ANALYSIS OF MATHEMATICS EDUCATION STUDENT'S LEARNING STYLE OF IAIN PEKALONGAN DURING COVID-19 PANDEMIC

Indriyani[1], **Alimatus Sholikhah**[2], **Nurul Husnah Mustika Sari**[3]
IAIN Pekalongan
04indriyani@gmail.com, alimatus.sholikhah@gmail.com, nurul.husnah.ms@iainpekalongan.ac.id

ABSTRAK

Pandemi covid-19 membuat perubahan di beberapa aspek. Salah satunya aspek pendidikan. Pembelajaran dilakukan secara *online*. Hal ini dilakukan untuk memutus mata rantai penyebaran virus covid-19. Berbagai inovasi dalam pembelajaran matematika dari tingkat sekolah dasar sampai perguruan tinggi dilakukan. Media yang digunakan dalam pembelajaran matematika sangat bervariasi. Pemilihan media pembelajaran khususnya matematika, merupakan hal yang sangat penting agar tujuan pembelajaran dapat tercapai secara maksimal. Berbagai media pembelajaran matematika secara *online* memunculkan gaya belajar mahasiswa. Terdapat tiga macam gaya belajar yaitu visual, auditori, dan kinestetik. Penelitian ini bertujuan untuk menganalisis gaya belajar mahasiswa di masa pandemi serta apakah terdapat perubahan gaya belajar sebelum dan selama pandemi. Penelitian ini merupakan penelitian dengan metode survey. Populasi dalam penelitian ini adalah mahasiswa tadris matematika IAIN Pekalongan dari mahasiswa semester satu sampai semester delapan. Sampel diperoleh dengan teknik *stratified random sampling*. Teknik pengambilan data dilakukan dengan penyebaran angket dan wawancara. Data dianalisis dengan menentukan persentase masing-masing gaya belajar. Hasil penelitian ini menunjukkan bahwa 1) di masa pandemi, persentase gaya belajar mahasiswa secara auditori lebih besar dari gaya belajar lainnya; 2) terdapat perbedaan gaya belajar mahasiswa tadris matematika sebelum dan saat pandemi.
Kata kunci *:* gaya belajar, matematika

ABSTRACT

The Covid-19 pandemic has made changes in several aspects. One of which is education. Learning is done online. This is done to break the chain of spreading the covid-19 virus. Various innovations in mathematics learning from primary school to college were carried out. The media used in mathematics learning varies widely. The selection of learning media, especially mathematics, is very important so that learning objectives can be achieved optimally. Various online mathematics learning media create student learning styles. There are three kinds of learning styles, namely visual, kinesthetic, and audio. This study aims to analyze the learning styles of students during the pandemic and whether there have been changes in learning styles before and during the pandemic. This research was survey method.

The population in this study were students of mathematics education in IAIN Pekalongan from semester one to semester eight. The sample was obtained by using stratified random sampling technique. The data was collected by distributing questionnaires and interviews. Data were analyzed by determining the percentage of each learning style. The results of this study indicate that 1) during covid-19 pademic, the percentage of student learning styles auditory was greater than other learning styles; 2) there wass difference in learning styles of mathematics education students before and during the pandemic.
***Keywords** : learning style, mathematics*

INTRODUCTION

The Covid-19 pandemic that has emerged since February 2020 is still a problem in the world of education. This resulted in teaching and learning activities using distance learning. However, that is not an excuse to not be passionate, creative, and innovative for everyone to do something. Face-to-face learning is now being replaced by learning from home through the internet or online. The teaching and learning process like this is considered less than optimal, starting from elementary school to university. The online learning system at the university level is almost all subjects, including abstract subjects such as mathematics. The majority of people think mathematics is too complicated to be difficult to understand because it has abstract concepts. Understanding of mathematical material for students is a hand in this pandemic.

Learning styles have an important role in the teaching and learning process. According to Albar & Pramesti (2021), learning styles affect learning outcomes. Joko stated that "learning style is a process of behavior, appreciation, and the tendency of a student to learn or acquire knowledge in a separate way" (Wahyuni, 2017). Not only a student who must have a learning style, college students must also have a learning style to make it easier to capture lecture material. Having knowledge about learning styles will make it more effective and create a fun learning atmosphere, and reduce conflicts that arise as a result of learning during this pandemic. Learning style refers to the way of learning that the learner prefers. Generally, it is considered that a person's learning style comes from

personality variables, including the cognitive and psychological makeup of socio-cultural background, and educational experience (Wassahua, 2016).

According to DePorter & Hernacki (2007), there are three modalities (types) in learning styles, namely visual learning styles, auditory learning styles and kinesthetic learning styles. Visual learning style focuses more on vision, students who have a visual learning style understand lessons with illustrated material. Have a strong sensitivity to color, in addition to having a sufficient understanding of artistic problems (Cicilia & Nursalim, 2019). Auditory learning style relies on hearing, placing hearing as the main tool for absorbing information or knowledge. While the kinesthetic learning style requires the individual concerned to touch something that provides certain information in order to remember it (Wassahua, 2016).

Hasrul (2009) provides behavioral characteristics of each learning style. Characteristics of visual learning include: neat and orderly in recording material, careful to detail, concerned with appearance, remembering with visual associations, diligent readers and prefers to read than read. The characteristics of auditory type learning include: moving their lips and saying what is written in a book when reading, likes to read aloud, finds it difficult to write but is great at telling stories, learns by listening and remembering the things discussed, likes to talk, and discuss. While the characteristics of kinesthetic learning include: responding to physical attention, standing close when talking to people, always physically oriented and moving a lot, learning through manipulation and practice, using fingers as pointers when reading, unable to sit still for long periods of time.

Based on this description, the author is interested in conducting research with the title "Analysis of Mathematics education Student Learning Styles at IAIN Pekalongan during the Covid-19 Pandemic". This study aims to analyze student learning styles during the pandemic and whether there are changes in

learning styles before and during the pandemic.

METHODS

This research is a research with survey method. The survey was conducted on mathematics education students at IAIN Pekalongan. The research subjects are active students of mathematics at IAIN Pekalongan. Samples were obtained by using stratified random sampling technique, namely by dividing the population into strata and then selecting samples from each stratum. The strata used in this study are the current semester students are in, with the results of sampling the second semester students as many as 29 respondents, the fourth semester 30 respondents, the sixth semester 31 respondents, and the eight semester 20 respondents. This amount is 25% of the number of active students in each semester.

Data collection techniques consisted of questionnaires and interviews. Questionnaires are used to determine the percentage of learning styles. The questionnaire consists of 30 statements, with details of 10 statements of visual learning style, 10 statements of auditory learning style, and 10 statements of kinesthetic learning style. In the questionnaire there are 4 answer choices, namely always, often, rarely, and never. Questionnaires were given to all batches of mathematics education students via google form. Then, interviews were conducted with several respondents to find out the system or lecture method used by mathematics education lecturers before the pandemic and during the pandemic. The research was conducted from March to June 2021.

Data were analyzed quantitatively and qualitatively. Quantitative analysis techniques were carried out to get the percentage of the learning styles of the mathematics students at IAIN Pekalongan. Learning styles are analyzed every semester, starting from semester two, four, six, and eight to determine the type of learning style in students each semester. Furthermore, the percentage of learning styles is calculated as a whole to determine the type of learning styles in mathematics educations students as a whole. Qualitative analysis is used to

describe the percentage and describe how the differences and changes in the learning styles of students in mathematics at IAIN Pekalongan.

DISCUSSION

After collecting data through filling out questionnaires for mathematics education students and interviews with several respondents, the results of the study were divided into two parts, namely the learning styles of before the covid-19 pandemic and during the covid-19 pandemic. This is done to analyze changes in students' learning styles of mathematics and what factors influence these changes.

Every student has a different learning style. This is because each student has different characteristics in interacting with the environment. Learning style is a characteristic of cognitive, affective, and psychomotor aspects which have a function as an indicator in interacting and responding to the learning environment (Rezaeinejad, Azizifar & Gowhary, 2015). Learning style is one of the factors that affect learning outcomes (Sutama & Anggitasari, 2018).

Student Learning Style Before the Covid-19 Pandemic

Student learning styles before the covid-19 pandemic were dominated by visual learning styles. The percentage of mathematics learning styles before the pandemic is shown in Figure 1.

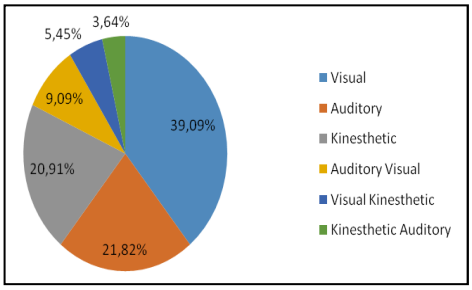

Figure 1. Percentage of Student Learning Styles Before the Pandemic

Based on Figure 1, it is known that the visual learning style reaches 39.09%, then the auditory learning style is 21.82% and the kinesthetic learning style is 20.91%. Then there are some which are a combination of the three learning styles. This happened because some students had the same score on the two learning styles. The percentage of learning styles before the pandemic can be seen in Table 1.

The learning style of the second semester students is dominant in the visual learning style with a

percentage of 10.91%. Then the three learning styles which are a combination of visual, auditory, and kinesthetic, the percentage is small. Even for a combined auditory and kinesthetic learning style there is none. This happens because there are few students who have a combined learning style. Most only gravitate towards one of the three learning styles.

Based on Table 1, it can be seen that the fourth semester student learning styles are visual learning styles. The learning style of sixth semester students is dominated by visual learning styles with a percentage of 10. The dominant learning style for eighth semester students is visual learning style..

Table 1. Student Learning Styles Before the Covid-19 Pandemic

Semester	Visual	Auditory	Kinesthetic	Visual and Auditory	Visual and Kinesthetic	Auditory and Kinesthetic
2	10,91%	3,64%	8,18%	2,73%	0,91%	0,00%
4	10,00%	9,09%	2,73%	2,73%	0,91%	1,82%
6	10,00%	4,55%	7,27%	2,73%	1,82%	1,82%
8	8,18%	4,55%	2,73%	0,91%	1,82%	0,00%
Jumlah	39,09%	21,82%	20,91%	9,09%	5,45%	3,64%

Based on these descriptions and explanations, it can be concluded that the visual learning style is the dominant learning style for mathematics education students at IAIN Pekalongan. The results of this study are strengthened by Sari's research (2014) that visual learning styles dominate informatics students at Trunojoyo University Madura.

Learning styles are influenced by several factors. In addition to internal factors from students, there are external factors, namely the strategies and learning approaches used in delivering the material in class. Based on the results of interviews with several respondents, mathematics education lecturers used discussion, presentation,

demonstration and there are some who use the mini research method for more applicable courses. The sources of material used are PPT, papers, and books. The lecture system is mostly with presentations by students or lecturers, then discussions or two-way questions and answers between several students and lecturers. After the discussion, the lecturer gave a conclusion from the results of the discussion. Learning is done directly by students seeing how to solve math problems and seeing the explanation of the material directly by lecturers or students through material presentations.

Student Learning Style During the Covid-19 Pandemic

Briefly, the percentage of learning styles during teh pandemic at mathematics education of IAIN Pekalongan students is shown in Figure 2. Meanwhile, the complete percentage of mathematics learning styles is shown in Table 2.

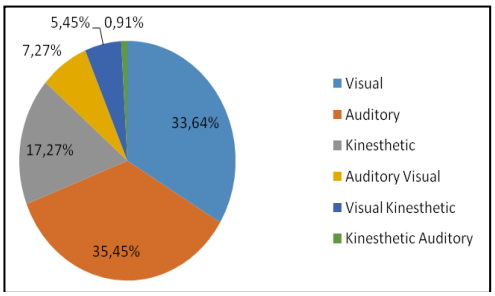

Figure 2. Learning Styles During The Covid-19 Pandemic

Table 2. Student Learning Styles During the Covid-19 Pandemic

Semester	Visual	Auditory	Kinesthetic	Visual-Auditory	Visual-Kinesthetic	Auditory-Kinesthetic
2	11,82%	7,27%	4,55%	0,91%	1,82%	0,00%
4	5,45%	16,36%	2,73%	0,91%	0,91%	0,91%
6	10,00%	4,55%	8,18%	4,55%	0,91%	0,00%
8	6,36%	7,27%	1,82%	0,91%	1,82%	0,00%
sum	33,64%	35,45%	17,27%	7,27%	5,45%	0,91%

Student Learning Style at every semester

The learning style of second semester students can be seen on the Figure 3. The the dominant learning style of second semester students

both before and during the pandemic is learning style. However, when viewed from the increase in the number of learning styles, the highest increase was found in the auditory learning style, which was 4 students or 13.8%. Then, the highest decrease occurred in the kinesthetic learning style as many as 4 students or 13.8%.

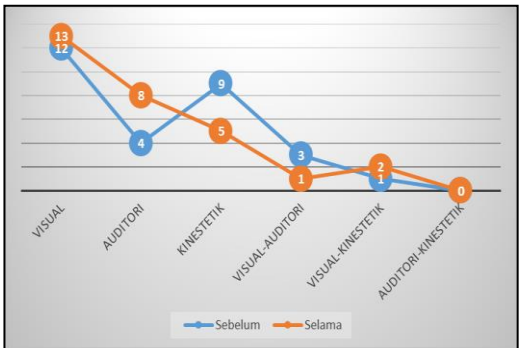

Figure 3. Learning Style of Second Semester Students

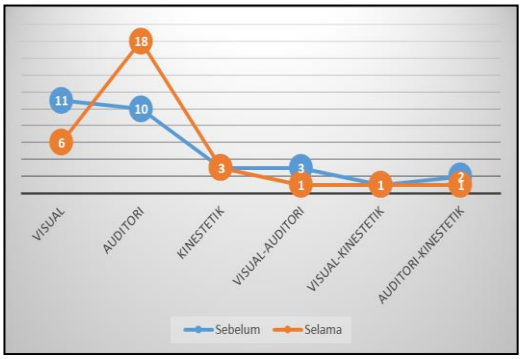

Figure 4. Fourth Semester Student Learning Style

Based on Figure 4, the learning style of 4th semester students, which before the visual learning style was dominant, during the pandemic changed to auditory learning style. An increase in auditory learning styles by 8 students or 27%. Meanwhile, for other learning styles the number tends to decrease.

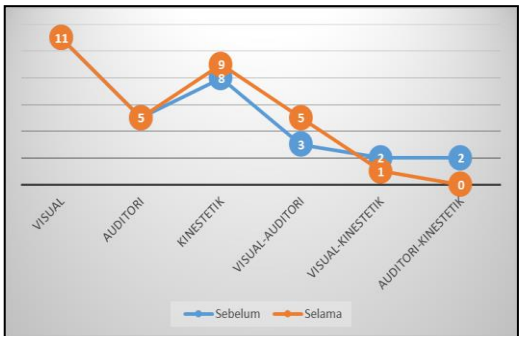

Figure 5. Sixth Semester Student Learning Style

Based on Figure 5, the dominant learning style in sixth semester students both before and after the pandemic is visual learning style. Then, the biggest increase occurred in the visual-auditory learning style, which was 2 students or 6.45%. Visual learning styles and auditory learning styles did not show a change in the amount. Meanwhile, the highest decrease occurred in the kinesthetic auditory learning style as many as 2 students or 6.45%.

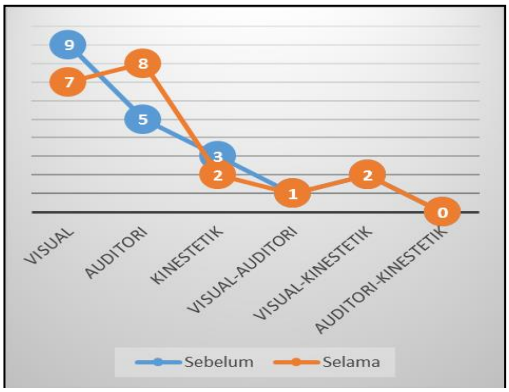

Figure 6. Eighth Semester Student Learning Style

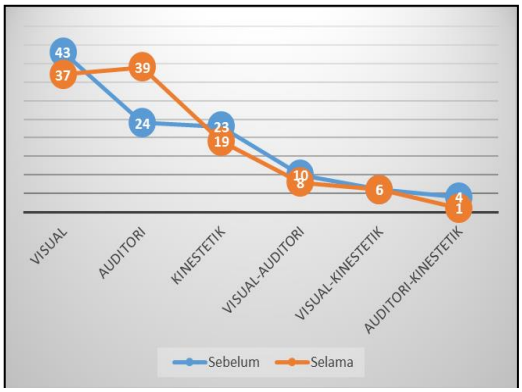

Figure 7. Learning Styles Before and During the Pandemic

The learning styles of eighth semester students underwent changes before and during the pandemic. Before the pandemic, the eighth semester student's learning style was dominantly visual, while during the pandemic, the dominant learning style was auditory.

Based on Figure 7, the student learning style which was originally dominant using a visual learning style, during the pandemic changed to an auditory learning style. An increase in auditory learning style occurred in 15 students or 13.64%.

There was a change in the learning style of the mathematics education students before the pandemic and during the pandemic, namely from a visual learning style to an auditory learning style. Similar results were also obtained in the study of Hamidah & Kusuma (2020) where during the Covid-19 pandemic, 4th semester mathematics education students at Bina Bangsa University tended to use auditory learning styles when studying geometry.

From external factors, this change in learning style occurred due to changes in learning methods that occurred during the pandemic. According to a case study conducted by Hasanah & Setiawan (2020) during the covid-19 pandemic, IAIN Pekalongan students during the

covid-19 pandemic often did online meetings with video conferencing applications that were dominantly used, namely zoom and google meet. Learning with online meetings provides an opportunity for students to discuss directly with the teacher. In addition, research by Khabiburrokhman, Khamid, & Ali (2020) states that the majority of students prefer online learning packaged through videos via YouTube or other social media. Learning with youtube media provides benefits for students who have an auditory learning style because the videos on youtube can be listened to repeatedly. In addition, there are several courses that ask students to make learning videos. This will support students with auditory learning styles that are easier to digest, process, and convey information by listening or orally (Bire, Geradus, & Bire, 2014). There is no one approach that suits all students, if learning is designed by taking into account differences in learning styles, students will be able to increase learning concentration (Ghufron, 2012). Therefore, every teacher, must know the learning styles of students so that mathematics learning is more effective and efficient to improve learning outcomes.

CONCLUSION

Based on the results and discussions that have been described previously, it can be concluded that during the COVID-19 pandemic, mathematics education students tended to use the auditory learning style. Meanwhile, when compared to the learning styles before the pandemic, there was a change in the learning styles, namely before the pandemic students tended to use visual learning styles but during the pandemic students tended to use auditory learning styles.

REFERENCES

Albar, A.S., & Pramesti , S. L.D. (2021). Pengaruh Gaya Belajar Siswa dan Pola Asuh Anak dalam Keluarga terhadap Hasil Belajar Matematika Siswa Kelas XI di SMA Islam YMI Wonopringgo Kabupaten Pekalongan. *Circle: Jurnal Pendidikan Matematika, 1*(1), 83-94. https://doi.org/10.28918/circle.v1i1.3620

Bire, A. L., Geradus, U., & Bire, J. (2014). Pengaruh Gaya Belajar Visual, Auditorial, dan Kinestetik terhadap Prestasi Belajar Siswa. *Jurnal Kependidikan, 44*(2), 168-

174. https://doi.org/10.21831/jk.v44i2.5307

Cicilia, Y., & Nursalim. (2019). Gaya dan Strategi Belajar Bahasa. *Jurnal Ilmu Pendidikan, 1*(3), 138-149.

DePorter, B., & Hernacki, M. (2007). *Quantum Learning: Membiasakan diri Belajar Nyaman dan Menyenangkan*. Bandung: Kaifa.

Ghufron, M.N & Rini R. (2012). Gaya Belajar Kajian Teoritik. Yogyakarta : Pustaka Belajar.

Hamidah, & Kusuma, J.W. (2020). Analysis of Student Learning Styles and Geometry Thinking Skills: During the Covid-19 Pandemic. *Journal of Physics: Conference Series 157 012036*. doi:10.1088/1742-6596/1657/1/012036.

Hasanah, H. N., Setiawan, T. 2020. Pembelajaran daring di masa panedmi covid-19 pada perguruan tinggi keagamaan islam negeri (studi di IAIN Pekalongan). *Indonesian Journal of Educational Science (IJES), 3*(1), 12-23.

Hasrul. (2009). Pemahaman Tentang Gaya Belajar. *Jurnal Meditek, 1*(2), 1-9.

Khabiburrokhman., Khamid, A., & Ali, Y. F. (2020). Analisis Gaya Belajar Siswa Melalui Media Pembelajaran Daring di Masa Pandemi Covid19. *Tapis: Jurnal Penelitian Ilmiah, 4*(2), 211-219. https://doi.org/10.32332/tapis.v4i2.2588

Rezainejad, M., Azizifar, A., & Gowhary, H. (2015). The Study of Learning Styles and Its Relationship with Educational Achievement among Iranian High School Students. *PROCEDIA – Social and Behavioral Sciences 199*, 218–224.

Sari, A. K. (2014). Analisis Karakteristik Gaya Belajar VAK (Visual, Auditori, Kinestetik) Mahasiswa Pendidikan Informatika Angkatan 2014. *Jurnal Ilmiah Edutic, 1*(1), 1-11.

Sutama., & Anggita, S. (2018). Gaya dan Hasil Belajar Matematika Siswa SMK. *Jurnal Managemen Pendidikan, 3*(1), 52-61.

Wahyuni, Y. (2017). Identifikasi gaya Belajar (Visual, Auditorial, Kinestik) Mahasiswa Pendidikan Matematika universitas Bung Hatta, *Jurnal Penelitian dan Pembelajaran Matematika, 10*(2), 128-132.

Wassahua, S. (2016). Analisis Gaya Belajar Siswa terhadap Hasil Belajar Matematika pada Materi Himpunan Siswa Kelas VII SMP Negeri Karangjaya Kecamatan Namlea Kabupaten Buru, *Jurnal Matematika dan Pembelajarannya*, *2*(1), 84-104.