



# Correlation Between Understanding Body Movement Systems and Habits of Maintaining Bone Health in Elementary School Students

Lili Kasmini<sup>1\*</sup>

<sup>1</sup> Prodi Pendidikan Guru Sekolah Dasar, Fakultas FKIP, Unuversitas Bina Bangsa Getsempena, Banda Aceh, Indonesia.

Received: January 28, 2024

Revised: March 13, 2024

Accepted: April 25, 2024

Published: April 30, 2024

Corresponding Author:

Lili Kasmini

[lili@bbg.ac.id](mailto:lili@bbg.ac.id)

DOI: [10.29303/jppipa.v10i4.7103](https://doi.org/10.29303/jppipa.v10i4.7103)

© 2024 The Authors. This open access article is distributed under a (CC-BY License)



**Abstract:** This research aims to determine the correlation between elementary school level students' understanding of the concept of movement systems in humans and their habits in maintaining bone health. Because maintaining bone health is something that must be paid attention to, especially in children at their growing age. Habits of maintaining bone health must be supported by elementary school level students' knowledge regarding the process of growth and development in the human body. This research uses a correlation analysis method, with the Product Moment correlation technique. The number of samples used in this research was 35 class VI students from 5 elementary schools in Banda Aceh City. The instruments used are test questions related to the movement system material in the chapter on how our bodies move, and also a student response questionnaire regarding their daily habits in maintaining bone health. The research results can be concluded that the correlation obtained through the Product Moment correlation test can determine the relationship between the two variables at 0.64 with strong criteria. So there is a strong correlation between the first variable, namely the level of understanding of students' concepts regarding how the body moves and the second variable, namely their habits of maintaining healthy bones. The results of the correlation coefficient obtained show changes in students' habits as they understand the concepts they gain.

**Keywords:** Body movement system; Correlation analysis; Maintain bone health

## Introduction

The learning process in schools is a reciprocal activity between teachers and students in building insight in terms of constructing knowledge, building good ethics and adjusting skill levels according to the substance of the material being taught. One of the goals of the learning process is to achieve understanding of the concepts taught in accordance with the planned indicators (Munandar et al., 2020). The implementation of the learning process in the classroom in order to realize learning objectives is greatly influenced by several factors. These factors relate to technical matters and non-technical matters. In its implementation, it is not only teachers and students who play a role in the implementation of the learning process, but there are other things that can also influence it, such as students'

understanding of the concepts being studied and also the depth of the material being taught. In the process, learning does not only involve interaction between students and educators, but learning resources in a learning environment and students' readiness to understand concepts are also important parts in the success of the learning process (Suardi, 2018).

Based on the explanation from Arikunto (2015) states that "Criteria for understanding (comprehension) in the learning process can be seen when students are asked to prove that they can understand a simple relationship between several facts or concepts that they have acquired". Furthermore Uno (2009) added "Understanding concepts is a person's ability to interpret or interpret, give interpretations, and translate or state a situation in their own way. This could be related to the knowledge he has received, in other

## How to Cite:

Kasmini, L. (2024). Correlation Between Understanding Body Movement Systems and Habits of Maintaining Bone Health in Elementary School Students. *Jurnal Penelitian Pendidikan IPA*, 10(4), 1571-1578. <https://doi.org/10.29303/jppipa.v10i4.7103>

words he is able to provide a definition of a problem which is then studied and compiled based on his own perceptions."

Furthermore, related to the definition of understanding above, Widodo (2006) adds that the meaning of understanding (understand) is the process of rearranging a concept based on information that one already has. This process involves adjusting the initial schema that a person already has with the new schema that he or she has acquired. This is the basis of the conceptual knowledge reconstruction process which will give birth to a new understanding. This definition of understanding will later be developed widely into other cognitive domains, such as: the definition of explaining, comparing, interpreting, classifying, summarizing and giving examples. In cognitive taxonomy, the level of understanding is included in the second level of cognitive level (C2), where this relates to the ability to understand the facts and principles of a phenomenon that occurs, the ability to interpret a chart or graph, the ability to predict the consequences stated in the data - available data.

In connection with this research on the human body movement system, which is one of the learning materials taught at elementary school level, which is summarized in material related to how the body moves, there has actually been a relevant study carried out by previous researchers or reviewers. Study Bella et al. (2021) on the human movement system which is a complex unit consisting of several important components that work together to facilitate body movement. Bones, as part of the skeletal system, provide structure and support for the body, while joints, which consist of various types such as hinge and ball joints, allow flexible movement. Furthermore, there is a study Tortora et al. (2017) about muscles, including skeletal muscles, smooth muscles and cardiac muscles, which play a very important role in producing body movements by means of contraction and relaxation. The nervous system, which includes the brain, spinal cord, and peripheral nerves, has a central role in controlling and coordinating muscle activity and transmitting signals throughout the body.

Furthermore, a study conducted by Saladin (2018) related to the sensory perception system which is also a crucial part of the human movement system by providing information about body position, pressure and other environmental stimulation. Meanwhile, the endocrine system regulates growth, development and the body's chemical balance through the production of hormones. The cardiovascular system, consisting of the heart and blood vessels, plays an important role in circulating blood to provide oxygen, nutrients, and transport waste. In addition, body posture and balance

are crucial in ensuring proper positioning during daily activities, while movement coordination involves cooperation between muscles, nerves and other systems to produce coordinated movements. The locomotor system also exhibits high adaptability and response to the environment, allowing the body to adapt to changes and respond to external stimuli.

Based on several previous studies explaining theories related to human body movements, however, the research conducted by this researcher talks about the practice of body movements, which is possible due to an understanding of the importance of body movements carried out in a systematic manner. So this is where the novelty value of this study is because it talks about the correlation between a person's understanding of body movement theory and the desire to move their body systematically and continuously. Understanding the human movement system in the Elementary School (SD) curriculum in Indonesia is taught to class VI students in Natural and Social Sciences subjects. Based on the flow of learning objectives, students are expected to be able to understand basic concepts related to the movement system in the human body and be able to apply them in everyday life. In its application in everyday life, students are also expected to be able to understand things related to maintaining bone health. This is because the average student is 11 years old, which of course is the ideal age for their growth, so knowledge regarding maintaining bone health is also very important. This research aims to see the relationship between students' level of understanding regarding the concept of human movement systems and their habits in maintaining bone health. This research was conducted at five elementary schools (SD) in the city of Banda Aceh, Aceh Province.

## Method

This research uses the correlation analysis method. According to Smith (2018) states that correlation analysis is a method of statistical analysis that is used to state a condition or quantity that shows how strong or weak the relationship is between one variable and another variable without considering whether the variable is dependent on other variables (Abdullah et al., 2022; Sugiyono, 2018). The clearer the linear relationship, the stronger or higher the degree of straight line relationship between the two variables. One correlation technique that can be used is the Product Moment correlation technique.

Product Moment Correlation is a simple correlation that only involves one dependent variable and one independent variable. Product Moment

Correlation will produce a correlation coefficient whose function is to measure the level of strength of the linear relationship between the variables being measured. Correlation is also useful in measuring the level of strength of the relationship between two or more variables measured on a certain scale. The condition of the strength of the level of relationship in this correlation lies between 0 to 1. The first variable in this research is students' understanding of concepts related to the subject of how our bodies move, while the second variable is students' habits in maintaining bone health.

Correlation analysis is used to determine the level or closeness of the relationship between the two variables. The magnitude of the correlation value can be seen using the following Product Moment correlation equation, where x is the first variable, and y is the second variable, while n is the number of observations.

$$r_{xy} = \frac{n \sum xy - (\sum x)(\sum y)}{\sqrt{[n \sum x^2 - (\sum x)^2][n \sum y^2 - (\sum y)^2]}} \quad (1)$$

Correlation is a technique used to measure the strength of the relationship between two or more different variables which is described in the form of a correlation coefficient value. The correlation coefficient is a measure used to determine the degree of relationship between the variables being measured. The correlation coefficient value is between negative 1 to positive 1, which can be seen in Table 1.

**Table 1.** Correlation Coefficient

r value	Description
0.00 - 0.19	Very low
0.20 - 0.39	Low
0.40 - 0.59	Medium
0.60 - 0.79	Strong
0.80 - 1.00	Very strong

The number of samples used in this research was 35 students from 5 elementary schools (SD) in Banda Aceh City, Aceh Province. In sample selection, each school selected 7 students from class VI who had studied Natural and Social Sciences (IPAS) subjects. Data collection was carried out twice. The first data collection was carried out regarding understanding the material of how the human body moves. The technique involves giving test questions to students in the form of a multiple choice test totaling 20 questions. Meanwhile, the second data collection regarding students' habits in maintaining bone health was carried out by administering a questionnaire. The questionnaire given

contained 15 statement items related to students' daily habits in maintaining bone health.

## Result and Discussion

The human movement system involves a number of components that work together to enable body movement. Bones, as part of the skeletal system, provide structure and support to the body. Joints connect bones and allow various types of movement, such as hinge and ball joints. Muscles, including skeletal muscles, smooth muscles, and cardiac muscles, play a role in moving the body by contracting and releasing (Madri, 2017). The nervous system, which consists of the brain, spinal cord, and peripheral nerves, controls and coordinates muscle activity and sends signals to various parts of the body (Tarwaka, 2015).

The sensory perception system provides information about body position, pressure, and other environmental stimulation (Dania et al., 2021). The endocrine system regulates growth, development, and the body's chemical balance through the production of hormones. The cardiovascular system, consisting of the heart and blood vessels, circulates blood to provide oxygen, nutrients, and transport waste. Posture and balance ensure proper positioning during activities, and coordinated movement involves the joint work of muscles, nerves, and other systems for precise movement. The movement system also has the ability to adapt and respond to the environment, which allows the body to adapt to changes and respond to external stimuli (Bustan et al., 2018). Overall, this complex human movement system allows us to carry out various daily activities efficiently and flexibly (Mubarak et al., 2016).



**Figure 1.** Student's condition after distributing test questions

The concept of movement systems in humans is contained in the first chapter of the class VI science course. The first chapter presents material entitled "How Do Our Bodies Move?" This research was



conducted in the Odd Semester of the 2023-2024 Academic Year, to be precise in August 2023. Researchers collected data regarding students' understanding of the material *How Our Bodies Develop*. Researchers randomly selected 5 class VI students at Elementary School-001 to be given test questions related to this material. The same thing was also done at Elementary School-002, Elementary School-003, Elementary School-004 and Elementary School-005, with the number of students given the test at each elementary school being 5 students in class VI who were chosen randomly.

Based on the results of the tests that have been carried out and then adjusted to the Minimum Completeness Criteria (KKM) for the material, the following results are obtained:

**Table 2.** Results of Students' Concept Understanding Test

School	Average score
Elementary school 01	79.00
Elementary school 02	81.00
Elementary school 03	78.00
Elementary school 04	83.00
Elementary school 05	78.00

Based on the data in the table above, it can be seen that the average student score is between 78 and 83, meaning that students' understanding of the concepts at each school is relatively almost the same. These results are the average scores of 5 students at each school, meaning that a total of 35 students took the test. The Minimum Completeness Criterion (KKM) for the material on how our bodies move in all research schools is 70, so all students get a score above the KKM. Students also seem to understand the material on how our bodies move, because the implementation of this test is arranged after students have just studied this material at their respective schools.

Tests are given to see to what extent students have understood concepts related to the human movement system. In the question items which aim to see students' ability to show the skeletal parts of the human body, students are expected to be able to name starting from the skull, body skeleton and limb skeletons. Students are also expected to be able to show the parts that are included in the framework. For questions with indicators relating to parts of the human skeleton, there are 5 question items. On these questions, students were focused in providing answers, this can be seen from the results of students' answers, where 90% of students were able to answer the questions correctly. This is because the questions related to indicators describing parts of the human skeleton are easy questions, where students are only asked to show several parts of the

body that can move. In the learning process in class, students have received information about the parts of the skeleton, starting from the skull, body skeleton, and also parts of the limbs, students have also completed practice questions given by the teacher related to this material. This has a positive influence on students' level of understanding regarding the parts of the human skeleton.

Students also answer questions related to the functions and benefits of the skeleton for humans. From the question indicators relating to the category of function and benefits of the skeleton for humans, there are 4 question items. Students are directed to answer questions about the benefits of the skeleton in determining a person's physical shape, the benefits of the skeleton in protecting the body's vital organs, the benefits of the skeleton in producing red blood cells and finally the benefits of the skeleton in attaching muscles. The results obtained by the participants were that the majority of students still had difficulty answering questions related to the functions of the human movement system. The results of students' answers to this indicator are the lowest compared to the questions on the other indicators. This is because students still do not receive sufficient information regarding this concept. Based on the level of depth of the material, material related to the functions of the movement system is given at the junior and senior high school levels, so that the concepts taught at the elementary school education unit level do not fully discuss this in detail.



**Figure 2.** Condition of students working on test questions

The third indicator used in preparing this test question is things related to classifying diseases related to the movement system. There are 5 test items related to information about diseases related to the human movement system. In this section, students will be able to show several examples of common diseases related to the human movement system, such as polio, osteoporosis, bone injuries and bone fractures. This is

because students often get information related to these diseases, both from teachers during the learning process, and from other reading materials. The diseases asked about in the question items are still classified as diseases that commonly occur in society, making it easier for students to answer these questions.

The last indicator asked about is things related to maintaining bone health. There are 6 question items for this indicator, where students are expected to be able to give examples of how to maintain bone health in

everyday life. The majority of test participants were able to answer questions related to how to maintain bone health. This is also because students have received information regarding ways to maintain bone health, both information through teachers during the learning process in class, and from other reading materials, such as social media, news on television and so on. Details of students' answers for each test question indicator can be seen in Table 3.

**Table 3.** Distribution of Student Test Answers Based on Indicators

Question Indicator	Number of Question Items	Percentage of Correct Answers
Describe the parts of the Human Skeleton	5	92 %
Mention the functions of the skeleton in humans	4	52 %
Classifying diseases related to the human movement system	5	86 %
Give an example of how to maintain healthy bones	6	88 %

After completing the test, the students were also directed to provide responses via a questionnaire regarding their daily habits in maintaining bone health. This questionnaire contains 15 statement items with a scale of 5 consisting of very often, frequently, rarely, sometimes and never. Based on the results of the responses carried out through giving questionnaires, it can be concluded that there is continuity between each activity they carry out in order to maintain bone health, such as students are accustomed to doing physical exercise, then the habit of consuming nutritious food and using several injury protectors when doing sports activities.

understanding concepts is an ability to behave, think and act carried out by students in understanding a definition, understanding special characteristics, essence and essence/content of the material that has been obtained. and the ability to choose the right procedure to solve problems.

Students will find a scheme from a series of examples or facts. To be able to make inferences, students must be able to conclude abstractions from concepts or principles based on several available examples. In the end, students will detect the similarities and differences between these two objects, ideas or situations. Students also compare several phenomena and then they also find connections between the elements of one object or situation and the elements of the object or situation with the elements of other objects or conditions related to the influence of understanding on reactions or actions (Fitriyani et al., 2022; Restuning, 2015).



**Figure 3.** Condition of students hearing the orientation of the human body's needs for nutrition

This shows that students have a good level of understanding regarding the material on how our bodies move that they get in the IPAS learning process at school. These two data show a strong relationship which shows that the level of students' understanding of a concept will influence their daily habits, including habits in maintaining bone health. This is in accordance with what has been stated by Widodo (2006) that



**Figure 4.** Condition of students practicing body movements to maintain bone health

Based on the 15 response items contained in the student response questionnaire section, it can be seen

that knowledge regarding how to maintain bone health is obtained from information provided by the teacher during the learning process in class. Information related to how to maintain healthy bones is very useful in constructing students' thinking in carrying out physical activities, whether in sports or when resting. This information is also supported by material contained in school reading materials, thereby increasing students' insight into maintaining bone health.

The next step is to look at the correlation (Telussa et al., 2013; Wibowo et al., 2020) between the two results above. This correlation analysis technique uses the product moment correlation equation via the Microsoft Excel application. Where the first variable is students' conceptual understanding of the material on how our bodies move, while the other variable is students' habits in maintaining bone health (Bella et al., 2021). The results of the analysis can be seen in Table 4.

**Table 4.** Correlation Results

Variable	Student Concept Understanding Level	Student Habits to Maintain Bone Health
Student Concept Understanding Level	1	-
Student Habits to Maintain Bone Health	0.64	1

Based on the correlation results we can see that the analysis of the relationship between the two variables is at 0.64. If these results are consulted with the information in Table 1, information is obtained that there is a strong correlation between the level of understanding of students' concepts related to the subject of how our bodies move and their habits in maintaining bone health. The correlation coefficient results obtained in the table above show changes in students' habits as they understand the concepts they gain. This is in accordance with what Azwar (2001) said, where the correlation coefficient is a coefficient that states the state of the relationship between two or more variables being measured. The condition of whether the correlation coefficient value is large or small does not describe a causal relationship between the variables, but this situation only describes the linear relationship between the variables. Apart from that, the correlation coefficient also shows a reciprocal relationship so that it will not be a problem when stating the independent or dependent variable or the first variable or the second variable or anything else in a study. Correlation also aims to measure the level of strength of relationship between two or more variables on a certain scale.

The correlation results also give us information about the relationship between the knowledge that students have gained through the learning process at school and the students' daily physical activity. The information obtained by students plays a very important role in shaping the character and personality of students in applying it in everyday life. This relationship, as mentioned by Azwar (2001), is a continuous pattern between each variable that is measured, where each variable has an influence on other variables, so that this will show the strength of the relationship in each of the parts involved analyzed.

Understanding the concept of bone health has a significant impact on a person's tendency to maintain

their bone health through proactive actions. First of all, understanding the structure and function of bones helps individuals realize the crucial role of bones in supporting the body, protecting vital organs, and participating in blood production. With this understanding, awareness arises of the need for specific nutrients such as calcium, vitamin D and vitamin K which are very important for bone health (Septianggreini et al., 2022). This encourages individuals to consume foods rich in these nutrients or even consider using supplements if necessary.

In addition, understanding the relationship between physical activity and bone density encourages people to make exercise and physical activity an integral part of their lifestyle (Ramayulis et al., 2011). Heavy exercise or bone weight training is chosen as a real effort to maintain bone health and reduce the risk of osteoporosis. Understanding the risk of bone injury is also an important factor. Individuals who understand the risks and consequences of bone injury are more likely to take preventative steps, such as using protective equipment when exercising or avoiding behaviors that may increase the risk of bone injury.

Then, awareness of healthy living habits such as not smoking and reducing excessive alcohol consumption is integrated into the understanding of bone health. Individuals who understand that these habits can support bone health are more likely to live a healthy lifestyle. Of course, this understanding also encourages individuals to consult regularly with a doctor or health professional to obtain regular bone health assessments. In addition, knowledge of risk factors that can damage bone health helps individuals avoid or circumvent these factors. Thus, understanding the concept of bone health is not just knowledge, but also a trigger for concrete and positive action in maintaining bone health throughout life. Through a combination of knowledge and action, individuals can



create a lifestyle that supports their bone health and reduces the risk of future bone disorders.

## Conclusion

Based on the results and discussion above, it can be concluded that the correlation obtained through the Product Moment correlation test can determine the relationship between the two variables at 0.64 with strong criteria. So there is a strong correlation between the first variable, namely the level of understanding of students' concepts regarding how the body moves and the second variable, namely their habits of maintaining bone health. The results of the correlation coefficient obtained show changes in students' habits as they understand the concepts they gain. Students who have a strong understanding of concepts will have good habits in maintaining the health of their bones as they grow older.

## Acknowledgments

Thanks are expressed to the Chancellor of Bina Bangsa University Getsempena Banda Aceh and the Research and Community Service Institute of Bina Bangsa University Getsempena Banda Aceh, who have funded this research.

## Author Contributions

Conceptualization, L.K; methodology, L.K; validation, L.K; formal analysis, L.K; investigation, L.K; resources, L.K; data curation, L.K; writing—original draft preparation, L.K; writing—review and editing, L.K; authors have read and agreed to the published version of the manuscript.

## Funding

Funding for this research was through the Bina Bangsa Getsempena University budget, Banda Aceh.

## Conflicts of Interest

This research was conducted based on an assignment letter from Bina Bangsa Getsempena University, Banda Aceh, to increase the resources of lecturers in the field of research.

## References

- Abdullah, K., Jannah, M., Aiman, U., Hasda, S., Fadilla, Z., Taqwin, M., Ardiawan, K. N., & Sari, M. E. (2022). *Metodologi Penelitian Kuantitatif*. Yayasan Penerbit Muhammad Zaini.
- Arikunto, S. (2015). *Dasar-Dasar Evaluasi Pendidikan*. Jakarta: Bumi Aksara.
- Azwar, S. (2001). *Metode Penelitian*. Yogyakarta: Pustaka Pelajar.
- Bella, A. K., Polii, H., & Wungow, H. I. S. (2021). Pengaruh Latihan Resisten terhadap Kepadatan Tulang. *Jurnal E-Biomedik*, 9(2). <https://doi.org/10.35790/ebm.v9i2.31799>
- Bustan, M. N., Aprilo, I., & Anwar, K. (2018). Derajat Kesehatan Jasmani dan Postur Siswa Sekolah di Makassar. *Media Kesehatan Masyarakat Indonesia*, 14(1), 93. <https://doi.org/10.30597/mkmi.v14i1.3781>
- Dania, I. A., & Novziransyah, N. (2021). Sensasi, Persepsi, Kognitif. *Ibnu Sina: Jurnal Kedokteran Dan Kesehatan - Fakultas Kedokteran Universitas Islam Sumatera Utara*, 20(1), 14–21. <https://doi.org/10.30743/ibnusina.v20i1.59>
- Fitriyani, W., & Kurniasari, R. (2022). Pengaruh Media Edukasi terhadap Peningkatan Pengetahuan Pencegahan Diabetes Mellitus pada Remaja. *Jurnal Untuk Masyarakat Sehat (JUKMAS)*, 6(2), 190–195. <https://doi.org/10.52643/jukmas.v6i2.2141>
- Madri. (2017). Kontraksi Otot Skelet. *Jurnal MensSana*, 2(2), 69. <https://doi.org/10.24036/jm.v2i2.25>
- Mubarak, Sukurni, & Rusli. (2016). *Anatomi Fisiologi Tubuh Manusia*. Purbalingga: Eureka Media Aksara.
- Munandar, H., & Junita, S. (2020). Pengembangan Instrumen Penilaian Psikomotorik Berbasis Peer Assessment Pada Kegiatan Praktikum IPA. *Jurnal Tunas Bangsa*, 7(2), 143–159. <https://doi.org/10.46244/tunabangsa.v7i2.1127>
- Ramayulis, R., Pramantara, I. D., & Pangastuti, R. (2011). Asupan vitamin, mineral, rasio asupan kalsium dan fosfor dan hubungannya dengan kepadatan mineral tulang kalkaneus wanita. *Jurnal Gizi Klinik Indonesia*, 7(3), 115. <https://doi.org/10.22146/ijcn.17752>
- Restuning, D. (2015). Efektifitas Edukasi Diabetes dalam Meningkatkan Kepatuhan Pengaturan Diet pada Diabetes Melitus Tipe 2 Diabetes. In *Mutiara Medika* (Vol. 15, Issue 1). Mutiara Medika. <https://doi.org/10.18196/mmjkk.v15i1.2492>
- Saladin, K. S. (2018). *Anatomy & Physiology: The Unity of Form and Function*. McGraw-Hill Education.
- Septianggreini, J., Widyastuti, N., Ardiaria, M., & Fitranti, D. Y. (2022). Hubungan Asupan Kalsium, Vitamin D, dan Paparan Sinar Matahari dengan Status Gizi pada Balita Usia 3-5 Tahun. *Nutri-Sains: Jurnal Gizi, Pangan Dan Aplikasinya*, 6(2), 75–86. <https://doi.org/10.21580/ns.2022.6.2.7338>
- Smith, M. J. (2018). *Statistical Analysis Handbook A Comprehensive Handbook of Statistical Concepts, Techniques and Software Tools*. The Winchelsea Press, Drumlin Security Ltd.
- Suardi, M. (2018). *Belajar & Pembelajaran*. Yogyakarta: CV Budi Utama.
- Sugiyono. (2018). *Metode Penelitian Kuantitatif Kualitatif dan R & D*. Bandung: Alfabeta.
- Tarwaka. (2015). *Ergonomi Industri, Dasar-dasar Pengetahuan Ergonomi dan Aplikasi di Tempat Kerja* (2nd ed.). Surakarta: Harapan Press.
- Telussa, A. M., Persulesy, E. R., & Leleury, Z. A.

- (2013). Penerapan Analisis Korelasi Parsial untuk Menentukan Hubungan Pelaksanaan Fungsi Manajemen Kepegawaian dengan Efektivitas Kerja Pegawai. *BAREKENG: Jurnal Ilmu Matematika Dan Terapan*, 7(1), 15-18. <https://doi.org/10.30598/barekengvol7iss1pp15-18>
- Tortora, G. J., & Derrickson, B. (2017). *Principles of Anatomy and Physiology*. John Wiley & Sons.
- Uno, H. B. (2009). *Teori Motivasi dan Pengukurannya Analisis di Bidang Pendidikan*. Jakarta: Bumi Aksara.
- Wibowo, R. A., & Kurniawan, A. A. (2020). Analisis Korelasi Dalam Penentuan Arah Antar Faktor Pada Pelayanan Angkutan Umum Di Kota Magelang. *Journal of Electrical Engineering, Computer and Information Technology*, 2(1), 1-3014. <https://doi.org/10.31002/JEECIT.V1I2.3552>
- Widodo, T. (2006). *Perencanaan Pembangunan: Aplikasi Komputer (Era Otonomi Daerah)*. Yogyakarta: UUP STIM YKPN.