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Teacher performance analysis using analytic network process method

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Abstract

Analytic Network Process adalah salah satu metode yang dapat digunakan untuk memilih alternatif terbaik dari beberapa alternatif. Pengambilan sampel pada penelitan ini dilakukan dengan memberikan angket untuk semua siswa kelas 12 IPA. Kemudian memberikan kuisioner perbandingan berpasangan dari kriteria dan subkriteria kepada kepala cabang LBB Primagama untuk memperoleh bobot dari masing-masing subkriteria. penilaian kinerja pengajar menggunakan *rating scale* berdasarkan kriteria dan subkriteria kepada siswa yang menjadi responden penelitian berdasarkan angket yang telah diberikan. Data penelitian ini merupakan persepsi siswa kelas 12 IPA terhadap pengajar kelas 12 IPA bimbingan belajar Primagama berdasarkan 5 kriteria yaitu prapembelajaran, penguasaan materi, strategi pembelajaran, dan interaksi serta subkriteria dari masingmasing *cluster* kriteria. Berdasarkan hasil *Analytic Network Process* (ANP) dapat ditarik kesimpulan bahwa kinerja pengajar di bimbingan belajar Primagama di tahun 2021 yang kinerja mengajarnya paling baikyaitu pengajar I dengan bobot yang dimiliki sebesar 4.747, kemudianpengajar A yang kinerja mengajarnya terbaik kedua dengan bobot yang dimiliki sebesar 3.979, lalu pengajar dengan kinerja mengajar terbaik ketiga yaitu pengajar G memiliki bobot sebesar 3.703, dan pengajar yang kinerja mengajarnya pada urutan keempat yaitu pengajar E dengan bobot yang dimiliki sebesar 2.798. Dengan lima kriteria utama sebagai prioritas dalam penilaian kinerjanya yaitu melaksanakan pembelajaran dengan runtut dengan bobot sebesar 0.1730, menyampaikan materi pembelajaran dengan jelas denganbobot sebesar 0.1510, menunjukan penguasaan materi pembelajaran dengan bobot sebesar 0.1240, menunjukan sikap terbuka terhadap respon siswa dengan bobot sebesar 0.1170 dan menguasai kelas dengan bobot sebesar 0.1100.

Analytic Network Processis one method that can be used to select the best alternative from several alternatives.Taking The sample in this research was carried out by providing a questionnaire for all 12th grade science students. Then, a Pairwise comparison questionnaire of criteria and subcriteria will be delivered to the head of the LBB branch Primagama to obtain the weight of each subcriteria. Teacher performance assessment using a rating scale based on criteria and sub-criteria for students who become research respondents based on the questionnaire that has been given. This research data is the perception of grade 12 science students towards the 12th-grade science teacher Primagama tutoring based on 5 criteria: pre-learning, mastery of the material, learning strategies, and interactions as well as sub-criteria for each cluster criteria. Based on the results of the Analytic Network Process (ANP), it can be concluded that the performance of teachers in Primagama tutoring in 2021 with the best teaching performance is teacher I with a weight of 4,747, then teacher A has the second best teaching performance with a weight of 3,979 , then the teacher with the third best teaching performance, namely teacher G, has a weight of 3,703, and the teacher whose teaching performance is in fourth place, namely teacher E, has a weight of 2,798. With five main

criteria as priorities in assessing performance, namely carrying out learning coherently with a weight of 0.1730, conveying learning material clearly with a weight of 0.1510, showing mastery of learning material with a weight of 0.1240, showing an open attitude towards student responses with a weight of 0.1170 and mastering class with a weight of 0.1100.

Keywords: Performance, Analysis, Teacher, Analytic Network Process.

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INTRODUCTION

Education is the most basic right that every human being must have. This is written in the 1945 Constitution article 31 paragraph 1 which states that "Every Citizen has the Right to Education" and is also supported by the government with a 12 years compulsory education program to improve the quality of human resources. Having educated human resources is the key to the nation's progress. Apart from the country's aspirations in the field of education, of course every parent wants their child to get a higher education. This is because having a higher education will improve a person's standard of living. The research conducted by (Muda et al., 2019) indicates that there is a positive correlation between education level and economic growth. Two factors contribute to educational success, including individual factors including intelligence, interests, talents, motivation and physiological conditions of students; as well as social factors, which include the family environment, school environment and society (Wahdah & Malasari, 2022). There are quite a few students whose parents care about making their children excel at school through various efforts (Oktaviani, et al, 2020). Based on this, many parents register their children for tutoring in the hope of gaining more knowledge outside of school

This has resulted in many tutoring sessions being established, for example, in Malang City. The large number of tutoring mushroomed in Malang City has tightened competition in the tutoring business.

One of the study tutoring in Malang City is Primagama study tutoring. In 2007, PRIMAGAMA recorded the highest number of branches added, reaching up to 623 branches across Indonesia. Educators' ability influences the absorption of knowledge

experienced by students (Surur, 2019). Primagama tutoring always maintains its quality, this is proven by every prospective teacher who wants to teach at Primagama tutoring, they have to go through a series of acceptance selections. Apart from going through admissions selection, each teacher will evaluate their performance every 3 months. However, the evaluation process is still carried out verbally with students. Because it is carried out verbally, the assessments given by students are not detailed and are only based on general assessments without considering a teacher's assessment criteria and the relationship between these criteria. Therefore, to maintain the quality of Primagama tutoring, a method is needed to assess teacher performance and select good-quality teachers. One method that can be used to select the best alternative from several alternatives is the Analytic Network Process. In the decision-making process, the Analytic Network Process is a systematic and complex method because it considers the relationship between the criteria so that it is able to show employee competency values in accordance with the criteria set by the institution (Santoso, 2010). Therefore, researchers want to conduct research using the Analytic Network Process method to determine the quality of teacher performance in Primagama tutoring.

This research is limited. The data used is primary data, namely the results of a pairwise comparison questionnaire between criteria and sub-criteria for branch heads or management as well as teacher performance assessment questionnaires using a rating scale for class 12 students of Primagama Science High School, Tugu Malang branch. The teachers studied were teachers who taught class 12 science at the Primagama tutoring Tugu Malang branch. The benefit of this research is to get an objective assessment of teachers' performance in Primagama tutoring, which can be used as input to Primagama tutoring management based on the objective assessment results.

METHODS

The data used in this research is primary data, namely data obtained from the questionnaire results. The condition for selecting respondents in the Analytic Network Process (ANP) method is that they are experts in this research field (Sukmana & Firmansyah, 2014). The sampling process in this research was carried out by giving a questionnaire to all grade 12 science students. The questionnaire is used to obtain the objects to be researched and the respondents to be used. Then, a pairwise comparison

questionnaire of the criteria and sub-criteria will be given to the head of the LBB Primagama branch to obtain the weight of each sub-criterion. After obtaining the weight of each sub-criterion, distribute teacher performance assessment questionnaires using a rating scale based on the criteria and sub-criteria to students who are research respondents based on the questionnaire that has been given. This research data is the perception of class 12 science students towards class 12 science tutors Primagama tutoring based on 5 criteria: pre-learning, mastery of material, learning strategies, and interaction as well as sub-criteria from each criteria cluster. The steps taken in this research are: (1) establish a control/network hierarchy. The control hierarchy is a hierarchy of criteria and subcriteria. Priorities are selected in the same way as AHP; (2) carry out validity and reliability tests of the rating scale assessment questionnaire according to equations (2.14) and (2.15). Validity and reliability testing using SPSS software; (3) calculate the score of the rating scale questionnaire which has been checked for validity and reliability according to equation (2.16) using Excel software; (4) form a pairwise comparison matrix for all interrelated elements and clusters based on the pairwise comparison questionnaire for the branch head. Then calculate the eigenvalues and eigenvectors according to equations (2.9) and (2.10) using MATLAB software; (5) carrying out consistency tests on each pairwise comparison matrix includes: calculating the Consistency Index according to equation (2.12), calculating the Consistency Ratio according to equation (2.11), if the Consistency Ratio (CR) value means the pairwise comparison matrix is inconsistent, if the pairwise comparison matrix is inconsistent, it is necessary to make improvements to the pairwise comparison matrix; (6) form an unweighted supermatrix based on the eigenvector value of each subcriterion; (7) form a weighted supermatrix obtained by multiplying the subcriteria cells in the unweighted supermatrix with the criteria cells in the cluster matrix using Excel software; (8) caculate the limiting supermatrix according to equation (2.13) to obtain the final weight for each sub-criterion with the help of MATLAB software; (9) the teacher performance rating takes into account the weight resulting from multiplying the final weight of each sub-criterion with the mode of each criterion obtained in the rating scale assessment.

RESULT AND DISCUSSION

Quetionnaire Results

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The questionnaire is used to obtain the names of the teachers who will be assessed and the respondents who will be used. This is done so that the assessment is based on respondents who the same teacher has guided. The results of the questionnaire can be seen in Table 1 below :

Table 1. Questionnaire for the number of teachers and number of respondents

Number of Teachers	Number of Respondents
2 teachers	29 respondents
3 teachers	25 respondents
4 teachers	21 respondents
5 teachers	18 respondents
6 teachers	17 respondents
7 teachers	12 respondents
8 teachers	6 respondents
9 teachers	5 respondents

The table above shows that the more teachers who will be assessed, the fewer respondents will be used. This is because according to Primagama management, not every day all students attend class and some teachers are unable to attend. Therefore, the researchers decided to use 4 teachers and 21 respondents as research objects.

Validity and Reliability Test

Validity and reliability tests are used to determine which questions are invalid or notreliable. In the results of the previous questionnaire, 21 respondents were selected to be used and 4 teachers were to be assessed. The 21 respondents were distributed questionnaires assessing the performance of the four teachers who had been determined using the previous questionnaire. then tested for validity and reliability. The validity test calculation uses the corrected item–total correlation formula. The results of the validity test can be seen in Table 4.2 below :

Table 2. Validity Test Results

Criteria	***Corrected Item-Total Correlation***	***Cronbach's Alpha***
Pre-learning (C1)	0.633	0.938
Checking student attendance (C11)	0.695	
Mastery of material (C2)	0.708	
Showing mastery learning materials (C21)	0.794	
Linking material with other relevant knowledge (C22)	0.541	
Delivering learning material clearly (C23)	0.741	
Linking material withreality of life (C24)	0.549	
Learning strategy (C3)	0.575	

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Carrying out learning with coherent (C31)	0.733
Mastering Class (C32)	0.768
Carry out learning in accordancewith planned time allocation (C33)	0.694
Interaction (C4)	0.644
Fostering students' active participation in learning (C41)	0.820
Demonstrate an open attitude towards student responses (C42)	0.839
Grow cheerfulness And student enthusiasm in learning (C43)	0.634

A question item is considered valid if the r-value, which is the value of Corrected Item-Total Correlation, is greater than 0.30. (Sugiyono, 2021) Based on Table 2, it can be seen that all corrected item-total correlation values are greater than 0.3, so it can be concluded that the research instrument is valid. After the validity test, a reliability test is performed. A research instrument using Cronbach's Alpha is considered reliable if the reliability coefficient is 0.60 or higher (Sugiyono, 2021). Reliability test uses Cronbach's Alpha formula. Based on Table 2 Cronbach's Alpha value≥0.6 so it can be concluded that the research instrument is reliable. Suppose the instrument used is invalid and unreliable. In that case, improvements are made in the phrasing of the invalid and unreliable items or by discarding question items that obtain invalid and unreliable results.

Pairwise Comparison Matrix Results, eigen Vectors, Eigen Values, and Consistency Tests

A pairwise comparison matrix is formed based on a pairwise comparison questionnaire between criteria. The pairwise comparison matrices formed were 34 matrices. Eigenvectors, eigenvalues and consistency tests are obtained through pairwise comparison matrices.

Table 3 Pairwise comparison matrix of learning material mastery sub-clusters

PMP (C21)	MMPLR (C22)	MMPJ (C23)	MMRK (C24)
MMPLR (C22)	1	1/5	5
MMPJ (C23)	5	1	5
MMRK (C24)	1/5	1/5	1

Eigenvectors, eigenvalues, and consistency tests can be seen in Table 4.

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Table 4. Eigenvectors, eigenvalues, and sub-cluster consistency tests mastery of learning material

PMP (C21)	Eigenvectors	Eigenvalues	λmax	CR
C22	0.2529	3.2739	3.3077	0.2653
C23	0.6584	3.5938		
C24	0.0887	3.0554		

Based on Table 4, it can be seen that the learning material mastery sub-cluster has a CR value of 0.2653. According to(Saaty, 2006)a consistent matrix must have a CR value≤10%. Because of the CR value≥10%, then we must look for the matrix element that causes the inconsistency. An inconsistent matrix element is an element that has a value of Sij =αij is the biggest.$\frac{\omega_i}{\omega_i}$(Gasiea, 2010). The sij value can be seen in Table 5.

Table 5. Sij values of sub-cluster pairwise comparison matrix mastery of learning material

PMP (C21)	MMPLR (C22)	MMPJ (C23)	MMRK (C24)
MMPLR (C22)	1	0.5207	1.7532
MMPJ (C23)	1.9205	1	0.6734
MMRK (C24)	0.5704	1.4850	1

Based on Table 5, it can be seen that element s21 has the largest value. Therefore, the comparative assessment of elements that convey learning material clearly and relate the material to other relevant knowledge must be improved with the value $wi/$, so that a new element a_{21} is obtained:

$$a_{21} = \frac{w_2}{w_1} = \frac{0{,}6854}{0{,}2529} = 2{,}603$$

The corrected pairwise comparison matrix can be seen in Table 6.

Table 6. Pairwise comparison matrix of sub-cluster improvements in learning material mastery

PMP (C21)	MMPLR (C22)	MMPJ (C23)	MMRK (C24)
MMPLR (C22)	1	0.3841	5
MMPJ	2.6035	1	5

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(C23)			
MMRK (C24)	0.2	0.2	1

The corrected pairwise comparison matrix, the eigenvectors, eigenvalues and consistency tests are re-searched in Table 7.

Table 7. Eigenvectors, eigenvalues, and sub-cluster consistency tests for mastery of learning material (improvement)

PMP (C21)	Eigenvectors	Eigenvalues	λmax	CR
C22	0.3200	3.1134	3.1038	0.0894
C23	0.5901	3.1736		
C24	0.0899	3.0243		

Based on Table 7, it can be seen that the CR value is 0.0894. Because the CR value is <10%, it can be concluded that the pairwise comparison matrix of sub-cluster mastery of learning material is consistent.

Table 8. Pairwise comparison matrix of sub-clusters relating material to other relevant knowledge

MMPLR (C22)	PMP (C21)	MMPJ (C23)	MMRK (C24)
PMP (C21)	1	1/9	1/5
MMPJ (C23)	9	1	1/5
MMRK (C24)	5	5	1

Eigenvectors, eigenvalues, and consistency tests can be seen in Table 9.

Table 9. Eigenvectors, eigenvalues, and sub-cluster consistency tests linking material to other relevant knowledge

MMPLR (C22)	Eigenvectors	Eigenvalues	λmax	CR
C21	0.0759	3.0811	3.5976	0.5152
C23	0.3022	3.6724		
C24	0.6219	4.0394		

Based on Table 9, it can be seen that the sub-cluster relating material to other relevant knowledge has a CR value of 0.5152. Because of the CR value≥10%, then we must look for the matrix element that has the value Sij =αthe largest ij, Sij can be seen in the

table $\frac{\omega_i}{\omega_i}$

Table 10. The sij value of the sub-cluster pairwise comparison matrix relates the material to other relevant knowledge

MMPLR (C22)	PMP (C21)	MMPJ (C23)	MMRK (C24)
PMP (C21)	1	0.4423	1.6388
MMPJ (C23)	2.2607	1	0.4117
MMRK (C24)	0.6102	2.4292	1

Based on Table 10, it can be seen that element s32 has the largest value. Therefore, the comparative assessment of elements relating material to the realities of life and conveying learning material clearly must be corrected with grades wi/w, so that the element is obtained a The new 32.

$$a_{32} = \frac{w_3}{w_2} = \frac{0{,}6219}{0{,}3022} = 2{,}0583$$

The corrected pairwise comparison matrix can be seen in Table 11.

Table 11 Pairwise comparison matrix of sub-cluster improvements linking material with other relevant knowledge

MMPLR (C22)	PMP (C21)	MMPJ (C23)	MMRK (C24)
PMP (C21)	1	0.1111	0.2
MMPJ (C23)	9	1	0.4858
MMRK (C24)	5	2.0583	1

The corrected pairwise comparison matrix, the eigenvectors, eigenvalues and consistency tests are searched again in Table 12.

Table 12. Eigenvectors, eigenvalues, and sub-cluster consistency tests linking material to other relevant knowledge (improvement)

MMPLR (C22)	Eigenvectors	Eigenvalues	λmax	CR
C21	0.0734	3.0372	3.1974	0.1702
C23	0.4012	3.2837		
C24	0.5253	3.2712		

Based on Table 12, it can be seen that the CR value is 0.1702. Because the CR value is > 10%, the sub-cluster pairwise comparison matrix linking the material with other

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relevant knowledge is inconsistent, so the value of Sij =αThe largest ij value of sij can be seen in Table 13.

Table 13. Sub-cluster pairwise comparison matrix sij values relate the material to other relevant knowledge

MMPLR (C22)	PMP (C21)	MMPJ (C23)	MMRK (C24)
PMP (C21)	1	0.6069	1.4304
MMPJ (C23)	1.6476	1	0.6361
MMRK (C24)	0.6991	1.5721	1

Based on Table 13, it can be seen that element s21 has the largest value. Therefore, the comparative assessment of elements that convey learning material clearly and demonstrate mastery of learning material must be improved with value *w*i/*w*, so that the element is obtained *a* The new 21.

$$a_{21} = \frac{w_2}{w_1} = \frac{0{,}4012}{0{,}0734} = 5{,}4626$$

The corrected pairwise comparison matrix can be seen in Table 14.

Table 14. Pairwise comparison matrix of sub-cluster improvements linking material with other relevant knowledge

MMPLR (C22)	PMP (C21)	MMPJ (C23)	MMRK (C24)
PMP (C21)	1	0.1831	0.2
MMPJ (C23)	5.4626	1	0.4858
MMRK (C24)	5	2.0583	1

The corrected pairwise comparison matrix, the eigenvectors, eigenvalues and consistency tests are re-searched in Table 15.

Table 15. Eigenvectors, eigenvalues, and sub-cluster consistency tests relate material to other relevant knowledge (improvement)

MMPLR (C22)	Eigenvectors	Eigenvalues	λmax	CR
C21	0.0874	3.0177	3.0739	0.0637
C23	0.3578	3.0887		
C24	0.5548	3.1154		

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Based on Table 15, it can be seen that the CR value is 0.0637. Because the CR value is <10%, it can be concluded that the sub-cluster pairwise comparison matrix relating the material to other relevant knowledge is consistent. This process is carried out on all pairwise comparison matrices until all pairwise comparison matrices are consistent.

Selection of Priority Criteria

The next step is to construct the supermatrix after calculating the eigenvectors from the previous pairwise comparison matrix. The supermatrix consists of 3 stages, namely unweighted supermatrix, weighted supermatrix, and limiting supermatrix.(Baskoro et al., 2021). The elements arranged in the unweighted supermatrix are priority weights or eigenvectors obtained from the previous pairwise comparison matrix.

The next supermatrix is the weighted supermatrix. The elements arranged in a weighted supermatrix are a product of the unweighted supermatrix and the corresponding cluster matrix. The number of each column produced in the weighted supermatrix is 1.

Table 16. Priority weight for each criterion

Clusters	*Subcluster*	Priority weight	Priority
Pre-learning (C1)	Checking student attendance (C11)	0	XI
Mastery material (C2)	Showing mastery learning materials (C12)	0.1240	III
	Linking material with knowledge other Which relevant (C22)	0.1010	VI
	Convey material learning clearly (C23)	0.1510	II
	Relate material to reality of life (C24)	0.0510	VIII
Learning strategy (C3)	Carrying out learning coherently (C31)	0.1730	I
	Master class (C32)	0.1100	V
	Carrying out learning in accordance with the planned time allocation (C33)	0.0440	IX
Interaction (C4)	Grow participation active student in learning (C41)	0.0390	X
	Show an open attitude on student responses (C42)	0.1170	IV

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	Grow cheerfulness and student enthusiasm in learning (C43)	0.0900	VII

The final stage in the supermatrix is the limiting supermatrix. Limiting supermatrix is produced from a weighted supermatrix whose rank is obtained until the result is that each matrix element in one row has the same value. The results obtained from the limiting supermatrix are used to determine the priority weight of each criterion. The priority weight of each criterion can be seen in Table 4.16.

There are 4 clusters and 11 subclusters which are the criteria for evaluating teachers in Primagama tutoring. Based on Table 4.16, it can be concluded that Primagama tutoring prefers to carry out learning coherently as a criterion as the main priority as assessed by its teachers with a priority weight obtained of 0.1730. Because coherent learning will make good use of study time so that the lesson material prepared can be delivered in its entirety(Fitria et al., 2020). The assessment criteria with the second priority are the criteria for clearly conveying learning material with a priority weight of 0.1510. This is because every student who takes tutoring at Primagama is expected to understand the learning material explained by the teacher so that they can achieve the goal of Primagama tutoring, namely being at the forefront of achievement. As the third priority, the assessment criteria show mastery of learning material with a priority weight of 0.1240. Because every teacher who teaches at Primagama tutoring must master the learning material(zainuddin, 2018).

The fourth ranking assessment criterion shows an open attitude towards student responses with a weight of 0.1170. This is because of the importance of a teacher's open attitude towards students. Having an open attitude towards student responses reflects that the teacher has mastery of the learning material. The assessment criteria with the fifth priority is mastering the class with a priority weight of 0.1100. This is also important because a teacher who has an open attitude towards student responses in the learning process can master the class because of the interaction between the teacher and students, as research results(Arianti, 2018).

The assessment criteria with the sixth priority is linking the material with other relevant knowledge with a priority weight of 0.1010. Teachers who can relate the material to other relevant knowledge can be said to be able to master the teaching material well,

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such as in research(Prihatini, 2019). Then the seventh priority criterion is to foster students' joy and enthusiasm in learning with a priority weight of 0.0900. This is because the teacher is able to create a pleasant learning atmosphere and is enthusiastic about the learning material so that students feel comfortable during the learning process(Jaya, 2017). The eighth priority criterion is linking material to the reality of life with a priority weight of 0.0510. Teachers who are able to relate material to the realities of life can motivate students to learn because students know the purpose of learning(Kadir, 2013). The ninth priority criterion is carrying out learning in accordance with the planned time allocation with a priority weight of 0.4410.

Criteria with ninth priority are directly proportional to the main priority criteria. Because teachers can carry out learning according to the planned time allocation, the teacher can carry out learning in a coherent manner(Sugiarto, 2015). Then the criterion that has the tenth priority is to foster students' active participation in learning with a priority weight of 0.0390. This is because active students are able to respond to the teaching and learning process so that the teaching and learning process runs in two directions for teachers and students(Wibowo, 2016). The final ranking criterion chosen by Primagama tutoring is checking student attendance with a priority weight obtained of 0. This is because Primagama prioritizes criteria in the teaching and learning process to achieve its goals.

Rating Scale Assesment

The assessment uses a rating scale using respondents and teachers selected based on a questionnaire. According to (Sugiyono, 2021) Data from the assessment using a rating scale can be calculated by dividing the number of criteria scores by the number of scores resulting from data collection which is presented in Table 17 below:

Table 17. Data Collection Results

Teacher	Score
A	$\frac{1208}{5x15x21} = 0{,}7670$
I	$\frac{1300}{5x15x21} = 0{,}8254$
E	$\frac{992}{5x15x21} = 0{,}8589$

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G	$\frac{1150}{5x15x21} = 0{,}7302$

Based on Table 4.17, it can be seen that according to the perception of 21 respondents at the Primagama tutoring institute, Tugu Malang branch, the performance quality of teacher A is 0.7670 or 76.7% of the 15 criteria that have been determined. The quality of teacher performance I was 0.8254 or 82.54% of the 15 criteria set. The performance quality of teacher E is 0.8589 or 85.89% of the 15 criteria set and the quality of teacher G's performance is 0.7302 or 73.02% of the 15 criteria set. However, the score results obtained do not match the data obtained. Teacher E has the highest score compared to other teachers, but the assessment score for each criterion obtained by teacher E has the lowest rating compared to teacher A, teacher I and teacher G. This is because the divisor value is small in calculating teacher E's score.

Based on Appendix 5, teacher E's assessment score on sub-criteria shows mastery of learning material (C21), there are 2 respondents who give the highest assessment scale, while teacher G's assessment score on sub-criteria shows mastery of learning material (C21), there are 5 respondents who give the highest assessment scale. Even though teacher G has more respondents who give the highest rating scale, the number of questions that have the highest rating scale in equation 2.16 still has a value of 1. Therefore, the researcher provides suggestions to change the number of Criterion scores to the number of score scales to the maximum possible scale. obtained in table 18 below:

Table 18. Rating scale assessment scores with maximum scale

Teacher	Score
A	$\frac{1208}{5x15x21} = 0{,}7670$
I	$\frac{1300}{5x15x21} = 0{,}8254$
E	$\frac{992}{5x15x21} = 0{,}6298$
G	$\frac{1150}{5x15x21} = 0{,}7302$

Based on Table 4.18, it can be said that teacher E's assessment score is in

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accordance with the data obtained. The performance quality of teacher E has the lowest performance quality, namely 0.6298 or 62.98% of the 15 criteria set.

Teacher Performance Ratings

The teacher performance ranking is obtained by multiplying the priority or importance weight of each criterion with the mode of assessment score for each teacher based on each previously obtained criterion. The results obtained are expected to consider each assessment criterion's importance. Then, from the results of multiplying the weight of each criterion with the mode of assessment score for each criterion for each teacher, the total of all the sub-criteria arranged is calculated. The weights and rankings of each teacher are presented in Table 19 below:

Table 19. Teacher performance ratings

Teacher	Weight	Rating
I	4,747	I
A	3,979	II
G	3,703	III
E	2,798	IV

Based on Table 19, it can be seen that of the four teachers assessed, the teacher who had the best performance was teacher I with a weight of 4,747. The teacher with the second place of best performance is teacher A with a weight of 3,979. The teacher with the third best performance is teacher G with a weight of 3,703 and the teacher with the last ranking teaching performance, namely teacher E, has an assessment weight of 2,798. The following is the hierarchical structure of the Analytic Network Process (ANP) network based on the results obtained, which are presented in Figure 1.

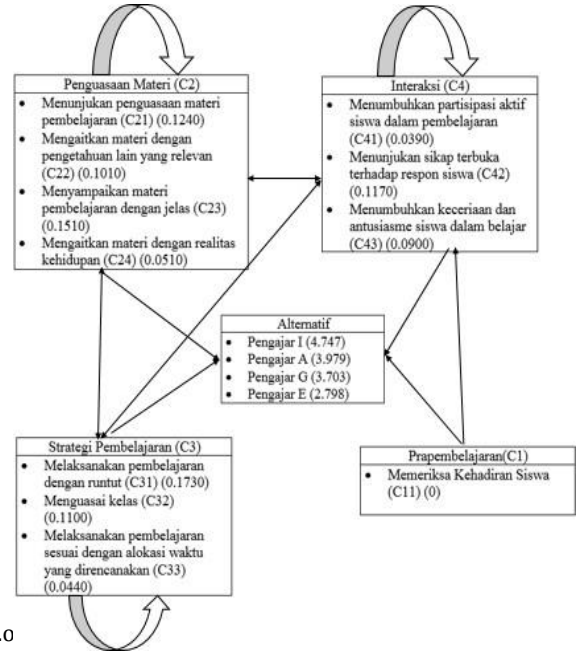

Figure 1. Analytic Network Process (ANP) network hierarchical structure

Based on Figure 4.1, it can be seen that there is an inner dependence relationship in the cluster of material mastery, interaction and learning strategies. It can be said that the criteria influence the criteria in the cluster in the same cluster. For example, in the learning material mastery cluster, the criteria showing mastery of learning material are influenced by the criteria of relating the material to other relevant knowledge, conveying learning material clearly, and relating the material to the realities of life. Then there is an outer dependence relationship between the pre-learning and interaction clusters. This means that the criteria in the pre-learning cluster are influenced by the interaction cluster criteria and the relationship between feedback shown in the material mastery cluster and learning strategies. It can be said that the criteria influence the criteria in the learning material mastery cluster in the learning strategy cluster, and vice versa, the learning strategy cluster criteria are influenced by the criteria in the learning material mastery cluster.

Teacher I is the teacher with the best performance because, according to students, Teacher I has a higher weight on the 8 assessment criteria which are used as assessment measures compared to other teachers. The criterion with the highest weight possessed by teacher I compared to other criteria and other teachers is carrying out learning in a coherent manner with a weight of 0.865. According to students, teacher I is indeed better than other teachers in carrying out learning in a cohesive manner. This is because teacher I in delivering the learning material is considered detailed so that students are able to understand the learning material being delivered. Then in other criteria, teacher I has the highest weight compared to other teachers, namely the criteria of showing mastery of learning material with a weight of 0.62, conveying learning material clearly with a weight of 0.755, mastering the class with a weight of 0.55, carrying out learning with the planned time allocation with a weight amounting to 0.22, fostering students' active participation in learning with a weight of 0.195, showing an open attitude towards student responses with a weight of 0.585, fostering student joy and enthusiasm in learning with a weight of 0.45. However, on the other two criteria, teacher I was not rated better than the other teachers. On the criteria of linking other relevant knowledge and relating the material to

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the realities of life, teacher I has a weight of 0.303 and 0.204. This weight is below that of teachers A and G so that in these two criteria teacher I is considered no better than teachers A and G. This is in accordance with research put forward by (Rahmawati et al., 2021). Students have various types of learning so teachers need to accommodate these learning styles.

Teacher A is the second-ranked teacher in terms of teaching performance. There are 2 criteria that are considered better than other teachers, namely the criterion of linking the material to other relevant knowledge and the criterion of linking the material to the reality of life with the respective weights obtained being 0.505 and 0.255. Then there are 7 criteria which are in second place in the assessment, namely the criteria of showing mastery of learning material with a weight of 0.496, conveying learning material clearly with a weight of 0.604, mastering the class with a weight of 0.44, carrying out learning according to the planned time allocation with a weight of 0.176, fostering active student participation in learning with a weight of 0.156, showing an open attitude towards student responses with a weight of 0.468 and fostering student joy and enthusiasm in learning with a weight of 0.36. However, not all of the weights in teacher A's assessment criteria are the second highest assessment. Regarding the criteria for carrying out learning coherently, teacher A has the lowest assessment weight, namely 0.519.

Teachers who have good teaching performance are in third place, namely teacher G with a weight for each of the criteria they have, namely showing mastery of learning material has a weight of 0.496, relating the material to other relevant knowledge has a weight of 0.404, conveying learning material clearly has a weight of 0.604, relating material to the reality of life has a weight of 0.153, carrying out learning coherently has a weight of 0.692, mastering the class has a weight of 0.44, carrying out learning according to the planned time allocation has a weight of 0.176, fostering active participation of students in learning has a weight of 0.117, showing an open attitude towards responses students have a weight of 0.351, fostering student joy and enthusiasm in learning has a weight of 0.27.

Then the teacher whose teaching performance is in last place is teacher E with a weight for each criterion, namely showing mastery of learning material has a weight of

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0.372, relating the material to other relevant knowledge has a weight of 0.303, conveying learning material clearly has a weight of 0.453, relating material to the reality of life has a weight of 0.102, carrying out learning coherently has a weight of 0.519, mastering the class has a weight of 0.22, carrying out learning according to the planned time allocation has a weight of 0.22, fostering active participation of students in learning has a weight of 0.078, showing an open attitude towards responses students weight 0.351, fostering student joy and enthusiasm in learning has a weight of 0.18.

Based on all the available criteria, teacher A is considered the best in clearly conveying learning material with a weight of 0.604. Teacher I is considered the best in terms of carrying out learning coherently, with a weight of 0.865. Teacher E was rated the best in terms of carrying out learning coherently with a weight of 0.519. and Teacher G was rated the best in terms of carrying out learning coherently with a weight of 0.692. Then, the yes criterion has the lowest weight, namely, checking student attendance, which has a zero (0) weight. This means that Primagama considers there is no interest in these criteria. The process of implementing learning is considered more important than the process before learning is carried out (pre-learning).

CONCLUSION

Based on the results of the Analytic Network Process (ANP), it can be concluded that the performance of teachers in Primagama tutoring in 2021 with the best teaching performance is teacher I with a weight of 4,747, then teacher A has the second best teaching performance with a weight of 3,979 , then the teacher with the third best teaching performance, namely teacher G, weights 3,703, and the teacher whose teaching performance is in fourth place, namely teacher E, weights 2,798. With five main criteria as priorities in assessing performance, namely carrying out learning coherently with a weight of 0.1730, conveying learning material clearly with a weight of 0.1510, showing mastery of learning material with a weight of 0.1240, showing an open attitude towards student responses with a weight of 0.1170 and mastering class with a weight of 0.1100.

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