Information and Communication Technology towards Academic Performance among College Students

Zyra Jean P. Raotraot[1], Zairo H. Orpiano[2], Bryan Lloyd Sillonar[3], John Mark B. Lazaro[4]

[1,2,3]Student, Santo Tomas College of Agriculture Sciences and Technology

[4]Instructor, Santo Tomas College of Agriculture Sciences and Technology

DOI: https://doi.org/10.47772/IJRISS.2026.10100484

Received: 28 January 2026; Accepted: 02 February 2026; Published: 14 February 2026

ABSTRACT

Academic performance is used to measure how well students do in different academic subjects. The study aimed to determine the relationship between the impact of information and communication technology and academic performance of college students. Data were gathered from the 138 college students. This study used a total sampling technique. This study used quantitative non-experimental research through a descriptive correlational design. This study utilized adapted instruments that were thoroughly evaluated for precision and relevance. The statistical tools were mean and Pearson r. Results revealed that Information and communication Technology got a descriptive level of very high which was always manifested while the academic performance got a descriptive level of high which was outstanding. Results revealed that information seeking have better access to a variety of accurate resources, which can enhance their understanding and academic success. The relationship between information and communication technology and academic performance indicated that students that use ICT perform better academically. It facilitates sharing ideas among students and makes learning more enjoyable.

Keywords: Information and Communication Technology, Academic Performance, Correlational Design., Philippines.

INTRODUCTION

Academic performance can be simply defined as how well a student does in their schoolwork (Thornton, 2022). However, many students face different challenges that prevent them from achieving academic success. These challenges encompass various factors such as limited availability of network connectivity, a lack of suitable training, a lack of time, incompetent students, and schools with insufficient ICT resources (Mensah et al., 2023). Additionally, students that experience problems like family conflict, financial difficulties, and emotional stress can make it hard for students to focus, which negatively affects their academic performance (Galgo, 2020).

In the United States, international students face significant academic challenges exacerbated by the COVID-19 pandemic (Mbous, 2024). Many faced academic struggle, financial, and mental health issues. negatively impacting both their well-being and academic performance (Olatunji et al., 2023). In addition, the abrupt transition to virtual education necessitated by COVID-19 resulted in many students being unprepared with the necessary tools. This lack of access to technology, particularly prevalent among low-income and minority students, negatively impacted their ability to complete schoolwork (Perez, 2023).

In the Philippines, bullying influenced by factors such as age, family type, and personality, has a statistically significant negative impact on students' academic performance (Tiauzon & Malquisto, 2019). Moreover, poor study habits tend to lower academic performance of students in Pangasinan. This may be due to factors such as their home environment, peer pressure, and excessive social media use (Salcedo-Relucio, 2019).

Much research has been carried out in the international setting investigating factors related to academic performance. However, the researcher has not found a study that links Information and Communication Technology and academic performance. Hence, the researcher finds the urgency to conduct this study to fill the

gap in the literature covering these subjects, especially in the local context. The results of this study are expected to help us understand how technology affects students' learning and grades. It shows the role of information and communication technology (ICT) in making education easier and more accessible for college students

Statement Of the Problem

This research determined the relationship between the impact of information and communication technology and academic performance of college student.

Specifically, this aimed to answers to the following questions:

1. What is the level of information and communication technology in terms of:

1.1. information seeking; and

1.2. information sharing?

2. What is the level of academic performance in terms of grades in:

2.1. technology for teaching and learning 1; and

2.2. technology for teaching and learning 2?

3. Is there a significant relationship between information and communication technology and academic performance?

Hypothesis

The null hypothesis was tested at 0.05 level of significance and stating that there is no significant relationship between information and communication technology and academic performance.

Theoretical Framework

This study was anchored to Self-Regulated Learning Theory developed by Zimmerman (1989) which states that using digital toold like online planners, learning platforms, and note taking apps empowers students to take charge of their education. By enabling them to effectively plan, track their progress, and assess their own learning, these tools can significantly enhance academic performance. Moreover, this was supported by Tulubas (2002) that self-regulated learning skills have a big impact on academic achievement in online learning and using ICT effectively can help students develop these skills, which would improve their academic performance, especially when it comes to time management, asking for help, and organizing their surroundings.

Conceptual Framework

The independent variable was information and communication technology, including the indicator: information seeking and information sharing (Knezek et al., 2012).

The dependent variable was academic performance, which included the indicator: Technology for teaching and learning 1 and Technology for teaching and learning 2.

The conceptual framework as shown in Figure 1 the study’s variables.

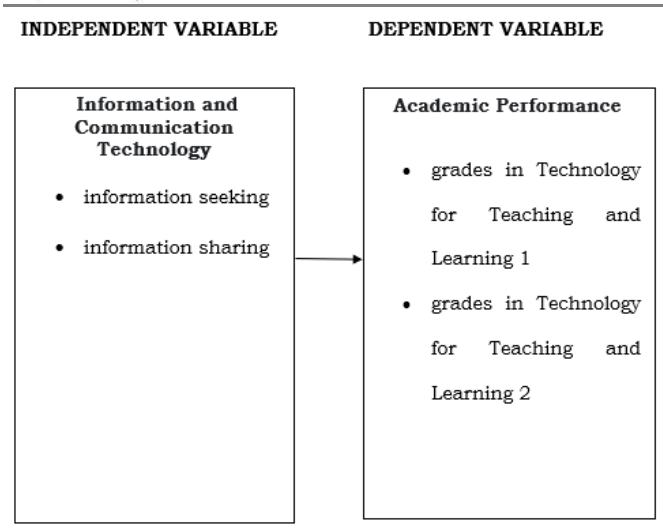

Figure 1. The Conceptual Paradigm of the Study

METHODOLOGY

Research Design

This study used quantitative, non-experimental, descriptive correlational research design. Quantitative research was a method that involved gathering and examining numerical information to understand, forecast, or manage factors of significance. This research approach aids in evaluating cause-and-effect connections between variables, making forecasts, and applying findings to larger groups (Sreekumar, 2023). Non-experimental research focused on observing and analyzing existing phenomena instead of manipulating variables with randomly assigned groups as seen in experiments. Additionally, correlational research explores the relationship between different variables. It reveals if there's an association, but it doesn't create a cause-and-effect relationship (Sreekumar, 2024).

This method determined the relationship between information and communication technology and academic performance of college students. It required collecting and analyzing data on a minimum of two variables in order to ascertain whether a relationship between them exists.

Research Subject

The respondents of this study were the 138 college students. The respondents were selected through total sampling technique. According to Canonizado (2024) total sampling investigated the whole population based on a specific set of characteristics. Researchers considered this their sampling approach most of the time due to the small and well-defined nature of the overall population, as well as the possibility that a fraction of them may not provide the necessary measurements.

Research Instrument

The researchers used one (1) adapted survey questionnaire for the independent variable and a grade for the dependent variable. The questionnaires were validated by the panelists and an external validator to test its validity.

Information and Communication Technology Questionnaire. The survey questionnaire was used to measure the level of information and communication technology, it is from the research titled “Measuring student attitudes toward learning with Social media: “Validation of the social media learning scale” by Knezek et al., (2012). The questionnaire consisted of 15 items covering the following aspects: information seeking (7 items), information sharing (8 items). Respondents rated each item using a 5-point Likert scale, ranging from 5 for "Strongly Agree”, 4 for "Agree", 3 for "Moderately Agree", 2 for "Disagree", and 1 for "Strongly Disagree”.

Range of Mean	Descriptive Level	Interpretation
4.20 – 5.00	Very High	Information and Communication Technology was always manifested
3.40 – 4.19	High	Information and Communication Technology was oftentimes manifested
2.60 – 3.39	Moderate	Information and Communication Technology was sometimes manifested
1.80 – 2.59	Low	Information and Communication Technology was less manifested
1.00 – 1.79	Very Low	Information and Communication Technology was least manifested

In determining the level of academic performance in Technology Research 1 and Technology Research 2, the researcher utilized the grades given by the subject teacher to the student. These grades were based on the different outcomes performed by the students in accordance with the syllabus set by the Commission on Higher Education. The scoring guide for the academic performance of students was categorized into five levels. The parameter was as follows:

Score Interval	Descriptive Equivalent	Interpretation
90 - 100	Very high	This means that the academic performance was outstanding.
85 - 89	High	This means that the academic performance was very satisfactory.
80 - 84	Moderate	This means that the academic performance was satisfactory.
75 - 79	Low	This means that the academic performance was fairly satisfactory.
Below 75	Very low	This means that the academic performance does not meet the expectation.

Statistical Treatment of Data

Mean. The mean is calculated by summing all the numbers in a group and dividing by how many numbers there are. It's a common way to represent the center of a dataset (Hurley &, Tenny 2023). This was used to determine the level of information and communication technology and academic performance of college students.

Pearson R. The correlation coefficient is the most widely used method for measuring the linear relationship between two variables. This value, ranging from -1 to 1, indicates both the strength and direction of the association (Turney, 2022). This was used to determine the interrelationship between information and communication technology and academic performance of college student

RESULTS AND DISCUSSIONS

Level of Information and Communication Technology in terms of Information Seeking s

The result for the information and communication technology in terms of information seeking was presented, examined, and interpreted in table 1. The overall average mean was 4.39, with a standard deviation of 0.39 which is described as very high. This means that Information and communication technology in terms of Information seeking is always manifested. Moreover, the data could be gleaned that “I use Internet technology to explore topics of interest” is the indicator with the highest mean of 4.64 and described as “Very High”. While, the indicator with the lowest mean of 4.29 described as Very High, is “I learn more when I regulate my own learning experience and seek information on the things that I want to learn about”. Learners can effortlessly work together with fellow students via digital platforms, engage in online conversations, and access educational resources at any time and from any location. The overall findings of information and communication technology in terms of information seeking implied an efficient access to a broad range of accurate information sources. Learners can effortlessly work together with fellow students via digital platforms, engage in online conversations, and access educational resources at any time and from any location.

Table 1
Level of information and communication technology in terms of information seeking

Items	Mean	SD	Descriptive Equivalent
1. I learn more when I regulate my own learning experience and seek information on things that I want to lean about.	4.29	0.61	Very High
2. I use Internet technology to explore topics of interest	4.64	0.58	Very High
3. I like to take classes from good instructors.	4.30	0.68	Very High
4. Internet technology helps me be successful in my college classes.	4.36	0.63	Very High
5. I like to enroll in classes to continue my education.	4.37	0.72	Very High
6. I use Internet communications technology tools when I want to learn about something new.	4.41	0.60	Very High
7. I use Internet communications technology to keep current on topics related to my field of expertise.	4.35	0.64	Very High
Average	**4.39**	**0.63**	**Very High**

The results aligned with the study of Ruppel et al., (2020) who found that individuals seek information to fill a knowledge gap or to address some sort of issue. This aligned with Tella et al., (2020) who found that learners actively pursue information using digital channels, showcasing a strong propensity for seeking out information.

Level of Information and Communication Technology in terms of Information Sharing

The result for the information and communication technology in terms of information sharing were presented, examined, and interpreted in table 2. The overall average mean is 4.12, with a standard deviation of 0.75 which is described as high. This means that Information and communication technology in terms of Information seeking is always manifested. Moreover, the data was gleaned that "I learn many things with other internet users and my learning should include interactive communication technology experiences" are the indicator with the highest mean of 4.25 and described as "Very High". While, the indicator with the lowest mean of 3.94 described as "High", is "I post information that might be of interest to other people".

Table 2
Level of Information and Communication and Technology in terms of Information Sharing

1. I like to share interests and reflections online.	4.07	0.76	High
2. I use Internet communications and other technology tools for self-expression	4.16	0.73	High
3. I learn many things by interacting with other Internet users.	4.25	0.65	Very High
4. my classroom learning should include interactive communication technology experiences	4.25	0.67	Very High
5. I would like to be a participating member of an online community.	4.05	0.81	High
6. I post information that might be of interest to other people.	3.94	0.89	High
7. I learn best in a traditional classroom setting.	4.12	0.77	High
8. the things I need to know are taught by instructors in the classroom.	4.12	0.72	High
Average	**4.12**	**0.75**	**High**

The overall findings of information and communication technology in terms of information sharing implied a quicker and simpler way to transmit information, but it must be used carefully to ensure that it is accurate and secure. Exchanging information allowed everyone to acquire the knowledge necessary for making informed choices. Additionally, it enhances decision-making and fosters trust among team members and strengthens connections while also propelling advancement and achievement in different situations.

According to the data collated, this aligned with the study of Shabur et al., (2024), which show that students' engagement in group projects through online social networking had a major impact on their contacts with teachers and peers as well as their willingness to share what they have learnt online.

Furthermore, Kim et al., (2022) found that people who are motivated by a strong sense of self-connection and social connection are more inclined to share information, highlighting the importance of personal and social influences in fostering significant information sharing online.

Summary of the level Information and Communication Technology

Table 3 is a summary of the level of information and communication technology. As shown, the equivalent overall mean is 4.26 with a standard deviation of 0.69 and described as high which means oftentimes manifested. The highest mean of 4.39 is for indicator 1, “information seeking” described as “Very high”. The lowest mean of 4.12 is for indicator 2, “information sharing”, described as “high”.

These findings suggested that students who engage in information seeking have better access to a variety of accurate resources, which can enhance their understanding and academic success.

Table 3

Summary on the Level of information and communication technology

Indicators	Mean	SD	Descriptive Equivalent
1. Information seeking	4.39	0.63	Very High
2. Information sharing	4.12	0.75	High
Overall	**4.26**	**0.69**	**Very High**

According to the data collated, this aligned with the study by Ishaq et al., (2021) integrating Information and Communication Technology (ICT) into teaching and learning sparks student interest, boosts their motivation and engagement, ultimately helping them process information more effectively, understand it more deeply, and remember it for longer. The findings corroborated with Ashraf et al. (2021) that students sharing study-related content on social media platforms is seen as a trustworthy source of information that is significant to all communities, including those of students, clients, and staff.

Summary of the level of Academic Performance

Table 4 is a summary of the level of academic performance. As shown, the equivalent overall mean is 91.17 with a standard deviation of 3.50 and described as high which means oftentimes manifested. The highest mean of 91.17 is for indicator 2, “technology for teaching and learning 2” described as “Very high”. While, the lowest mean of 90.74 is for indicator 1, “technology for teaching and learning 1”, described as “Very high”. These findings suggested that a student's future achievement is significantly influenced by their academic performance. Strong academic credentials also help students develop their critical thinking and problem-solving skills, which give them the tools they need to overcome obstacles in both their personal and professional life.

Table 4

Summary on the Level of academic performance

Indicators	Mean	SD	Descriptive Equivalent
1. Technology for teaching and learning 1	90.74	3.22	Very High
2. Technology for teaching and learning 2	91.59	3.77	Very High
Overall	**91.17**	**3.50**	**Very High**

According to the data collated, this aligned with the study by Mappadang et al (2022) that students' academic performance is crucial since it reflects their knowledge, abilities, and attitudes from their college education. The findings also corroborated with Valverde-Berrocoso (2022) that academic performance is a common measure for understanding how technology influences student learning.

Correlation between Information and Communication Technology towards Academic performance

Table 5

Significance of the Relationship Between information and communication technology and academic performance

Variables Correlated	Mean	r	p-value	Decision on H_o	Decision on Relationship
information and communication technology and	4.26				
academic performance	91.17				
		0.182*	0.032	Rejected	Significant

Showed in table 5 were the results regarding the importance of the link between information and communication technology and academic performance with an overall calculated r-value of 0.182 and a p- value of <.032, which is lower than the .05 the level of significance. This implied that the relationship of the variable got a positive, very weak and significant correlation. Also, this shows that information and communication technology was correlated to academic performance. Thus, the null hypothesis was rejected. This indicates that students that use ICT perform better academically. It facilitates sharing ideas among students and makes learning more enjoyable.

The findings supported the statement of Mensah et al (2023) that it has been demonstrated that the students who are using computers and other tech tools makes learning faster and simpler for students, which can improve students' academic performance. However, Vargas-Montoya et al (2023) demonstrated in the study that using ICT can sometimes take students' attention away from learning and it could make them spend less time talking face-to-face with their teachers and classmates. But, Keher and Suhag (2023) emphasized that we cannot overlook the importance of ICT tools in the twenty-first century since they are essential to students' optimal academic achievement and have a significant impact on their comprehension, grades, and classroom performance.

The result also conformed to the Self-regulated Learning Theory developed by Zimmermam (1989) that using online tools like planners, learning websites, and note-taking apps helped students control their own learning. Because these tools let them plan well, see how they're doing, and check their own understanding, which enhances their academic performance. Furthermore, Tulubas (2022) affirmed that effective use of ICT can assist students in developing self-regulated learning skills, which will improve their academic performance, particularly in the areas of time management, asking for assistance, and maintaining an organized learning environment. These skills have a significant impact on academic performance in online learning.

SUMMARY OF FINDINGS, CONCLUSIONS, AND RECOMMENDATIONS

Summary of Findings

The major findings of the study were the following:

1. The level of information and communication technology had an overall mean of 4.26 with a standard deviation of 0.69 with a descriptive equivalent. The highest indicator was Information seeking with a mean of 4.39, while the lowest indicator was Information sharing with a mean of 4.12.

2. The level of academic performance had an overall mean of 91.17 with a standard deviation of 3.50 with a descriptive equivalent. The highest indicator was Technology for teaching and learning 2 with a mean of 91.59, while the lowest mean was Technology for teaching and learning 1 with a mean of 90.74.

3. The relationship of information and communication technology and academic performance showed a very weak positive correlation with an r-value of 0.182 and p-value of <0.032. These results led to the rejection of the null hypothesis

Conclusions

1. The result of information and communication technology revealed a very high level, which was always manifested. The overall findings of information and communication technology implied that students sharing study-related content on social media platforms is seen as a trustworthy source of information that is significant to all communities, including those of students, clients, and staff. SM use has become an essential component of intellectual activity.

2. The result of academic performance was very high, considered as outstanding. The overall findings implied that a student's future achievement is significantly influenced by their academic performance. Students with strong academic qualifications also benefit from improved critical thinking and problem-solving abilities, which give them the tools they need to overcome obstacles in both their personal and professional life.

3. The results showed the importance of the association between information and communication technology and academic performance, indicating a positive, very weak, and significant correlation. This indicates that students that use ICT perform better academically. It facilitates the idea sharing among students and makes learning more enjoyable.

Recommendations

Based on the findings, analysis, and conclusion drawn in this study, the following recommendations were summarized:

1. The Commission on Higher Education (CHED) was encouraged to promote the development of AI-driven research tools to help students perform their investigations more efficiently, while training sessions focused on AI literacy to provide both students and instructors with the knowledge to utilize these technologies. Incorporating AI principles into the curriculum across diverse fields will ready students for upcoming job markets and improve their critical thinking abilities.

2. College Administrators may implement organized programs to encourage students to share knowledge and resources. This approach allows for question-asking, idea exchange, and collaborative work, fostering community and increasing students' willingness to share important information. These initiatives help students gain essential communication skills and create a more engaging learning experience that supports their academic success.

3. College Instructors may continue to guide students in the smart use of technology. This includes instruction on identifying reliable online information, staying on task, and employing educational resources like apps and videos to foster better concentration and ultimately enhance academic achievement.

4. Students may utilize ICT tools not just for educational activities but also for cooperative learning and sharing information, as these methods have been proven to improve comprehension and academic achievement.

5. Future Researchers may investigate students' self-directed learning practices when using these technologies. Examining factors such as age, academic major, and prior technology experience could also illuminate how these elements affect the effectiveness of ICT for students.

REFERENCES

1. Ashraf, M. A., Khan, M. N., Chohan, S. R., Khan, M., Rafique, W., Farid, M. F., & Khan, A. U. (2021). Social Media Improves Students' Academic Performance: Exploring the Role of Social Media Adoption in the Open Learning Environment among International Medical Students in China. Healthcare, 9(10), 1272. https://doi.org/10.3390/healthcare9101272
2. Canonizado, I. (2024). When to Use Total Population Sampling in Research Study. Hubpages. https://discover.hubpages.com/education/When-to-use-total-population-sampling-in-a-research-study
3. Galgo, J. (2020). Endeavours towards Academic Success: An Investigation of Underprivileged Student's Life Experience. Middle Eastern Journal of Research in Education and Social Sciences, 1(2), 94-106.https://doi.org/10.47631/mejress.v1i2.4
4. Hurley M, Tenny S (2023). StatPearls [Internet]. NIH https://www.ncbi.nlm.nih.gov/books/NBK546702/
5. Ishaq, K., Zin, N. a. M., Rosdi, F., Abid, A., & Ijaz, M. (2020). The Impact of ICT on Students' Academic Performance in Public Private Sector Universities of Pakistan. International Journal of Innovative Technology and Exploring Engineering, 9(3), 1117–1121. https://doi.org/10.35940/ijitee.c8093.019320
6. Keher, B. U. Z., & Suhag, A. K. (2023). Impact of ICT on students academic Performance at Sindh Madressatul Islam University Karachi. International Journal of Trends and Innovations in Business & Social Sciences, 1(1), 10–16. https://doi.org/10.48112/tibs.v1i1.423
7. Kim, M., Jun, M., & Han, J. (2022b). The relationship between needs, motivations and information sharing behaviors on social media: focus on the self-connection and social connection. Asia Pacific Journal of Marketing and Logistics, 35(1), 1–16. https://doi.org/10.1108/apjml-01-2021-0066
8. Knezek, G., Mills, L. A., & Wakefield, J. S. (2012). Measuring student attitudes toward learning with social media: Validation of the social media learning scale. In Proceedings of the annual convention of the Association of Educational Communications and Technology https://www.tresystems.com/proceedings/documents/2012_proceeding_volume1.pdf#page=135
9. Mappadang, A., Khusaini, K., Sinaga, M., & Elizabeth, E. (2022). Academic interest determines the academic performance of undergraduate accounting students: Multinomial logit evidence. Cogent Business & Management, 9(1). https://doi.org/10.1080/23311975.2022.2101326
10. Mbous, Y. P. V., Mohamed, R., & Rudisill, T. M. (2024). International students challenges during the COVID-19 pandemic in a university in the United States: A focus group study. Current Psychology, 43(9), 8325-8337. https://link.springer.com/article/10.1007/s12144-022-02776-x
11. Mensah, R. O., Quansah, C., Oteng, B., & Nii Akai Nettey, J. (2023). Assessing the effect of information and communication technology usage on high school student's academic performance in a developing country. Cogent Education, 10(1). https://doi.org/10.1080/2331186X.2023.2188809
12. Olatunji et al., 2023). COVID-19: Academic, Financial, and Mental Health Challenges Faced by International Students in the United States Due to the Pandemic. NIH. https://pmc.ncbi.nlm.nih.gov/articles/PMC10375931/
13. Perez, K. Y. (2023). The Impact of Lack of Internet and Technology Access on Students' Academic Achievement: An Analysis of the United States (Master's thesis, Georgetown University). https://www.proquest.com/openview/9ba683bffa4ba61f5821fdbac4f8ede6/1?pq-origsite=gscholar&cbl=18750&diss=y
14. Ruppel, E. K., Kahlow, J. A., & Pu, Z. (2020). Information Seeking. The International Encyclopedia of Media Psychology, 1–14. https://doi.org/10.1002/9781119011071.iemp0264
15. Salcedo-Relucio, M. A. (2019). Factors affecting the study habits of grade eleven students in one national high school in Pangasinan, Philippines. Southeast Asian Journal of Science and Technology,4(1), 8997.https://www.sajst.org/online/index.php/sajst/article/view/99

16. Shabur, M. A., & Siddiki, M. R. (2024). Investigating social media's impact on the new era of interactive learning: A case study of Bangladesh. Heliyon, 10(4). https://doaj.org/article/151dd9482ec74adda046be0fddec4bde
17. Sreekumar, D. (2023). What is quantitative research? Definitions, Methods, Types, and Examples . Researcher.life. https://researcher.life/blog/article/what-is-quantitative-research-types-and-examples/
18. Sreekumar, D. (2024). What is Correlational Research: Definition, Types,and Examples. Research.life. https://researcher.life/blog/article/what-is-correlational-research-definition-and-examples/
19. Thornton, T. (2022, May 31). What means academic performance? CLJ. https://communityliteracy.org/what-means-academic-performance/
20. Tiauzon, B. A., & Malquisto, P. R. (2019). Incidence of bullying and academic performance of grade 7 learners. European Journal of Education Studies. https://oapub.org/edu/index.php/ejes/article/view/2370
21. Tulubas, T. (2022). The Effect of Self-regulated Online Learning Skills on Academic Achievement. Anadolu Journal of Educational SciencesInternational(AJESI),12(2). https://www.researchgate.net/publication/361679564_The_Effect_of_Selfregulated_Online_Learning_Skills_on_Academic_Achievement
22. Turney, S. (2022, February 13). Pearson Correlation Coefficient (r)/Guide&Examples.Scribbr. https://www.scribbr.com/statistics/mean/
23. Valverde-Berrocoso, J., Acevedo-Borrega, J., & Cerezo-Pizarro, M. (2022, June). Educational technology and student performance: A systematic review. In Frontiers in Education (Vol. 7, p. 916502). Frontiers Media SA.
24. Vargas-Montoya, L., Gimenez, G., & Fernández-Gutiérrez, M. (2023). ICT use for learning and students' outcomes: Does the country's development level matter? Socio-Economic Planning Sciences, 87, 101550.https://www.sciencedirect.com/science/article/pii/S0038012123000502
25. Zimmerman, B. J. (1989). A social cognitive view of self-regulated academic learning. Journal of Educational Psychology, 81(3), 329–339. https://doi.org/10.1037/0022-0663.81.3.329