

Differences in Emotional Intelligence, Learning Styles, Learning Motivation and Biology Learning Outcomes of Male and Female Students of Sman 4 Toraja Utara

Vilya Biring Pongbala¹, Nurhayati B², Hartati³

Biology Education, Makassar State University, Indonesia

²Lecturer of Department of Biology, Makassar State University, Indonesia

³Lecturer of Department of Biology, Makassar State University, Indonesia

Article Info

Article history:

Received July 28, 2025

Revised October 28, 2025

Accepted October 30, 2025

Keywords: (A-Z)

Emotional Intelligence

Learning motivation

Learning outcomes

Learning styles

ABSTRACT

This study is an ex-post-facto study that aims to examine the differences in emotional intelligence, learning styles, learning motivation, and learning outcomes of male and female students of SMAN 4 Toraja Utara. Emotional Intelligence is a student's ability to recognize their own feelings and those of others, manage emotions effectively, and communicate effectively with others. Learning style is the way students absorb, organize, and process the information or learning materials they receive. Learning motivation is the drive that arises within students that drives and directs their learning behavior. Emotional Intelligence, learning style and learning motivation was measured by researchers using a Likert-scale questionnaire during the study. Biology learning outcomes are students' cognitive scores. Cognitive scores are obtained from scores after answering mid-semester multiple-choice questions developed and distributed by researchers covering the second half of the 2020/2021 academic year. This study aims to determine the differences between emotional intelligence, learning styles, learning motivation, and Biology learning outcomes of male and female science students at SMAN 4 Toraja Utara. Sampling was conducted using a stratified random sampling technique, resulting in a sample of 100 female students and 79 male students. This sample was obtained by calculating the total number of students and then determining the number of male and female representatives in each class. Data collection techniques used instruments in the form of learning outcomes and questionnaires. The data analysis technique used is inferential statistical analysis. The results showed that (i) there were differences between emotional intelligence, learning styles, learning motivation, and learning outcomes for male and female students of SMAN 4 Toraja Utara.

This is an open access article under the CC BY-SA license.



Corresponding Author:

Vilya Biring Pongbala,

Biology Education, Makassar State University

Jalan Andi Pangeran Pettarani, Makassar 90222, Indonesia

Email: vilyapongbala80@guru.smp.belajar.id

1. INTRODUCTION

Education has a strategic position in the aspect of nation building, especially in human resource development efforts. This is in line with function and objectives of national education as stipulated in the law of Republic of Indonesia No.20 article 3 of 2003 concerning the National Education System which states that "National education function to develop the ability and shape the character and civilization of a dignified nation in order to educate the nation's life, aims to develop the potential of students to become human beings who have faith and devotion to God almighty, have noble character, are healthy, knowledgeable, capable, creative, independent, and become democratic and responsible citizens".

Currently, the quality of education in Indonesia is still far behind when compared to other countries. One indicator that also shows that the quality of education in Indonesia is still low is the results of an international survey that assesses the quality of education in the world. A survey conducted by the *Program for International Students Assessment* (PISA) in 2018 showed that Indonesia's reading score was ranked 72 out of 77 countries,

then the math score was ranked 72 of 78 countries, and the science score was ranked 70 out of 78 countries (Liputan6.com, 2019)

Various efforts have been made by the government in improving human resources, especially in the field of education, one of which is compulsory 12-year education. With the hope that the Indonesian people already have basic knowledge and skills when plunging into society and can advance the nation and state. Effort to develop the potential of these students must be done early and must be realized, although in practice it is not always as expected (Wijaya et al., 2016).

Based on the results of observations at SMAN located in Rindingallo district, namely SMAN 4 North Toraja in July 2020, it was obtained that the number of data on students majoring in science was 335 students with 158 male students and 177 female students. From the results of interviews with biology teachers also obtained informations that the number of students who reached the minimum completion criteria before remedial was below 85%, where the minimum completion criteria value set by teacher was 75. In fact, the learning process is said to be complete if 85% of the number of student have reached the minimum completion criteria value of the learning evaluation carried out.

Data from the biology teacher's observations show that there are several factors that affect the learning outcomes of male and female students. Among them are the learning styles of each student who varies in receiving lessons. There are those who like when the teacher on the blackboard, hears the teacher's explanation verbally, group discussions and does direct practice. In addition, learners also show a self-centered attitude, are less able to establish communication with others and are closed. The learning motivation of some students is also low which can be seen from symptoms such as attitudes that do not pay attention to the teacher when teaching, do not do assignments on time and give up easily when finding difficulties.

The situation that appears as above is also exacerbated by the current Covid 19 pandemic. Students who are not accustomed to learning independently will experience difficulties in learning, due to the lack of guidance from teachers and friends to discuss. Students who are less motivated to learn will also be more lazy, so that in the end it will affect their learning outcomes.

The low learning outcomes obtained by students are influenced by various factors. In general, the factors that affect learning outcomes can be divided into two, namely external factors (derived from the external factors). While internal factors (originating from within learners) include physical aspects such as the five senses and psychological aspects such as motivation, interest, talent, emotional intelligence, discipline and learning style of learners.

The objectives of this study are as follows: 1). To determine the emotional intelligence, learning styles, learning motivation, and learning outcomes of male and female science students at SMAN 4 Toraja Utara. 2). To determine the relationship between emotional intelligence, learning styles, and learning motivation with Biology learning outcomes of male and female science students at SMAN 4 Toraja Utara. 3). To determine the differences between emotional intelligence, learning styles, learning motivation, and Biology learning outcomes of male and female science students at SMAN 4 Toraja Utara.

Emotional intelligence plays an important role in the success of the learning process. According to (Goleman, 2000), intellectual intelligence (IQ) only contributes 20% to success, while 80% is the contribution of other forces, including emotional intelligence (EQ), namely the ability to motivate oneself, overcome frustration, control urges, regulate mood, empathize and the ability to cooperate with others. In addition, according to (Efendi, 2005) a high IQ will not solely make someone smart, without emotional intelligence the ability to understand and manage our feelings and the feelings of others, and our chances of living happily become very slim.

According to (Goleman, 2003), one of the factors that influence emotional intelligence is gender. Some studies prove that women have higher emotional intelligence than men, women are also more sensitive to the surrounding environment, recognize and are able to manage emotions, and are quick to establish intensive communication than men (Meyers-Levy & Loken, 2015).

Emotional intelligence has a close relationship with motivation. People who have emotional intelligence will be able to motivate themselves. So that they have the perseverance to resist gratification and control impulses, and have a positive sense of motivation. Learners who are motivated to learn will stay on task longer than learners that less high in motivation to learn, because they experience failure. They will attribute their failure to a lack of effort, rather than to external factors such as task difficulty, and luck. Learners who are motivated to learn want success, and when they fail will redouble their efforts to succeed (Sukmadinata, 2003).

Differences in learning outcomes between men and women are also not uncommon in the classroom. According to (Hoang, 2008), men with all their innate characteristics are different from women, and are also thought to affect the motivational aspects of learning experienced by students. Women's motivation is better than men's because women have a higher willingness to learn and comply with the rules that have been set. While men are not more comfortable in the room so there is a tendency that they often come late, do not make assignments and often skip class during class hours (Oksara & Nirwana, 2019). The results of research that support this statement are research conducted by (Saragi & Suryani, 2018), which revealed that female students have an average score of higher learning motivation than male students.

Another factor that also affects learning outcomes is the learning style of students. Learning style is a person's way to absorb, organize, and process information or learning materials received. So that a teacher in teaching should know the learning style of each student so that the delivery of material can be adjusted to the situation of the students. Because if students receive information or material according to their learning style, then there will be no lessons that are difficult to learn.

Learning style, as one of the success factors of learning, is also influenced by gender. Gender as A concept, which is the result of human thinking, is created by society so that it fluctuates and can be different due to differences in culture, religion, customs, society, value systems, and the likes of certain nations. Men and women have different learning styles. Women prefer a convergent learning style that uses abstract conceptualization and active experimentation. While men prefer an assimilator learning style with the ability to learn using abstract conceptualization and reflection observation, and learn by seeing and thinking (Vidiana, 2014). Another thing that supports the differences in learning styles of men and women is also supported by research conducted by (Azizah 2016), which states that there are differences in student learning outcomes in terms of gender. Male students spend a lot of time outdoors. The unstructured outdoor environment causes boys to rely more on space than time. Meanwhile, females with a visual learning style tend to remember things more easily based on sight, understand instructions better when reading, and can even enjoy reading even in the midst of noise.

2. RESEARCH METHOD

The type of research used in this study is *ex post facto* research. Research carried out on semester even, 2020/2021 school year from November 2020 - March 2021. At SMAN 4 North Toraja which is located in Rindingallo District, North Toraja Regency. The population in this study was all science students at SMAN 4 Toraja Utara in the 2020/2021 academic year. These students consisted of four study groups for grade 10 with 120 students, four study groups for grade 11 with 111 students, and four study groups for grade 12 with 104 students, resulting in a total population of 335 students. The sampling technique used is *stratified random sampling*. (Sugiyono, 2010) Determining the sample size in the stratified random sampling technique involves first calculating the total sample size. Next, the sample size for each class is determined using the proportional allocation formula to determine the number of males and females in each class.

The instruments used in this research are questionnaires and learning outcome test instruments that have been tested for validity and reliability. Questionnaires are used to obtain data on emotional intelligence, learning styles and learning motivation. While the learning outcomes test questions are used to obtain the value of students' cognitive domain Biology learning outcomes. The data obtained were then processed using inferential statistical analysis to see differences in emotional intelligence, learning styles, learning motivation and learning outcomes in male and female students at SMAN 4 North Toraja.

3. RESULT AND DISCUSSION

Based on the results of inferential statistical tests, the following data were obtained.

Table. 1 Differential Test of Emotional Intelligence, Learning Style, Learning Motivation and Biology Learning Outcomes of Male and Female Learners of SMAN 4 North Toraja

Variables	Gender	Mean	Std. Deviation	Sig. (2-tailed)
Emotional intelligence	Men	69,34	9,377	0,000
	Women	75,32	4,851	
Learning style	Men	68,92	8,128	0,047
	Women	70,83	6,787	
Learning motivation	Men	69,09	10,077	0,000
	Wpman	76,94	4,563	
Learning outcomes	Men	68,77	8,771	0,000
	Women	78,06	7,546	

Data source: The results of the analysis of the SPSS program version 21.0 for windows

The research data on emotional intelligence variables show that the average emotional intelligence of female students is higher than that of male students. This means that female students have better emotional intelligence than male students at SMAN 4 North Toraja. Female learners are more able to recognize and manage their own emotions, able to motivate themselves, recognize other people's emotions, and are proficient in building good relationships with others than men.

Differences in the level of emotional intelligence of male and female students are influenced by the teacher's interaction patterns with students. Sometimes teachers unconsciously give different treatment between them. According to (Herdiansyah, 2016), not a few teachers carry the understanding that women are sensitive to their feelings. So that in educating teachers, they are more sweet, soft-spoken, and behave gently only because of the teacher's understanding of the girls. Conversely, teachers' understanding of men who are embedded in

themselves that they are relatively more ignorant, more need to be controlled and more difficult to regulate so that in educating men need to be directed more firmly with louder language, higher voice volume and rules that must be stricter (Khasanah, 2018)

A woman tends to have a maternal nature, empathy, and uses more feelings in acting so that her emotional intelligence is higher (Chong et al., 2016). In addition, women are also more sensitive to the surrounding environment, recognize and are able to manage emotions than men (Meyers-Levy & Loken, 2015). If we look at the environment around us, girls' friendships are also more intimate and more understanding of each other. Understanding than the friendship of boys (Cm et al., 2013). This is the underlying reason why the emotional intelligence of female learners is also higher than male learners.

Emotional intelligence is very important because the success of a person is not only determined by intellectual intelligence but also determined by the ability to manage emotions and the ability to establish relationships with other people and the environment. If someone is able to control and stabilize the emotions that arise in him, then that person can be said to be emotionally intelligent. Learners who have good emotional intelligence will find it easy to master and understand the material, focus their minds on what they are learning, and be able to optimize their learning outcomes and able to optimize their learning outcomes (Sebayang, 2015).

The research data on the learning style variables of male and female students are also known to be different, where the average in female students is higher than male students. This result is in line with the results of the previous descriptive analysis which shows that male students are dominated by kinesthetic learning style types and female students are dominated by visual learning style types.

Kinesthetic learning style has characteristics, namely: usually speak slowly, memorize by walking and looking directly, use fingers as a guide when reading, learn through direct practice or manipulation, generally poor writing, cannot sit still in one place for a long time, touch others to get attention, and like activities that keep busy. These characteristics are generally experienced by males because they have greater motor skills, such as jumping and throwing or other physical activities (Olivia, 2009). Male learners spend a lot of time outdoors. The unstructured outdoor environment causes boys to be more dependent on space than time. This is in accordance with the results of research that it has been conducted that male students of SMAN 4 North Toraja are more dominant to kinesthetic learning style.

Learners with a visual learning style type are more likely to use their sense of sight to receive and manage information. With characteristics: neat and orderly, meticulous and detailed, not easily distracted by noise or noise when studying, remember what is seen rather than what is heard, not good at choosing words in expressing their opinions and have problems in verbal instructions. From the results of the research conducted, this type of visual learning style is owned by female students of SMAN 4 North Toraja, and if it is related to everyday life, these characteristics are generally owned by women as revealed by (Olivia, 2009), that girls are faster in learning to write and read. Everyone's learning style is different because it is influenced by habits, personality, and develops in line with time and experience. the pattern or style of learning is influenced by the major or field, which in turn will affect its success in achieving achievement and what is expected (Amrullah, F. 2016).

The results of data analysis of learning motivation in male and female students are also known to be different, where the average learning motivation of female students is higher than male students. This is also supported by the results of observations and interviews with the research subject teacher who said that female students have better motivation in learning, seen from how their readiness and enthusiasm in receiving and doing learning.

Learning motivation is one of the factors that determine the success of students in learning. With a clear motivation, it will help students determine and set their steps ahead. Like that expressed by (Ormrod, 2008), explaining that motivation is something that animates, directs, and maintains behavior so that it makes students move, puts students in a certain direction, and keeps students moving. Thus, students who study diligently and have a good learning motivation will maximize their learning outcomes when compared to students who do not have good learning motivation.

The results of the last analysis, namely the Biology learning outcomes of male and female students of SMAN 4 North Toraja are also known to be different, the average learning outcomes of female students are higher than male students. This means that the learning outcomes of female students are better than male students. The difference in learning outcomes is influenced by internal factors such as emotional intelligence, learning style and student motivation. In addition, there are also external factors such as facilities and infrastructure, methods and learning models used by teachers in teaching, and no less important is the environment where students live. So this difference is not only caused by gender, but can also be influenced by many other factors that were not examined in this study. These differences are the result of complex interactions, driven by many non-gender factors that are rarely examined or controlled for in studies. For example: socialization and culture: norms that dictate how men and women should express emotions and pursue ambitions, socioeconomic status: differences in access to resources, tutoring, and stimulating environments.

4. CONCLUSION

The conclusions of the research that has been done are: there are differences in emotional intelligence, learning styles, learning motivation, and learning outcomes of Biology of male and female students of SMAN 4 North Toraja.

Female students have better emotional intelligence than male students. Female students are better able to recognize and manage their own emotions, motivate themselves, recognize the emotions of others, and are skilled at building good relationships with others, not just men. Therefore, male students need training from teachers and parents to improve their emotional intelligence.

The learning styles of male students at SMAN 4 Toraja Utara are dominated by the kinesthetic learning style, with 36 students representing 46%. Meanwhile, the visual learning style is dominated by female students, with 52 students representing 52%. Male students spend a lot of time outdoors. The unstructured outdoor environment causes boys to rely more on space than time. Female students at SMAN 4 Toraja Utara have a visual learning style. When related to everyday life, this characteristic is generally found in women, as stated by Olivia (2009), who found that girls learn to write and read more quickly. During the learning process, a teacher must understand each student's learning style, and students must also understand their own learning styles. This will impact their learning outcomes. Male and female students have different learning motivations. According to Pratama and Haryanto (2017), children's motivation in today's era has been contaminated by technological developments. Technological developments, rather than leading to positive change, lead adolescents to negative behaviors that negatively impact their personality and learning motivation.

In recent times, it's undeniable that the learning process hasn't been running as usual. Learning activities are predominantly conducted online, and this has created an uneven distribution of education. Students face various obstacles in participating in lessons, from not having a mobile phone to difficulty accessing the internet. These obstacles have led to a decline in student motivation to learn, which ultimately impacts their learning outcomes.

5. ACKNOWLEDGEMENT

The author would like to thank Prof. Dr. Nurhayati B, M.Pd as the first supervisor, and Mrs. Hartati, S.Si., M.Si., Ph.D as the second supervisor, who have taken the time, energy, and thoughts in providing guidance and valuable opportunities for the author during the preparation of the thesis. And also to the entire extended family of SMAN 4 Toraja Utara, especially Mrs. Kristina, S.Pd and Mrs. Intan Purwanti, S.Pd who have helped the researcher during the research process.

6. REFERENCES

- Amrullah, F. (2016) Hubungan Gaya Belajar, Fasilitas Belajar di Sekolah, dan Sikap Belajar dengan Hasil Belajar Biologi Siswa Kelas XI IPA SMA Negeri di Kabupaten Pinrang. Program Pascasarjana Universitas Negeri Makassar. Masters. Pascasarjana. - Google Search. (n.d.). Retrieved July 26, 2025, from <https://www.google.com>
- Chong, O. S., Mahamod, Z., & Yamat, H. (2016). Faktor Jantina, Kaum, Aliran Kelas dan Hubungannya dengan Kecerdasan Emosi Murid dalam Mempelajari Bahasa Melayu. *Jurnal Pendidikan Bahasa Melayu*, 3(1), Article 1.
- Cm, C., H, R., & D, B. (2013). The mediating role of interpersonal competence between adolescents' empathy and friendship quality: A dyadic approach. *Journal of Adolescence*, 36(1). <https://doi.org/10.1016/j.adolescence.2012.10.004>
- Efendi, A. (2005). *Revolusi Kecerdasan Abad 21*. Alfabeta.
- Goleman, D. (2000). *Kecerdasan Emosional*. Gramedia Pustaka Utama.
- Goleman, D. (2003). *Emotional Intelligence*, alih bahasa oleh T. Hermaya 2003. Gramedia Pustaka Utama.
- Herdiansyah, H. (2016). *Gender dalam Psikologi*. Salemba Humanika.
- Hoang, T. N. (2008). The Effects of Grade Level, Gender, and Ethnicity on Attitude and Learning Environment in Mathematics in High School. *International Electronic Journal of Mathematics Education*, 3(1), 47–59. <https://doi.org/10.29333/iejme/217>

-
- Khasanah, E. U. (n.d.). Disusun sebagai salah satu syarat menyelesaikan Program Studi Strata I pada jurusan Psikologi Fakultas Psikologi.
- Liputan6.com. (2019, December 4). Skor Terbaru PISA: Indonesia Merosot di Bidang Membaca, Sains, dan Matematika. liputan6.com. <https://www.liputan6.com/global/read/4126480/skor-terbaru-pisa-indonesia-merosot-di-bidang-membaca-sains-dan-matematika>
- Meyers-Levy, J., & Loken, B. (2015). Revisiting gender differences: What we know and what lies ahead. *Journal of Consumer Psychology*, 25(1), 129–149. <https://doi.org/10.1016/j.jcps.2014.06.003>
- Oksara, W., & Nirwana, H. (2019). Perbedaan Motivasi Belajar Antara Siswa Laki-Laki dan Siswa Perempuan. *Jurnal Neo Konseling*, 1(2), Article 2. <https://doi.org/10.24036/00117kons2019>
- Olivia, F. (2009). Kembangkan Kecerdikan Anak dengan Taktik Biosmart. PT Elex Media Komputindo.
- Ormrod, J. E. (2008). *Psikologi Pendidikan Jilid II*. Erlangga.
- Saragi, M. P. D., & Suryani, R. (2018). Perbedaan Motivasi Belajar Siswa Berjenis Kelamin Perempuan Dan Laki-Laki Smk Swasta Bandung. *Jurnal Penelitian Bimbingan dan Konseling*, 3(1).<https://doi.org/10.30870/jpbk.v3i1.3197>
- Sebayang, D. A. (2015) „Perbedaan Kecerdasan Emosional Ditinjau Dari Jenis Kelamin Pada Mahasiswa Angkatan 2013 Fakultas Psikologi Uksw Salatiga“, P. 29.
- Sugiyono. (2010). *Metode Penelitian Pendidikan Pendekatan Kuantitatif, Kualitatif, Dan R & D*. Bandung: Alfabeta.
- Sukmadinata, N. S. (2003). *Landasan Psikologi Proses Pendidikan*. Remaja Rosdakarya.
- Vidiana, H. (2014). Tingkat Berpikir Siswa Berdasarkan Teori Van Hiele Ditinjau Dari Jenis Kelamin. *Prosiding Seminar Nasional Matematika Dan Pendidikan Matematika*, 5(1), 85–90.
- Wijaya, E. Y., Sudjimat, D. A., Nyoto, A., & Malang, U. N. (2016). Transformasi pendidikan abad 21 sebagai tuntutan pengembangan sumber daya manusia di era global. *Prosiding Seminar Nasional Pendidikan Matematika*, 1(26), 263–278. bal.pdf