# Analysis of Mathematics Learning Outcomes for High School Students Accepted Based on The Zoning System

Mustamin Idris[1], Dasa Ismaimuza[2], Bakri Mallo[3], Ahmad[4*]

## Abstract

The purpose study is to analyze mathematics learning outcomes based on three zones, zone 1: SMA 1, zone 2: SMA 2, and zone 3: SMA 3. Class XI students were research objects taken from each zonation with a total sample of 155 for zone 1, 116 for zone 2, and 116 for zone 3, a total is 387 students. The results showed that the average mathematics learning outcomes for SMA Palu students based on zoning, namely zone 1, zone 2, and zone 3, obtained a score of 83.71, above the KKM. The test results of the analysis of variance in mathematics learning outcomes at Palu City High School based on Zone 1, Zone 2, and Zone 3 did not have a significant difference, which means that the ability levels of the three zones have the same mathematics learning outcomes. This result is due to the implementation of PPDB with a zoning system that can distribute new students well based on the zonation setting in the High School education unit in Palu, especially the distance between where they live and school. Conclude that the process of admitting new students with a zoning system was successfully carried out based on the criteria set by the Government and Department of Education for the 2021/2022 school year.

**Keywords:** *Zoning Mathematics; Learning; Outcomes*

## Introduction

Acceptance of New Students (PPDB) in 2017 in the zoning system is regulated in the Minister of Education and Culture Regulation No. 17 of 2017 concerning PPDB. This system is a system that is implemented by determining zones by each local government which is obliged to accept prospective students who live in the zone closest to the school with a certain percentage of the total number of students accepted as determined by the local government. The radius or distance to the nearest zone is determined by the regional government according to the situation and conditions of each area. In 2017 the zoning system was implemented for the first time by the acceptance of new students and refined in 2018 through(Kemendikbud, 2018),(Ariswati, 2021) (Putri, Yulianto, & Meutia, 2021),(Djatmiko, Hadi, & AM, 2022).

The zoning system is a form of consolidation as well as efficiency and effectiveness for the community to enroll their children according to the location of the school closest to their house, as stated in(Ministry of Education and Culture, 2018)in Article 16 paragraph (3) which reads: "The nearest zone radius as referred to in paragraph (1) is determined by the regional government in accordance with the conditions in the area based on: a. availability of school age children in the area; and b. the availability of capacity in study groups at each school, and paragraph (4) in determining the radius of the zone referred to in paragraph (3), the local government involves deliberations/working groups of school principals.

In this regard, the government is still experiencing many obstacles or not being fully implemented in accordance with expectations, because a policy will definitely have an impact, namely the emergence of problems and polemics in the community, the existence of a zoning system in accepting new students is considered beneficial by the community because it can place their children in the school closest to home, although it no longer differentiates which school is

the favorite or superior.(Syakarofath, Sulaiman, & Irsyad, 2020)(Stewart, Devine, Benade, & Couch, 2021)

The Province of Central Sulawesi in 2022/2023 determines the new student acceptance pathway for SMAN State Senior High Schools) in groups into 4 pathways:

(1) Zoning line, with a quota of at least 50% of the capacity according to dapodik
(2) Affirmation line, with a quota of at least 15% of the capacity according to dapodik,
(3) Achievement track, with a maximum quota of 30% of the capacity according to dapodik and
(4) Transfer path of parent/guardian duties,with a maximum quota of 5% of the capacity according to dapodik.

The results of an interview with one of the mathematics education teachers at a high school in Palu city which is also a research sample revealed that students who were accepted through the zoning route had relatively low learning abilities and were also different students before being treated by the zoning system in responding to the tasks and questions given. They have quite difficulty understanding the material that has been delivered, as well as there are differences with students who are accepted through the achievement path, they are quicker in understanding the material. Even among students who are accepted through the zoning system there are students who still have difficulty understanding integer and fractional operations as prerequisite material for further material

Then the placement of students in each class for each high school in the city of Palu is different, that is, some are randomized or combined for each track in a study group such as SMA 3, and there are schools that are grouped based on achievement with regard to learning outcomes or tests. which is carried out in schools as an initial test in knowing the initial abilities of each learner's mathematics learning achievement.

(Muhazir, Hidayati, & Retnawati, 2020) stated that the mathematical literacy skills of class XI high school students in Banjarmasin City and Palangka Raya City were still in the low category, while the self-efficacy of students in the two cities was in the medium category. There is no significant difference in the average mathematical literacy between students in Banjarmasin and Palangka Raya. This shows that the difference in zoning policies in the two cities has no impactsignificant effect on students' mathematical literacy abilities. However, there is a significant difference in the average self-efficacy between students in Banjarmasin and Palangka Raya. This shows that the difference in zoning policies in the two cities has a significant impact on student self-efficacy.

This research the author examines the problems based on phenomena that occur at the level of the education unit, especially at the high school level in the process of accepting new students with learning outcomes in mathematics, namely the extent to which the effectiveness of the zoning system for accepting new students on achievement in mathematics learning outcomes in Public High Schools in Palu City.

**Systemzoningacceptance of new students**

According to Imron, in(Sari, Imron, & Sobri, 2017)that "the student acceptance system is a way of accepting new students. There are two systems in the new student acceptance system, namely: first, by using a promotion system. The promotion system is the acceptance of students, previously without using selection. Second, by using a selection system. In article 15 of Permendikbud no 17 of 2017 it is explained that by implementing the zoning system, schools managed by the regional government are required to accept prospective students who live in the closest radius zone to the school of at least 90 percent of the total number of students accepted.

The nearest zone radius is determined by the local government according to the conditions in the area. Then 10 percent of the total number of students is divided into two criteria, namely 5 percent for the achievement path, and 5 percent for students who experience a change of domicile. However, the zoning system does not apply to vocational high schools (SMK). In Permendikbud no 17 of 2017 articles 12 and 13 states that PPDB selection in class VII SMP and class X SMA/SMK considers criteria in priority order according to capacity based on study group

provisions. The order of priority is: 1. Distance from residence to school in accordance with zoning provisions; 2. Age; 3. School exam results (for elementary school graduates) and National Examination Results Letter or SHUN (for junior high school graduates); and 4. Achievements in academic and non-academic fields that are recognized by schools according to their respective regional authorities.

**Achievement of Mathematics Learning Outcomes**

According to the Shah, in(Komara, 2016) Learning achievement is the level of success of a student in learning subject matter at school which is expressed in the form of scores obtained from test results regarding a certain subject matter. Learning achievement is the result of learning or the result of an overall assessment.

Especially for class X SMA which is a selection product with a zoning system, students in carrying out the learning process occur a mental change to adapt, especially learning mathematics. There are several factors that affect the process and learning achievement. According to Sumadi Suryabrata in(Nauli Thaib, 2013)Broadly speaking, the factors that influence the learning process and learning achievement can be classified into two factors, namely, a) Internal factors, are factors that come from within the students that can affect learning achievement. These factors can be divided into two groups, namely: 1) Physiological factors. In this case, the physiological factors in question are factors related to health and the five senses. b) External factors, namely influences from outside the student's self, which can affect learning achievement to be achieved, including: family environment, school, and community environment.

(Wahab & Solichin, 2008)that the end result of the effectiveness of a rule in its application can be measured by looking at the results or achievements with the aim of the program, namely the implementation of the new student acceptance zone. implementation, program or public policy requires a criterion to measure the success of the Zoning program or policy as follows:

**Table 1. Evaluation Criteria**

| Criteria Type | Statement | Illustration |
|---|---|---|
| effectiveness (*Effectiveness*) | Has the desired result been achieved? | service units |
| Efficiency | How much effort is required for reach results which wanted? | Net benefit unit cost Cost-benefit ratio |
| Adequacy (*adequacy*) | How far is the achievement of the desired result in solving the problem? | Fixed costs (type I problem) Effectiveness permanent (problemtype II) |
| Equity /Similarity (*Equity*) | is normal and benefitevenly distributed among different groups? | Pareto criterion Caldor-Hicks criterion Rawls's criterion |
| Responsiveness (Responsiveness) | Are the policy outcomes satisfactory needs, preference or scorecertain groups? | Consistency with citizen surveys |
| Accuracy (*Appropriateness*) | Are the desired outcomes (objectives) really useful or of value? | service units |

Source: Dunn dalam (Azteria, 2019)

The various types of criteria mentioned in the table above are the effectiveness of zoning results which focus on activities for accepting new students, becausethe learning process in schools as formal educational institutions is influenced by several factors, namely students, educational staff, curriculum, costs, facilities and infrastructure, and environmental factors. If

these factors are met, it will certainly expedite the learning process which will support the achievement of maximum learning outcomes, which in the end will achieve equitable access and improve the quality of education (Martitah, 2019)(Riyanti, Ayatina, Astuti, & Rahmah, 2020).

Efforts to develop human resources through schools, teachers need ongoing coaching to improve their abilities in the learning process, need to use the right strategy in dealing with students who have very diverse abilities with different origins and communities, so that teaching does not only communicate knowledge, but teaching also needs to create active and fun learning. One of the subject components is mMathematics has an important role to improve the ability to think, argue and also be able to participate actively in solving the problems found.(Kusmanto & Marliyana, 2014)states that mathematics has contributed a lot indevelopment of science and technology. Therefore, the achievement of mathematics learning outcomes is very important to be used as a benchmark for how effective the PPDB zoning system is. (Novita, Wiarta, & Wiyasa, 2017) states that the purpose of learning mathematics in elementary schools is for students to have the ability to: (1) understand mathematical concepts, know the interrelationships between concepts and be able to apply mathematical concepts or algorithms flexibly, accurately, efficiently, and precisely in problem solving. (2) using reasoning on patterns and properties, performing mathematical manipulations in generalizing, compiling evidence or explaining mathematical ideas and statements. (3) solving problems which include the ability to understand problems, design mathematical models, complete models and interpret/interpret the solutions obtained. (4) communicating ideas with symbols, tables, diagrams, or other media to clarify conditions or problems.

In planning an activity, evaluation should be an integral part, so that it can be said to be a complete activity. Evaluation is directed to control and control the achievement of goals. Evaluation relates to the results of information about the value and provides an overview of the benefits of a policy. The term evaluation is close to interpretation, scoring and assessment. Evaluation can answer the question "What difference is made"(Azteria, 2019)

## Method

This research uses a survey method with a quantitative approach. Namely by identifying the zoning that is grouped according to the policy of the Central Sulawesi Provincial Education Office which is based on the characteristics of the area bounded by sub-districts and sub-districts so that this research can choose a population and sample consistently. The sampling technique is generally carried out randomly based on the zoning and schools that have been determined by the researcher as a representative form of the zoning and schools taken. Population, Sample and Research Variables

The population in this study were class XI students who were accepted through the zoning system at SMAN Kota Palu for the 2021/2022 academic year. The research sample was selected based on the zoning system, namely zoning 1, zoning 2, and zoning 3 which were carried out by SMA N 1, SMA N 2, SMA N 3. With a total number of respondents of 387 students.

The research design conducted a survey to what extent the PPDB zoning system can contribute to students in developing the ability of students to follow the learning process, especially mathematics learning achievement as an indicator of the progress of educational services that has equitable access to learning that applies to each selected sample.
The variable of this research is the mathematics learning achievement of new students in class X SMA who are accepted through the zoning system, namely Zone 1, Zone 2, and Zone 3 which apply at the educational unit level of SMAN Kota Palu.

## Conceptual Definition of Mathematics Learning Outcomes Test

The implementation of the education zoning policy is another breakthrough in describing the government's efforts to equalize access and quality of education. The zoning system in education is the main basis for organizing school reform as a whole, starting from Kindergarten (TK) to High School (SMA) except for SMK.In order to develop a tool for assessing mathematics

learning outcomes in this study, there are five things that need to be done, namely: (1) compiling a conceptual (construct) definition, (2) compiling an operational definition, (3) compiling a grid of mathematics learning outcomes tests with reference to Bloom's cognitive dimension, (4) compiling test items on mathematics learning outcomes, and (5) validating them.

The conceptual definition of mathematics learning outcomes is a change in mental activity in understanding meaning, relationships and symbols to be used in solving complex mathematical problems through thinking processes in the cognitive, affective and psychomotor domains that students have after experiencing the learning process in certain period of time based on the expected goals of learning mathematics. Changes in students' learning abilities are indicated by the achievement of high mathematics learning outcomes.

Then operational understanding of mathematics learning outcomes is the score of changes in mental activity in understanding meaning, relationships and symbols to be used in solving complex mathematical problems through thinking processes in the cognitive, affective, and psychomotor domains that students have after experiencing the learning process within a certain timeframe based on the expected goals of learning mathematics. Changes in students' learning abilities are indicated by the achievement of high mathematics learning outcomes based on Bloom's cognitive dimension through the depth of class X high school mathematics competency standards.

### Descriptive data analysis

Descriptive statistical analysis is used to display the achievement of mathematics learning outcomes based on zone 1, zone 2, zone 3, namely tables and graphs, quartiles based on statistical data of range, mean and variance values.

### Inferential Statistical Analysis

One-way analysis of variance (One-Way Anova) is used to test the differences in the parameters of the mean mathematics learning outcomes for all groups of students formed by the application of the zoning system. between groups of students who are given criteria based on their respective school zoning.

Application of the One-Way ANOVA Model, namely one-way analysis of variance and the model is used to test several hypotheses given, with the equation (Rice, 1995):

$$Yij = \mu + \alpha_i + \varepsilon ij$$

*Yij* states the value/score of the lth observation in cell-(ij), the ith treatment of the scoring criteria zoning for the ith variable; jth treatment. μ represents the population mean parameter Yijk and εijk the random error term of the model with the assumption εijk - NII (0, δ2), where i=1, 2, 3, ... nijk.

### Result and Discussion

### PPDB Selection Results Based on Zoning

The results of the Governor's decision Number: 4221/169/DIS.DIKBUD-G.ST/2022 concerning the distribution of formations for each zoning, especially the city of Palu, are as follows in the table:

**Table. 2 List of Distribution of PPDB Zoning Areas in Educational Units for SMA N 1, SMA N 2, and SMA N 3 Palu for the 2022/2023 Academic Year**

| No | School Name | Zonation Area (Village/Sub-District) | Total Romb-El | Total Capacity | | | |
|----|-------------|--------------------------------------|---------------|------------------|---------------------|--------------------|-----------------------------|
| | | | | Zonation Routes | Affirmation Path | Achievement Track | Parent/Guardian Task Movement |
| 1 | SMAN 1 | Zoning 1 | 13 | 234 | 70 | 140 | 24 |
| 2 | SMA N 2 | Zoning 2 | 11 | 198 | 60 | 118 | 20 |
| 3 | SMA N 3 | Zoning 3 | 11 | 198 | 60 | 118 | 20 |

Based on the table above, the formation of new student admissions is based on school capacity, zoning and registrant criteria carried out by the admissions committee, so each school or zoning adds one group which is an agreement between new students and the committee.

**Descriptive Statistics**

The results of descriptive statistical data analysis regarding mathematics learning outcomes based on zoning 1 (SMA 1), zoning 2 (SMA 2), and zoning 3 (SMA 3) can be shown in the following table:

**Table 3. Summary of Descriptive Statistics on Mathematics Learning Outcomes**

| School | N | Means | SD | SE | 95% CI for Mean | | Min | Max |
|--------|---|-------|-----|------|-----------------|------------|-----|-----|
| | | | | | LowerBound | Upperbound | | |
| 1st high school | 155 | 84.74 | 15.64 | 1.26 | 82.26 | 87.22 | 15 | 100 |
| high school 2 | 116 | 83.58 | 19.55 | 1.81 | 79.98 | 87.17 | 10 | 100 |
| high school 3 | 116 | 82.45 | 16.26 | 1.51 | 79.46 | 85.44 | 20 | 100 |
| Total | 387 | 83.71 | 17.06 | .867 | 82.00 | 85.41 | 10 | 100 |

The average value for the three zoning shows that zoning 1 is the highest, namely 84.74, then zoning 2, which is 83.58 and followed by zoning 3, the average is 82.45. between the three zones. secThe total average value of the three zonings is 83.71 which shows an increase in learning outcomes based on the zoning system, with the lowest score being 10 and the highest 100.
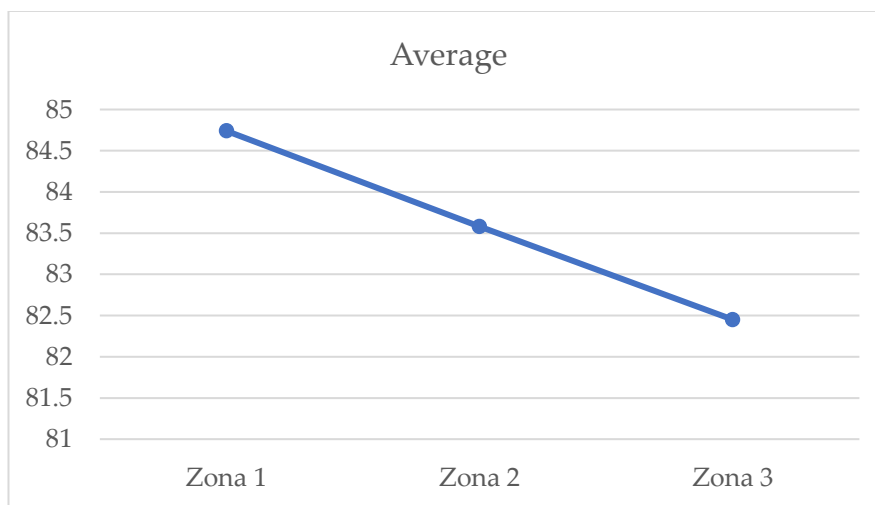


**Figure 1. The Average Value of Mathematics Learning Outcomes Based on Zoning**

Figure 1 shows that the highest score is zone 1 or SMA 1 which was previously a favorite school located in the downtown area, then the second zone or SMA 2 which is located in the middle of Palu city is a featured school and the third zone or SMA 3 is an environment-based pilot school located in the suburban area with the lowest average score. However, if you pay attention to the difference between the three zones above, it does not show a very large distance or average value.

**Inferential Statistics**

This paper conducts statistical tests regarding the influence of the zoning system in PPDB acceptance on mathematics learning outcomes, then a homogeneity test is carried out, namely the statistical level in the following table.

**Table 4. Homogeneity Test with Levene Statistics**

| | Statistics | Levene Statistics | df1 | df2 | Sig. |
|---|---|---|---|---|---|
| | Based on Means | 2,733 | 2 | 384 | .066 |
| | Based on Median | 1,083 | 2 | 384 | .340 |
| **Score** | Based on Median and with adjustments | 1,083 | 2 | 360.7 | .340 |
| | Based on trimmed mean | 1928 | 2 | 384 | .147 |

The results of the Levene statistical test show a significant value of 0.066 greater than the set alpha, namely $\alpha = 0.05$, so it can be concluded that the data on mathematics learning outcomes based on the three zonings is concluded as homogeneous data or the same variance, which means that the assumptions are fulfilled to carry out further tests, namely analysis of variance.

**Table 5. Variance Analysis Student Mathematics Learning Outcomes Based on the Zoning System**

| | Sum of Squares | Df | MeanSquare | F | Sig. |
|---|---|---|---|---|---|
| | | | Statistical Value | | |
| Between Groups | 349,242 | 2 | 174,621 | 0.598 | 0.550 |
| Within Groups | 112054.764 | 384 | 291,809 | | |
| Total | 112404.005 | 386 | | | |

Based on the results of statistical processing regarding the analysis of variance in mathematics learning outcomes based on the PPDB zoning system, it shows a significant value of 0.55 greater than $\alpha = 0.05$, which means that there is no difference in mathematics learning outcomes based on zoning 1, zoning 2, and zoning 3. This means that the zoning system has succeeded in carrying out equity/access to education and placing new student admissions in the 2021/2022 school year in Palu City, especially at the high school level.

The statistical test results above show thatacceptance of new students through the zoning system has a good impact on students in learning together by utilizing learning facilities and professional teachers. This can be seen from the results of learning mathematics students have a total average value of 83.71. besides that the acceptance of new students who have been carried out quite well or are in accordance with the rules can benefit students by making it easier to go to school because of the close distance, the zoning system also allows students to have school friends whose homes are close to them so they can study or do assignments together at home.(Batita & Tsai, 2020)(OECD (ORGANISATION FOR ECONOMIC CO-OPERATION AND DEVELOPMENT), 2000) This can help them in the learning process, so that their learning process can be maximized. A good learning process can affect learning achievement to be good too. This is in line with the opinion (Wulandari, Hasyim, & Nurmalisa, 2018) that, The admission of new learners through the zoning system has a significant influence on student learning achievement. This happens because the admission of new learners who have been done quite well or already in

accordance with the rules can provide benefits to the students such as students becoming easier to go to school because of the close distance, the zoning system also allows students to have schoolmates whose homes are close to them so that they can study or do assignments together at home, This can help them in the learning process, so that their learning process can be maximized

Researchers hope that the PPDB system can spread evenly and consistently for each zoning to serve new students, even though there is acceptance by other channelssuch as the path of achievement from the origin of each school.

## Conclusion

Based on the results of research and discussion of test results regarding the effect of acceptance of new students through the zoning system on the achievement of class XI students' mathematics learning outcomes. The effectiveness of PPDB implementation concluded that the process of admitting new students with the zoning system was successful based on the criteria set by the government and the education office for the 2021/2022 academic year. It can be shown that the average mathematics learning outcomes of Palu City High School students are based on zoning, namely zone 1, zone 2, and zone 3. That is, the value of 83.71 is above the KKM.

Then the test results of the analysis of variance in the mathematics learning outcomes of Palu City High School based on Zone 1, Zone 2, and Zone 3 do not have a significant difference, which means that the ability levels of the three zonings have the same mathematics learning outcomes and this is due to the implementation of PPDB with the zoning system being able to distribute well new students based on the zoning set for each high school education unit in Palu City, especially the distance between their residence and the school. Based on the conclusions above, the suggestions that can be given are as follows:

1. School

To the school, especially the school principal, should make SOPs for the PPDB committee in carrying out their duties to be selective and accountable in the process of implementing new student admissions, so that the opportunity for each participant can get according to predetermined criteria.

2. Teacher

Teachers are expected to be more professional in dealing with new students, because dealing with students has more varying abilities in following lessons even though there are certain schools and zones grouping students according to their academic abilities.

3. Student

Student are expected to be able to adapt to the school environment, increase learning motivation and an active attitude when the teaching and learning process takes place. This will assist students in mastering subject matter in accordance with learning objectives.

## References

Ariswati, Y. (2021). The Implementation of Zoning System Policy on The Admission Process of New Student in Public Junior High School. *Ar-Rosikhun: Jurnal Manajemen Pendidikan Islam, 1*(1), 29–36. https://doi.org/10.18860/rosikhun.v1i1.13900

Azteria, V. (2019). *Universitas Esa Unggul.* (April), 1–11.

Batita, M. S. R., & Tsai, H.-M. (2020). A Study of Student Admission by School Zoning System in Indonesia : Problem or Solution ? *National Chung Cheng University Taiwan,* (April), 0–8. Retrieved from https://www.researchgate.net/profile/Maurish-Sofie/publication/340460154_A_Study_of_Student_Admission_by_School_Zoning_System_in_Indonesia_Problem_or_Solution/links/5e8b2bab4585150839c4587e/A-Study-of-Student-

Admission-by-School-Zoning-System-in-Indonesia

Djatmiko, I. W., Hadi, S., & AM, M. A. (2022). The Impact of the Enrollment Zoning System on the Educational Quality of Vocational Secondary Schools. *Proceedings of the 5th International Conference on Current Issues in Education (ICCIE 2021)*, 640(Iccie 2021), 175–180. https://doi.org/10.2991/assehr.k.220129.041

Kemendikbud. (2018). *Sistem zonasi mempercepat pemerataan di sektor pendidikan.*

Komara, I. B. (2016). Hubungan antara Kepercayaan Diri dengan Prestasi Belajar dan Perencanaan Karir Siswa SMP. *Psikopedagogia Jurnal Bimbingan Dan Konseling*, 5(1), 33. https://doi.org/10.12928/psikopedagogia.v5i1.4474

Kusmanto, H., & Marliyana, I. (2014). Pengaruh Pemahaman Matematika Terhadap Kemampuan Koneksi Matematika Siswa Kelas Vii Semester Genap Smp Negeri 2 Kasokandel Kabupaten Majalengka. *Eduma : Mathematics Education Learning and Teaching*, 3(2). https://doi.org/10.24235/eduma.v3i2.56

Martitah. (2019). Zoning System of Education as a Strategy for Equalizing Education Quality in the Disruptive Era (Legal Aspect Review). *Atlantis Press*, 335(ICESSHum), 32–36. https://doi.org/10.2991/icesshum-19.2019.6

Muhazir, A., Hidayati, K., & Retnawati, H. (2020). *Literasi matematis dan self-efficacy siswa ditinjau dari perbedaan kebijakan sistem zonasi.* yogyakarta: Pythagoras : Jurnal Pendidikan Matematika.

Nauli Thaib, E. (2013). Hubungan Antara Prestasi Belajar Dengan Kecerdasan Emosional. *Jurnal Ilmiah Didaktika*, 13(2), 384–399. https://doi.org/10.22373/jid.v13i2.485

Novita, D., Wiarta, & Wiyasa. (2017). *Model Pembelajaran Kooperatif Tipe Scramble Berbantuan Bahan Manipulatif Berpengaruh Terhadap Kompetensi Pengetahuan Matematika*. 1, 133–140.

OECD (Organisation For Economic Co-Operation And Development). (2000). School Factors Related To Quality and Equity. *Organisation For Economic Co-Operation And Development*, 1–158.

Putri, I., Yulianto, Y., & Meutia, I. F. (2021). Role of Actors in the Implementation of School Zoning System Policy. *Journal of Research, Policy & Practice …*, 11(2), 59–73. Retrieved from https://ojs.upsi.edu.my/index.php/JRPPTTE/article/view/5528

Rice, J. A. (1995). *Mathematical Statistics and Data Analysis* (Second; J. Burger, Ed.). Duxbury Press.

Riyanti, E. D., Ayatina, H., Astuti, F. T., & Rahmah, P. J. (2020). Zoning System of Education in Indonesia Challenges and Their Future. *Atlantis Press*, 464(Psshers 2019), 1111–1114. https://doi.org/10.2991/assehr.k.200824.241

Sari, A. U. W., Imron, A., & Sobri, A. Y. (2017). Efektifitas Penerimaan Peserta Didik Baru (PPDB) Mellaui Sistem Online. *Manajemen Pendidikan-Pascasarjana Universitas Negeri Malang*, 1–11.

Stewart, G., Devine, N., Benade, L., & Couch, D. (2021). School Zoning: Spatial Justice and Education Policy in Aotearoa New Zealand. *New Zealand Journal of Educational Studies*, 56(s1), 1–4. https://doi.org/10.1007/s40841-021-00204-5

Syakarofath, N. A., Sulaiman, A., & Irsyad, M. F. (2020). Kajian Pro Kontra Penerapan Sistem Zonasi Pendidikan Di Indonesia. *Jurnal Pendidikan Dan Kebudayaan*, 5(2), 115–130. https://doi.org/10.24832/jpnk.v5i2.1736

Wahab, A., & Solichin. (2008). *Analisis Kebijaksaan dari formulasi ke implementasi kebijaksanaan negara*. Jakarta: Bumi Aksara.

Wulandari, D., Hasyim, A., & Nurmalisa, Y. (2018). Pengaruh Penerimaan Peserta Didik Baru Melalui Sistem Zonasi Terhadap Prestasi Belajar Siswa. *Photosynthetica*, 2(1), 1–13.