academic workload includes the number and complexity of tasks, such as individual assignments, reports, and lecturers' responsibilities, that must be completed within a certain period. The workload in PBL activities affects students' stress levels, especially when they lack effective coping skills for academic stress. This continuous burden can cause students to experience sleep disorders, anxiety, decreased motivation to study, and even prolonged emotional exhaustion (Nafishafara Irvanti et al., 2025)

In implementing PBL with highworkload, effective time management can help reduce academic stress. Students who manage their time well are less likely to feel pressured by tight deadlines (Khilyatu Zahwa & Hanif, 2024). Effective time management strategies include scheduling regular study time, setting task priorities, and avoiding procrastination in completing tasks (Ghania & Prihatsanti, 2025).

In this study, the factors of dependence on teamwork (24.3%) and an unsupportive learning environment (29.7%) are the least dominant factors causing student stress in implementing PBL. This shows that most students feel comfortable working in groups and consider the campus environment quite conducive.

The results of this study generally indicate that respondents felt that Batam State Polytechnic's facilities were supportive of project-based learning. However, student readiness for project-based learning itself needs to be improved. Therefore, guidance from lecturers, specifically project managers, is needed to prepare students, including how to improve coping skills and how to manage time so that projects run smoothly without causing high stress for students.

CONCLUSIONS

This study concludes that most new students of the Electronic Engineering Technology Study Program at Batam State Polytechnic experience moderate levels of stress in project-based learning. The dominant factors causing stress are social anxiety, time constraints, and high workloads. Stress management efforts, in addition to effective student coping mechanisms, also require support from the campus. This includes time management training, effective communication between lecturers and students, and psychological support strategies from lecturers to ensure optimal PBL implementation without undue stress on students.

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