Analysis of Independent Study Length of UNIMED Science Education Students Intake of 2023 on GPA

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Abstract
This study aims to evaluate the self-directed learning profiles of 78 Science Education students from the 2023 cohort by analyzing 15 indicators of study habits, complemented by GPA data as a measure of academic performance. The findings indicate that students demonstrate a moderate level of self-directed learning ability, although its implementation remains inconsistent. Students generally engage in regular independent study and extend their study duration when academic performance declines. However, irregular adherence to study schedules, limited frequency of material review, and a tendency to reduce study time due to competing activities highlight suboptimal discipline and time management. Self-evaluation and long-term learning planning have also not been fully internalized. These patterns are reflected in GPA achievements that fall within the "good" category yet have not reached optimal levels. The study underscores the need for strengthened time-management strategies, habitual self-evaluation, and increased utilization of supplementary learning resources to support sustained academic improvement.
Keywords: *Self-Directed Learning, Study Habits, Time Management, Self-Evaluation, Academic Achievement*

INTRODUCTION

Education is the primary foundation for developing quality human resources, especially in the era of globalization, which demands increasingly complex academic competencies and skills. In higher education, the success of the educational process is generally measured through student academic achievement, represented by the Grade Point Average (GPA). GPA is a crucial indicator for assessing a student's mastery of course material and ability to complete the entire study load undertaken during their education (Karlina et al., 2021). Therefore, the various factors influencing GPA achievement are crucial for improving the quality of higher education. One internal factor believed to have a strong influence on student academic achievement is the duration of independent study, or the intensity of study outside of class hours. Independent study is a learning process carried out consciously, on one's own initiative, and without dependence on others. Individuals who demonstrate independent learning are generally able to manage their time, determine learning priorities, and optimally utilize learning resources to enhance their academic understanding (Nurwahyuni in Ola & Susanti, 2024). In the context of higher education, which demands more active students, the ability to learn independently is a crucial factor in determining academic success.

Various relevant studies support the importance of independent learning in improving academic achievement. Research by Ola and Susanti (2024) showed that independent learning significantly influences junior high school students' mathematics achievement, where students who habitually manage their time and study independently demonstrate higher achievement. This finding is reinforced by Salsabila et al. (2023), who found a positive influence of independent learning on elementary school students' academic achievement, emphasizing that

independent learning skills need to be cultivated as early as possible to contribute to academic achievement at higher levels. At the higher education level, research conducted by Fadilah et al. (2021) found that independent learning and self-regulation significantly influence student achievement. Students who are able to organize their learning strategies, manage their time, and evaluate their learning process tend to have high academic achievement. These findings indicate that student academic success depends not only on intellectual intelligence but also on the ability to manage the learning process independently and in a directed manner (Fadilah et al., 2021).

In addition to independent learning, another important aspect of independent learning activities is the duration of study time. Several studies emphasize the importance of study duration as a determinant of GPA. Research conducted by Hudori et al. (2022) showed that the length of study hours significantly influenced the GPA of Civil Engineering students at Batam International University. The longer the study time, the more likely the student was to have a high GPA, provided that the study time was used effectively and consistently. This illustrates that study duration is an external factor that can optimize student learning outcomes. However, Karlina et al. (2021) found a different finding, stating that the number of additional study hours did not always significantly influence student GPA, especially during the COVID-19 pandemic when learning patterns drastically changed. According to their research, student achievement was more influenced by learning interest, a supportive learning environment, and the learning strategies used by students in independent study. This suggests that the length of study time cannot be the sole indicator of learning success if it is not accompanied by the quality and effectiveness of the learning process (Karlina et al., 2021). These differing research findings indicate that the length of independent study is an important, but not the sole, variable in determining student GPA. If study time is used strategically, honed through self-evaluation, and implemented consistently, study duration can be a significant factor in improving achievement. However, if this duration is not balanced with motivation, concentration, or appropriate study strategies, long periods of study can be ineffective. Amidst these diverse findings, there remains a research gap regarding how the duration of independent study specifically affects students' GPAs, particularly in the context of higher education, which demands greater independence than at previous levels of education (Permana et al., 2024).

RESEARCH METHODS

This research used a quantitative descriptive approach using a questionnaire survey to analyze the relationship between the duration of independent study as the independent variable and the Grade Point Average (GPA) as the dependent variable. This research was conducted in Medan, North Sumatra, and the target respondents were active students at Medan State University. The population used in this study was all Science Education students, both regular and bilingual, from the Biology Department, Faculty of Mathematics and Natural Sciences, Medan State University. The sample consisted of 78 Science Education students, both regular and bilingual, from the 2023 Stambuk program. This research was conducted online through a Google Form survey, distributed to save time and money. The response variables in this study were the Cumulative Grade Point Average (GPA) and the Self-Study Duration Statement Instrument for the 2023 regular and bilingual Science Education students at Medan State University. The tools used in this study were laptops. Laptops were used to create the survey using Google Forms and record the responses using Google Spreadsheets (Irawan et al., 2023). Data collection was conducted using a Likert-scale questionnaire with a score of 1–4, consisting of 15 statements based on four aspects of students' study duration: (1) Independent Study Habits; (2) Study Duration and Consistency; (3) Study Duration and Quality; and (4)

Relationship between Independent Study and Achievement/GPA, which included student study pressure, study time management, and duration of independent study. Before data analysis, the instrument was tested for its feasibility through a validity test using a factor analysis approach. This study did not use a separate reliability test because the primary focus was on construct feasibility through factor analysis, where construct validity is assessed from the pattern of relationships between variables.

RESEARCH RESULTS AND DISCUSSION

The results of this study were obtained from distributing a questionnaire to the respondents who were the subjects of the study. The questionnaire consisted of 15 statements, each assessed using four response categories: Never, Sometimes, Often, and Very Often. The percentage of responses from each category was calculated to determine the tendency of respondents' answers to each statement. The summary data from the questionnaire is presented in the following table.

Table 1. Student Statement Results

| Questions	Never (%)	Sometimes (%)	Often (%)	Very Often (%)
1.	7.14	78.57	14.29	0.00
2.	7.14	64.29	28.57	0.00
3.	0.00	64.29	21.43	14.29
4.	0.00	35.71	50.00	14.29
5.	0.00	57.14	35.71	7.14
6.	0.00	50.00	35.71	14.29
7.	0.00	42.86	42.86	14.29
8.	0.00	50.00	35.71	14.29
9.	0.00	28.57	57.14	14.29
10.	0.00	21.43	57.14	21.43
11.	7.14	57.14	21.43	14.29
12.	0.00	35.71	28.57	35.71
13.	0.00	50.00	35.71	14.29
14.	0.00	64.29	28.57	7.14
15.	0.00	35.71	42.86	21.43

Based on the percentage distribution table for the 15 statements, it can be seen that respondents tended to choose the "Sometimes" and "Often" categories more often than the other categories. This indicates that the behaviors or conditions measured in the questionnaire are experienced quite frequently by respondents. The percentage for the "Never" category was in the very low range, between 0 and 7.14%. Therefore, it can be concluded that only a small number of respondents never experienced or engaged in the behaviors in the statements. The "Sometimes" category achieved a dominant percentage in most statements, such as statements 1, 2, 5, 8, and 14, which reached over 50%. This condition indicates that respondents were still at a moderate level in demonstrating the behaviors measured. Meanwhile, the "Often" category also had a relatively high percentage in several statements, such as numbers 4, 9, 10, and 15. This suggests that respondents engaged in or experienced the behaviors asked about in the questionnaire quite frequently. Furthermore, the "Very Often" category also appeared with a significant percentage in certain statements, such as numbers 10 and 12, indicating that some respondents already exhibited very high levels of behavioral intensity. Overall, these results indicate that the behaviors or conditions measured in this questionnaire were experienced by respondents with relatively high frequency. This means that the research variables reflected in the questionnaire statements have a sufficiently high occurrence rate that they are relevant for further analysis in the research discussion. Therefore, it can be concluded that respondents do

not fall into the low category in the assessed aspects, but rather into the medium to high category in demonstrating the behaviors questioned.
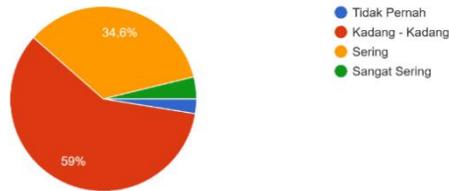
1. Saya meluangkan waktu khusus setiap hari untuk belajar mandiri
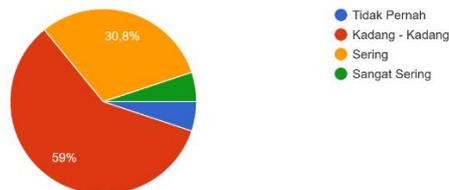78 jawaban
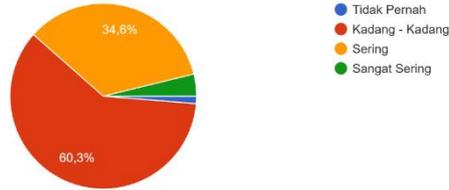
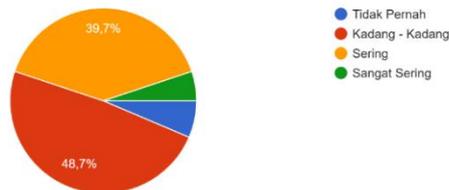2. Saya membuat jadwal belajar mandiri secara teratur.
78 jawaban
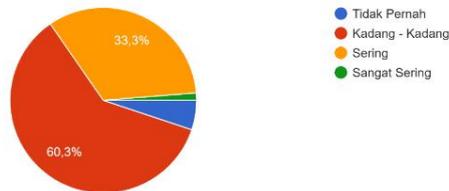
3. Saya sering melewatkan waktu belajar mandiri yang sudah saya jadwalkan.
78 jawaban

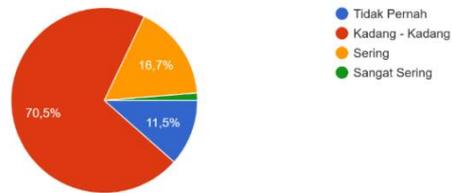4. Saya jarang meninjau ulang materi kuliah setelah perkuliahan selesai.
78 jawaban

5. Saya belajar mandiri lebih dari 1 jam per hari.
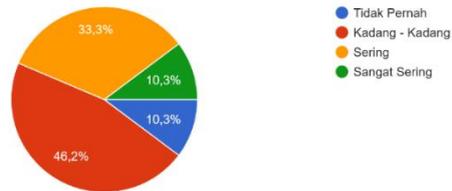78 jawaban

6. Saya tetap belajar meskipun tidak ada tugas kuliah.
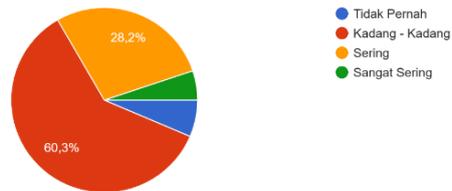78 jawaban

7. Saya sering mengurangi durasi belajar mandiri karena kegiatan lain.
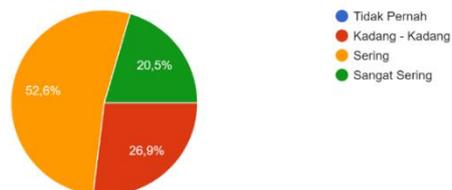78 jawaban

8. Saya jarang menilai kembali pemahaman saya setelah belajar mandiri.
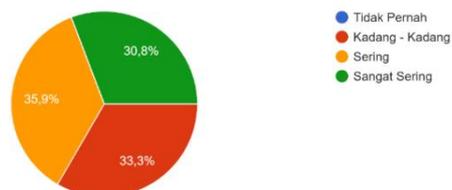78 jawaban

9. Saya mencari sumber belajar tambahan (buku, jurnal, video pembelajaran).
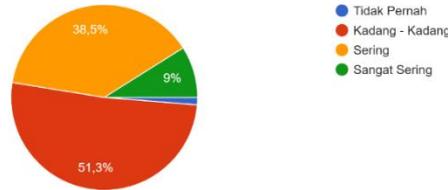78 jawaban

10. Saya merasa lebih memahami materi ketika dijelaskan langsung oleh dosen.
78 jawaban
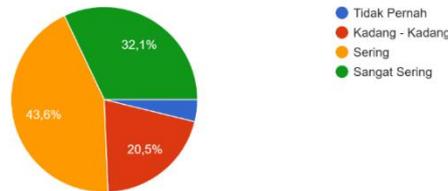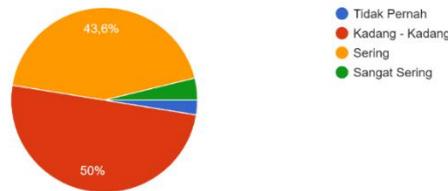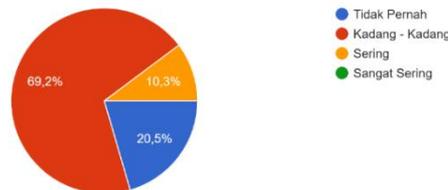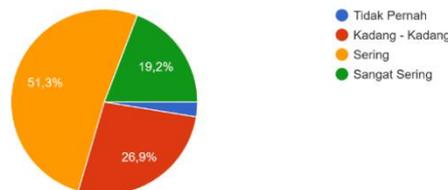
Figure 1. Graph Frequency of Student Statements

The graph shows the frequency of respondents' responses to 15 statements regarding the duration of independent study among 2023 Stambuk students. Based on the graph, the "Sometimes" category had the highest frequency, with 575 responses. This indicates that most students engage in independent study at moderate or intermittent intensity on a daily basis.

The "Often" category came in second with 410 responses. This finding indicates that a significant number of students are accustomed to engaging in independent study at a high frequency. Meanwhile, the "Very Often" category received 120 responses, indicating that some students still maintain excellent and consistent independent study habits. The "Never" category had the lowest frequency, with only 60 responses. This indicates that very few students never engage in independent study. Overall, the graph shows that independent study is a fairly frequent habit among 2023 Stambuk students, albeit at varying intensities. Therefore, it can be concluded that students tend to have a good awareness of independent study as a supporting factor in achieving optimal academic achievement, particularly in their Cumulative Grade Point Average (GPA). These results also strengthen that the independent learning variable is indeed relevant to be studied in relation to students' academic achievements.

Figure 2. Graph Comparison of GPA of Science Students In 2023, Abc and Bilingual

Based on an analysis of 15 statements related to independent learning and GPA data from 78 Science Education students in the 2023 Stambuk program, it appears that students have relatively good independent learning skills, but not yet fully optimal. The majority of students demonstrate good motivation to complete assignments on time and strive to improve their grades if they do not meet their targets.

Discussion

Statement 1 I set aside specific time every day for independent study." (78 respondents) a. 60.3% of respondents answered sometimes b. 34.6% of respondents answered often c. 3% of respondents answered never d. 2% of respondents answered very often that they spend time for independent study. These results indicate that most students are inconsistent in allocating daily study time. Poor study consistency can result in suboptimal understanding of the material, potentially lowering students' GPAs, unlike students who regularly study independently. Statement 2 I make a regular self-study schedule." (78 respondents) a. 60.3% of respondents answered sometimes b. 33.3% of respondents answered often c. while around 5% of respondents answered never, and d. 1% of respondents answered very often. This data shows that time management through study planning is not optimal. Lack of planning can impact study regularity, which can impact academic achievement and GPA, as students with organized schedules tend to be better able to master the material consistently.

Statement 3 I often miss my scheduled independent study time." (78 respondents) a. 59% of respondents answered that they sometimes miss their study schedule, b. 34.6% of respondents answered that they often do so, c. while around 4% of respondents answered that they never do so, and d. 2% of respondents answered that they very often do so. This figure indicates that students' discipline in following their study schedules remains low. Failure to adhere to study plans can hinder the achievement of academic goals, ultimately leading to a lower GPA. Statement 4 I rarely review the lecture material after the lecture is over." (78 respondents) a. 59% of respondents answered sometimes, b. 30.8% of respondents answered often, c. 6% of respondents answered never, and d. 4% of respondents answered very often reviewing the material. Machine Translated by Google The low level of review activity indicates that most students don't reinforce concepts after class. Lack of repetition can lead to rapid loss of understanding, potentially lowering GPA. Statement 5: "I study independently for more than 1 hour per day." (78 respondents) a. 48.7% of respondents answered sometimes, b. 39.7% of respondents answered often, c. 7% of respondents answered never, and d. 4% of respondents answered very often studying more than one hour every day. This indicates that some students are not yet optimally spending time on independent study. When study time is limited, understanding the material can be less in-depth, which can result in lower GPAs than students with longer and more consistent study periods.

Statement 6: "I still study even though there are no assignments." (78 respondents) a. 70.5% of respondents answered sometimes, b. 16.7% of respondents answered often, c. 11.5% of respondents answered never, and d. 1% of respondents answered very often. These results indicate that intrinsic motivation for learning remains low, with most students only studying when assigned. However, studying without relying on assignments can improve long-term understanding and positively impact students' GPAs. Statement 7 I often reduce the duration of independent study due to other activities." (78 respondents) a. 46.2% of respondents answered that they sometimes reduce the duration of study because other activities, b. 33.3% of respondents answered often, c. 10.3% of respondents answered never, d. and 10.3% of respondents answered very often. This indicates a tendency to prioritize other activities over studying, which can reduce the consistency and effectiveness of independent learning. This situation risks a decline in academic achievement and GPA due to poorly managed study time. Statement 8 I rarely reassess my understanding after self-study." (78 respondents) Machine Translated by Google a. 60.3% of respondents answered sometimes b. 28.2% of respondents answered often, c. 6% of respondents answered never and d. 5% of respondents answered very often. This figure shows that the self-evaluation process has not yet become a habit. Lack of review of understanding can lead to conceptual errors and weak application of the material,

which can impact on a less than optimal GPA. Statement 9 I look for additional learning resources (books, journals, learning videos)." a. 52.6% of respondents answered often b. 26.9% of respondents answered sometimes c. 20.5% of respondents answered that they had never done it. These findings indicate that the majority of students are quite active in seeking additional references. This activity significantly contributes to increased understanding and has the potential to improve their GPA compared to students who rely solely on lecturer materials.

Statement 10 I feel I understand the material better when it is explained directly by the lecturer." a. 35.9% of respondents answered that they often rely on lecturers' explanations. b. 30.8% of respondents answered that they often rely on lecturers' explanations. c. 33.3% answered that they sometimes rely on lecturers' explanations. This means that more than half of students still rely on face-to-face learning. This shows that their learning independence is not optimal and can have an impact on unstable GPAs, especially if the material requires broader independent exploration. Statement 11 I understand the material better when I study independently." a. 51.3% of respondents answered that sometimes they felt understanding increased When studying independently, b. 38.5% of respondents answered that they often felt it. c. 9% of respondents answered that they felt it very often. d. 1.2% of respondents answered that they never felt it. This shows that even when self-study is undertaken, not all students feel the results are optimal. Weakened self-study skills can make it difficult to achieve an excellent GPA. Statement 12 I prefer to study independently in the middle of the night rather than in the afternoon or after class." a. 43.6% of respondents answered that they often choose the night time to study b. 32.1% of respondents answered that they do it very often. Machine Translated by Google c. 20.5% of respondents answered sometimes. d. 3.8% of students answered never doing it. This situation indicates a tendency to study at times that are personally most conducive. If practiced consistently and effectively, this habit can have a positive impact on improving one's GPA.

Statement 13 I evaluate my grades each semester to determine my learning strategy." a. 50% of respondents answered that they sometimes conduct evaluations, b. 43.6% of respondents often do so. This shows that the majority of students are aware of the importance of self-evaluation. Reflective habits like this can help improve learning strategies, thereby contributing to an increased GPA in the following semester. Statement 14 I don't increase my study time even though my grades are not satisfactory." a. 69.2% of respondents answered sometimes b. 10.3% of respondents answered that they often did not increase study hours. c. 20.5% of respondents answered never. These data indicate a less consistent response in improving academic outcomes. An unresponsive attitude towards low grades can be an obstacle to improving achievement, so that students' GPAs tend to stagnate. Statement 15 I increase my study time when my GPA is not as expected." a. 51.3% of respondents answered that they often add study time. b. 19.2% of respondents answered that they do it very often. c. 26.9% of respondents answered that they sometimes do it. This indicates that most students are willing to improve their study strategies and duration when their GPA declines. Such a positive response can positively impact future GPA improvement.

Based on an analysis of 15 statements related to independent learning and GPA data from 78 Science Education students from the 2023 Stambuk program, it can be seen that students have fairly good independent learning skills, but they are not yet fully optimal. The majority of students demonstrate good motivation to complete assignments on time and strive to improve their grades if they do not meet their targets. The duration of independent study is also considered sufficient, with many students studying for more than an hour per day and continuing to study even when no assignments are given. However, there are still challenges in

terms of study consistency, such as a tendency to reduce study time due to other more engaging activities. Furthermore, students are not yet accustomed to reassessing their understanding after studying and are not consistent in creating short-term and long-term study plans. This condition impacts academic achievement, as reflected in students' GPAs, which are in the good category but still have low academic performance. Machine Translated by Google have not yet reached the excellent category evenly. The GPA range for class A students shows quite wide variation, ranging from 3.20 to 3.88, class B students range from 3.45 to 3.74, and the Bilingual class students range from 3.47 to 3.80. This indicates that although independent learning skills have been developed, the lack of structured evaluation and learning strategies leads to suboptimal academic achievement. Therefore, it is necessary to increase student awareness in managing study time, improving consistency, utilizing various learning resources, and reflecting on understanding so that academic achievement, particularly GPA, can continue to improve towards a more optimal level.

CONCLUSION

Based on the research findings, this study used a quantitative descriptive approach through a questionnaire survey to determine the relationship between the duration of independent study and the cumulative grade point average (GPA) of Science Education students enrolled in the 2023 Stambuk program. The results indicate that students experience significant changes in their learning patterns upon entering college, making independent study a crucial requirement for improving academic achievement. Students who manage their study time well, consistently adjust their study duration, and adapt their learning methods tend to have higher GPAs. However, some students still experience challenges such as difficulty understanding the material, lack of concentration, and academic pressure, which can impact their learning quality. Therefore, it can be concluded that the better the habits and quality of independent study, the greater the chance of achieving a high GPA. Therefore, support from educational institutions in helping students develop effective learning strategies is essential to improving academic success.

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