

**THE INFLUENCE OF WORK STRESS AND THERMAL COMFORT (PMV) ON
TEACHER PERFORMANCE MEDIATED BY EMOTIONAL INTELLIGENCE
(BINA WIRAWAN CATHOLIC JUNIOR HIGH SCHOOL, MAUMERE, SIKKA
REGENCY)**



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Abstract

Problems of work stress and thermal comfort (PMV) affect teacher performance at Bina Wirawan Catholic Junior High School, Maumere, Sikka Regency, and the role of emotional intelligence in mediating the relationship. This is important to understand to improve teacher performance through stress management, environmental comfort, and strengthening emotional intelligence. This study uses a quantitative method. The saturated sample is 28 (twenty-eight) teachers at Yapenthom 1 Catholic Junior High School, Maumere. Primary and secondary data sources. The data collection technique used was conducting a field study with interviews, installing measuring instruments to determine thermal comfort in schools, and distributing questionnaires to teachers. The results of the study showed that 1). Work Stress and Teacher Performance have a significant influence on teacher performance. Stress can interfere with concentration, interpersonal relationships, and reduce work motivation, which ultimately has a negative impact on teacher performance. 2) Thermal Comfort and Teacher Performance do not show a significant direct influence on teacher performance. However, thermal comfort has been shown to have a positive influence on teacher emotional intelligence. 3). Thermal Comfort and Emotional Intelligence are that a comfortable environment can improve mood, reduce stress, and support the development of emotional intelligence. 4) Emotional Intelligence and Teacher Performance are proven to have a very significant influence on teacher performance. Teachers with high emotional intelligence are better able to build good relationships with students, create a positive learning atmosphere, and motivate students. 5) Thermal Comfort, Emotional Intelligence, and Teacher Performance is Thermal comfort affects teacher performance through emotional intelligence.

Keywords: Job Stress, Thermal Comfort (PMV), Teacher Performance, Emotional Intelligence

INTRODUCTION

Human Resources (HR) is one of the key drivers of the success of quality schools that will later produce the next generation of the nation who are also qualified (Ananda et al, 2022). The success of schools in educating students does not solely depend on the availability of supporting tools or technology that is currently popular, but also depends on the human resources (HR) in the school. Schools need human resources (HR) who are skilled, potential, and able to compete in an era that is increasingly developing with sophisticated technology. Human resources in a school can act as planners, actors, and determinants of success (Pelealu, 2023; Fatkhurrozi, 2024). Teacher performance is the result of the output produced in a certain period. According to Supardi (2016) stated that teacher performance is the ability of a teacher to carry out learning tasks at school and be responsible for students under his guidance by improving the achievements or learning outcomes of his students. Performance is generally interpreted as success or the ability of a person to carry out the work given to achieve the targets that have been determined. Teacher performance in this case is one of the determinants of the success of a school or foundation in achieving its vision and mission, and the performance of the teacher itself can affect the performance of the school or foundation as a whole.

Bina Wirawan Catholic Junior High School Maumere, located in Sikka district, East Nusa Tenggara, is a school that...founded by sisters from the CIJ congregation which was later named SMP Bina Wirawan Maumere, has a school vision of "the realization of quality, competitive, intelligent and skilled Human Resources (HR), superior in science and technology based on the profile of Pancasila students who are inspired by the spirit of compassion" of course must have teachers who have optimal performance as indicated by maximum performance and achievements, because the achievement of teacher performance will have an impact on the performance of the school and the foundation as a whole.

Teacher performance can be measured from various factors, Renny, CA (2020), including self-assessment, principal assessment, and student assessment. The factor that plays a significant role in this is work stress. According to Robbins (2012) factors that are considered to play a role in work stress are task demands, role demands, interpersonal and organizational demands. Teachers must meet the demands of providing effective teaching,

which involves planning, implementing, and evaluating learning, teachers must face a complex and diverse curriculum, which requires the ability to adapt and integrate various materials, Teachers have great pedagogical responsibilities, including ensuring that students achieve the established academic standards, teachers often work more than 8 hours a day, including time outside of work hours to prepare materials, correct assignments, and participate in school activities.

According to Luthans and Avolio (2003), work stress can be influenced by various factors, including leadership and the work environment. Work stress also comes from the interaction of individuals with their environment. Based on several previous studies, it has been stated that work stress can interfere with teachers' concentration and motivation, which in turn can reduce their performance. Research shows that teachers who feel stressed tend to have a decrease in the quality of teaching and interaction with students (Renny, 2020). Meanwhile, research conducted by Kristanti and Pangastuti (2019) stated that work stress does not have a direct effect on performance.

Factors that affect performance other than work stress namely the work environment (Zuana et al, 2024). The environment is in the form of physical and non-physical environments, Sedarmayanti (2012), which are around them that influence teachers in carrying out the tasks and responsibilities assigned. The environment in this case is the physical environment which can be in the form of temperature, light, humidity, air exchange, and so on, which can be perceived by the five senses.

The School is included in the category of dry tropical climate areas in Indonesia. The dry tropical climate conditions in Sikka Regency, East Nusa Tenggara, Indonesia, have several unique characteristics, The air temperature in the dry tropical region is usually high and relatively stable throughout the year, the air humidity in this region is usually low, especially in the dry season, rainfall in the dry tropical region is very low, with most of the rain occurring in a short time and a short rainy season. Data are not specifically available in the report provided, but generally, rainfall in this region is less than 500 mm per year (Houghton, 2009). The dry tropical climate conditions in Sikka Regency have an impact on teacher activities at school.

Comfortable environmental conditions are closely related to thermal comfort. A thermally comfortable working environment greatly affects teacher productivity, health, and well-being. Research shows that an uncomfortable environment can disrupt concentration, cause fatigue, and reduce motivation (Renny, 2020). Therefore, good thermal comfort is very important to improve teacher performance. Several studies have shown that thermal comfort does not directly affect teacher performance. Other factors such as emotional intelligence, team support, and work experience also play an important role in determining teacher performance (Luthans & Avolio, 2003).

The expert who writes about emotional intelligence is Daniel Goleman. Goleman, in his book "Emotional Intelligence: Why It Can Matter More Than IQ" (1995), explains that emotional intelligence is the ability of individuals to recognize, understand, and manage their own and other people's emotions. He emphasizes that emotional intelligence is very important in various aspects of life, including in the context of education and work. Daniel Goleman has emphasized the role of emotional intelligence in managing emotions and improving individual performance. By understanding and developing emotional intelligence, teachers can be more effective in creating a conducive learning environment and supporting student well-being

High emotional intelligence can help teachers better manage their own and their students' emotions. This can improve teacher performance in teaching and managing the classroom. Goleman, (1995), Teachers who have high emotional intelligence tend to have higher motivation to learn and develop themselves. This can reduce work stress and improve their performance (Luthans & Avolio, 2003). According to Borman (2021), emotional intelligence does not have a significant effect on performance.

REVIEW OF LITERATURE

Job Stress

Robbins, SP (2003) Work stress is a condition of tension that affects a person's emotions, way of thinking, and physical condition, while according to Lazarus & Folkman (1984): Stress is a process that involves assessing environmental demands (stressors) and

individual resources to deal with them, then Khan, AU (1974) Work stress is an imbalance between job demands and the individual's ability to deal with them.

Some factors that can cause work stress include:

- a. Work overload: Too many tasks to complete in a limited time.
- b. Lack of control: Not having control over the work or decisions made.
- c. Interpersonal conflict: Bad relationships with coworkers or superiors.
- d. Organizational change: Changes in organizational structure, policies, or technology.
- e. Role ambiguity: It is unclear what tasks and responsibilities need to be performed.
- f. Lack of social support: Not getting support from coworkers or superiors.

Impact of Work Stress

Work stress can cause various negative impacts, both physical and psychological, such as:

1. Physical: Headaches, digestive problems, sleep disturbances, chronic fatigue.
2. Psychological: Depression, anxiety, decreased motivation, difficulty concentrating.
3. Behavior: Aggression, substance abuse, absenteeism from work.

Thermal Comfort

Thermal comfort is a condition in which a person feels comfortable with the surrounding environment, especially in terms of temperature, humidity, air flow, and heat radiation. Experts provide various definitions, but the essence is the same, namely thermal comfort is a subjective condition influenced by individual physical and physiological factors.

Some definitions from experts include:

ASHRAE (American Society of Heating, Refrigerating and Air-Conditioning Engineers): Thermal comfort is a condition in which there is satisfaction with the surrounding thermal conditions.

Fanger: Thermal comfort refers to the metabolic rate, which can be assessed by variables such as activity, clothing resistance, air temperature, relative humidity, air flow rate, and light intensity.

Snyder: Thermal comfort is a state of the environment/nature that can affect humans.

In essence, thermal comfort is a condition in which a person feels comfortable with the thermal environment around them, so that they can carry out activities optimally.

Factors Affecting Thermal Comfort

Thermal comfort is influenced by various factors, both environmental and individual factors. Here are some of the main factors:

Environmental Factors

Temperature: Air temperatures that are too high or too low can cause discomfort.

Humidity: High humidity can increase the sensation of heat, while low humidity can cause dry skin.

Air Speed: Air speed that is too high can cause a cold feeling, while air speed that is too low can make the air feel damp and stale.

Heat Radiation: Heat radiation from sources such as the sun or production equipment can affect thermal comfort.

Individual Factors

Activity Level: The higher the physical activity, the more heat the body produces, so the need for cooling increases.

Clothing: The type and amount of clothing worn will affect the body's isolation from the environment.

Physical Condition: Health conditions, age, and gender can also influence perceptions of thermal comfort.

Adaptation: Humans can adapt to different environmental conditions.

Thermal Comfort Index (PMV)

To measure thermal comfort quantitatively, the PMV (Predicted Mean Vote) index is often used. The PMV index provides a numerical value that indicates the level of thermal comfort felt by a group of people in certain environmental conditions. PMV values range from -3 (very cold) to +3 (very hot), with a value of 0 indicating neutral thermal comfort.

Factors taken into account in the PMV index:

- a. **Air temperature:** This is the ambient air temperature directly felt by the skin. Air temperature that is too high or too low will affect thermal comfort.
- b. **Relative humidity:** The level of moisture in the air can affect how a temperature feels. High humidity can make a temperature feel hotter, while low humidity can make a temperature feel cooler.

- c. Air velocity: The movement of air around an individual. Low air velocity can cause stuffiness, while high velocity can cause coldness.
- d. Activity level: Activities performed by an individual, which can increase body temperature and affect the perception of comfort.
- e. Clothing level: The temperature perceived by the individual from the clothing worn, which can affect comfort if the clothing is too thick or not suited to environmental conditions.
- f. Metabolism: An individual's metabolic rate, which varies based on factors such as age, gender, and health conditions, also contributes to the perception of thermal comfort.

The Importance of Thermal Comfort

Thermal comfort is very important because:

- a. Increase productivity: Workers who feel comfortable tend to be more productive and efficient.
- b. Maintaining health: An uncomfortable thermal environment can cause various health problems, such as fatigue, dehydration and respiratory disorders.
- c. Improving well-being: Thermal comfort contributes to the mental well-being of workers.

Emotional intelligence

Emotional intelligence is the ability of individuals to recognize, understand, and manage their own and other people's emotions. This concept was developed by experts such as Daniel Goleman, who emphasized the importance of emotional intelligence in various aspects of life, including in the context of education and work, Goleman, (1995).

Daniel Goleman, in his book "Emotional Intelligence: Why It Can Matter More Than IQ" (1995), identified five important indicators of emotional intelligence. Here are the indicators:

1. Recognizing Emotions

Self-Awareness: The ability to recognize and understand one's own emotions. This includes identifying feelings such as joy, sadness, anger, and fear, and understanding how these emotions influence behavior and decisions (Goleman, 1995).

2. Managing Emotions

Self-Regulation: The ability to manage one's own emotions. This involves the ability to regulate emotions, avoid impulsive behavior, and stay focused on goals.

3. Contacting Other People

Empathy: The ability to understand and recognize the emotions of others. This includes the ability to read non-verbal cues and understand how other people's emotions influence their behavior

4. Building Relationships

Social Skills: The ability to interact with others effectively. This involves the ability to communicate well, build strong relationships, and work cooperatively with others.

5. Making Decisions

Decision Making: The ability to make sound decisions based on emotional and rational analysis. This involves the ability to integrate emotional and rational information to make wise decisions.

Factors That Influence Emotional Intelligence

- a. **Emotional Experience:** Individuals who have extensive emotional experience tend to have higher emotional intelligence. They can better recognize and understand their own and others' emotions.
- b. **Emotional Education:** Good emotional education can help improve emotional intelligence. This includes lessons on recognizing, understanding, and managing emotions.
- c. **Social Support:** Strong social support from family, friends, and the workplace also plays an important role in developing emotional intelligence. This support can help individuals deal with complex emotional situations.
- d. **Personality:** A stable and flexible personality can help individuals manage emotions more effectively. Individuals with stable personalities tend to be better at dealing with emotional stress.

Performance

Performance is the result achieved by an individual or team in achieving the goals that have been set. This involves the ability to produce quality output and achieve the standards set by (Mangkunegara & Anwar, 2012).

Factors Affecting Employee Performance According to Mangkuprawira

Mangkuprawira identified several factors that significantly affect employee performance. These factors can be grouped into several aspects, namely:

Individual Factors:

Capabilities: Includes the knowledge, skills, and talents possessed by employees.

Motivation: Internal and external drives that cause employees to strive to achieve goals.

Attitude: A positive attitude towards work and the organization will improve performance.

Personality: Unique individual characteristics, such as an extroverted or introverted personality, can influence the way a person works.

Organizational Factors:

Organizational Structure: A clear organizational design and good hierarchy will provide clear direction for employees.

Company Policies: Company policies that support performance, such as fair compensation systems and career development programs, will motivate employees.

Organizational Culture: The values and norms adopted by the organization will shape employee behavior.

Work Environment: Comfortable physical and psychological conditions in the workplace will increase productivity.

Task Factors:

Nature of Work: The type of work performed, the level of complexity, and the autonomy granted will affect performance.

Workload: A realistic workload will increase productivity, while too heavy a workload can cause stress and decreased performance.

Technology: The use of appropriate technology can increase work efficiency and effectiveness.

Leadership Factors:

Leadership Style: A democratic and supportive leadership style will motivate employees.

Communication: Effective communication between leaders and employees will improve team performance.

According to Robbins (2012), employee performance indicators can be divided into several aspects, namely:

- a. Quality of Work: This is measured by employee perception of the quality of work produced and the perfection of tasks relative to employee skills and abilities.
- b. Quantity: This is the amount produced, expressed in terms such as units, number of activity cycles completed.
- c. Punctuality: This indicates the degree to which activities are completed at the stated start time, with good coordination and maximizing the time available for other activities.
- d. Effectiveness: This measures how effectively employees use resources to achieve goals.
- e. Independence: This measures how independent an employee is in performing tasks without requiring excessive assistance.
- f. Commitment: This indicates how much an employee identifies with the organization and its goals, and the desire to maintain membership in the organization.

These indicators are used to measure the extent of teacher performance achievement and to assist management in improving overall performance.

RESEARCH METHOD

This study uses quantitative methods. And the study used a saturated sample of 28 (twenty-eight) teachers at Yapenthom 1 Catholic Middle School, Maumere. Primary and secondary data sources. The data collection technique used was conducting field studies with interviews, installing measurement tools to determine thermal comfort in schools, and distributing questionnaires to teachers.

For measuring instruments, researchers used temperature and humidity measuring instruments installed in the classroom.

Model: RC-4HC is a type of temperature and humidity measuring instrument.

Serial Number: EF7185F00426, is a unique number to distinguish each device.

Total Space: 16000, likely referring to the device's data storage capacity.

Probe Type: Temperature & Humidity, indicates that this device measures temperature and humidity.

Firmware Version: V1.3 is the software version used on the device.

The data analysis technique used in this study is quantitative analysis using Structural Equation Modeling (SEM) with the Variance-Based SEM approach, better known as Partial Least Square (PLS) and often referred to as soft modeling. Inferential statistical analysis was performed using SmartPLS 4.0 (Partial Least Square) software.

This study uses the help of the SmartPLS 3.0 application. From the results of SmartPLS 3.0, the design of the structural relationship of the variables is displayed in the form of a path diagram as shown below:

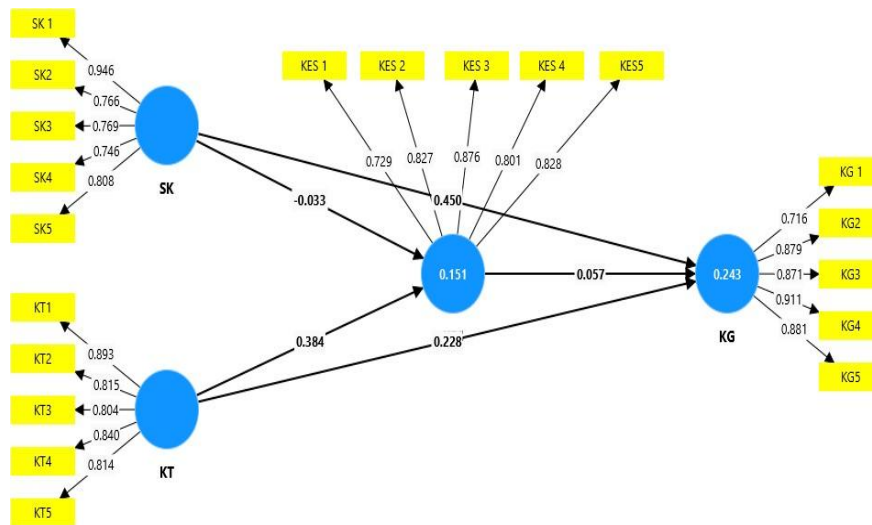


Figure 1.
SmartPLS 4.0 Analysis Results

RESULTS AND DISCUSSION

The Effect of Job Stress and Thermal Comfort (PMV) on Teacher Performance Mediated by Emotional Intelligence (Bina Wirawan Catholic Junior High School, Maumere, Sikka Regency). Three criteria found in the use of data analysis techniques with SmartPLS to assess the outer model are: Convergent Validity, Discriminant Validity, and Composite Reliability. The following is an explanation of each criterion:

Table 1
Outer Loading Value

Variables	Indicator	Loading Factor
Work Stress	SK 1 Task demands	0.946
	SK 2 Role demands	0.766
	SK 3 Interpersonal claims	0.769
	SK 4 Organizational Structure	0.746
	SK 5 Leadership	0.808
Thermal Comfort	KT 1 Temperature	0.893
	KT 2 Humidity	0.815
	KT 3 Wind speed	0.804
	KT 4 Types of clothing	0.840
	KT 5 Types of activities	0.814
Emotional Intelligence	1 Self-awareness	0.729
	2 Self-regulations	0.827
	3rd Motivation	0.876
	4 Empathy	0.801
	TO 5 Social skills	0.828
Teacher Performance	KG 1 Quality	0.879
	KG 2 Quantity	0.871
	KG 3 Punctuality	0.911
	KG 4 Effectiveness	0.881
	KG 5 Independence	0.716

Source: SmartPLS 4.0 Output

From Table 1, it can be seen that the outer loadings for the work stress variables (task demands, role demands, interpersonal demands, organizational structure, and leadership) have a value of more than 0.5, which means that all indicators have met the requirements for convergent validity. The thermal comfort variables (temperature, humidity, wind speed, type of clothing, type of activity) also have an outer loading value of more than 0.5, which means that these indicators have met the requirements for convergent validity. The emotional intelligence variables (self-awareness, self-regulation, motivation, empathy, social skills) have an outer loading value of more than 0.5, which means that the indicators used have met the requirements for convergent validity. The teacher performance variables (quality, quantity, punctuality, effectiveness, independence) have an outer loading value of more than 0.5, which means that the indicators used have met the requirements for convergent validity.

All indicators have met the convergent validity requirements in this study, which means that the indicators used can have good correlation and can reflect variables with statements that are in accordance with the indicators.

In addition to using external load values, the convergent validity test also uses the Average Variance Extracted (AVE) value. The results of the AVE values are shown in Table 2 below:

Table 2
Average Variance Extracted (AVE) Value

	Cronbach's Alpha	Composite Reliability (rho_a)	Composite Reliability (rho_c)	Average Variance Extracted (AVE)
KES	0.873	0.881	0.907	0.662
KG	0.910	0.952	0.931	0.730
KT	0.893	0.921	0.919	0.695
SK	0.874	0.934	0.905	0.656

Table 2 shows that the Average Variance Extracted (AVE) value for all variables in this study has a value above 0.5, which means that all indicators have met the requirements of convergent validity. This also means that the constructs in this study can explain more than half of the variance derived from their indicators.

Discriminant Validity

After convergent validity, the next evaluation is to see the discriminant validity. Discriminant Validity is a test used to ensure that variables are not correlated with each other and measure different constructs. Discriminant Validity is measured using the cross-loading value.

Table 3
Cross Loading Value

	KES	KG	KT	SK
CASE 1	0.729	0.269	0.306	0.062
CASE 2	0.827	0.068	0.301	-0.122
CASE 3	0.876	0.060	0.377	-0.146
KES 4	0.801	0.068	0.268	-0.024
KES5	0.828	-0.041	0.303	-0.059
KG 1	0.131	0.716	0.126	0.255
KG2	0.020	0.879	0.266	0.429
KG3	0.104	0.871	0.110	0.255

KG4	0.095	0.911	-0.012	0.351
KG5	0.149	0.881	0.266	0.429
KT1	0.350	0.103	0.893	-0.119
KT2	0.230	0.128	0.815	-0.098
KT3	0.200	0.120	0.804	-0.031
KT4	0.348	0.323	0.840	-0.129
KT5	0.404	0.115	0.814	-0.030
SK 1	-0.004	0.480	0.090	0.946
SK2	-0.140	0.385	-0.175	0.766
SK3	0.070	0.303	-0.088	0.769
SK4	-0.092	0.152	-0.299	0.746
SK5	-0.163	0.226	-0.120	0.808

Table 3 above shows that all variable indicators have a cross-loading value above 0.5, which means that each indicator used in this study is unique and can capture phenomena that are not captured by other constructs, while KES 1: The cross-loading value against other constructs is 0.269, 0.306, and 0.062. This value must be lower than the external load on the parent construct.

KG 2: The cross-loading values against other constructs are 0.879, 0.266, and 0.429. This value must be lower than the external load on the parent construct. KES 2: The cross-loading value (-0.122) indicates that this indicator has a negative correlation with other constructs.

KG 4: The cross-loading value (0.911) indicates that this indicator has a high correlation with other constructs. However, if this value is lower than the external loading on its parent construct, then discriminant validity is still achieved.

To measure discriminant validity at the indicator level, we can use the cross-loading value. However, to measure discriminant validity at the variable level, we can find out through the square root of the AVE (Average Variance Extracted) value. The square root value of AVE for each construct must be greater than the square root value of AVE for other constructs that are correlated with the construct. The square root value of AVE can be seen in Table 4 below.

Table 4
Discriminant Validity – Fornell-Larcker Criterion

	KES	KG	KT	SK
KES	0.814			

KG	0.113	0.854		
KT	0.387	0.204	0.834	
SK	-0.073	0.423	-0.102	0.810

KES and KG: There is a fairly strong positive correlation between KES and KG (0.854). This means that the higher the KES value, the higher the KG value.

KES and KT: There is a moderate positive correlation between KES and KT (0.834).

KES and SK: There is a weak negative correlation between KES and SK (-0.102). This means that the higher the KES value, the lower the SK value.

Further testing to analyze the research model is to look at the construct reliability of the latent variables measured by two criteria, namely composite reliability and Cronbach's alpha from the indicator block that measures the construct. The construct is declared reliable if the composite reliability value and Cronbach's alpha value are above 0.70. The following is the output of the composite reliability and Cronbach's alpha results:

Table 5

	Cronbach's Alpha	Composite Reliability (ρ_a)
KES	0.873	0.881
KG	0.910	0.952
KT	0.893	0.921
SK	0.874	0.934

From Table 5, it can be seen that the Cronbach's Alpha and Composite Reliability values for all constructs in this study have values greater than 0.7. Therefore, it can be concluded that the questionnaire used as a model for this study is reliable in reflecting the variables used, namely work stress, thermal comfort, emotional intelligence, and teacher performance.

Structural Model Evaluation Results

Path Coefficient

The path coefficient test is used to see how strong the influence of the independent variable is on the dependent variable. The standard value of the path coefficient ranges from -1 to +1. The closer to +1, it can be said that the independent variable has a positive or direct relationship with the dependent variable, and vice versa.

The path coefficient values are obtained from the original value of bootstrapping samples using Smart PLS. Bootstrapping is a process to assess the level of significance or probability of direct effects, indirect effects, and total effects. Can be seen in Table 6 below:

Table 6
Path Coefficient Value

Independent Variables	Dependent Variable	Original Sample
Work stress	Emotional intelligence	-0.033
Thermal Comfort	Emotional intelligence	0.384
Emotional intelligence	Teacher performance	0.057
Work stress	Teacher performance	0.450
Thermal comfort	Teacher performance	0.228

Based on the results above, the following conclusions can be drawn:

1. The path coefficient between work stress and emotional intelligence of -0.033 indicates that although there is a relationship, the relationship is very weak and tends to be negative, meaning that the higher the work stress, the emotional intelligence tends to decrease slightly.
2. The path coefficient between thermal comfort and emotional intelligence of 0.384 indicates that the higher the level of thermal comfort, the higher the emotional intelligence.
3. If the path coefficient is positive, it means that when the value of the independent variable increases, the value of the dependent variable also tends to increase. If the path coefficient is negative, it means that when the value of the independent variable increases, the value of the dependent variable tends to decrease.

Coefficient of Determination (R²) and Evaluation of Goodness of Fit

The coefficient of determination (R²) test is a test used to measure how much the dependent variable used in the study is influenced by the independent variable and variables outside the research model. In short, the coefficient of determination is used to show the predictive power of the research path model.

The R² value ranges from 0 to 1. The closer the value is to 1, the greater the influence of the independent variable on the dependent variable. The R² value in this study can be seen in the following table:

Table 7
R-Square Value

	R-square	R-square adjusted
KES	0.151	0.083
KG	0.243	0.149

Table 7 shows that teacher performance as a dependent variable has an R-squared value of 0.243 or 24.3%. This shows that 24.3% of changes in employee performance variables can be explained by the variables of work stress, thermal comfort, and emotional intelligence. The remaining 75.7% can be explained by other variables not included in this study.

In addition to being an independent variable, emotional intelligence is also included in the dependent variable. Emotional intelligence as a dependent variable has an R-squared value of 0.151 or 15.1%. This shows that 15.1% of changes in the emotional intelligence variable can be explained by the variables of work stress, thermal comfort. The rest, 84.9%, can be explained by other variables outside this study.

$$Q^2 \text{ value} = 1 - (1 - R^2) \times (1 - R^2)$$

$$Q^2 \text{ value} = 1 - (1 - 0.149) \times (1 - 0.083)$$

$$= 0.232$$

From the calculation results, it is known that the Q^2 value is 0.232, meaning that the magnitude of the diversity of research data that can be explained by the structural model is 23.20%, while the remaining 76.8% is explained by other factors outside the model.

Table 7
GoF

Variables	AVE	R Square
SK	0.656	
KT	0.695	
KG	0.730	0.243
KES	0.662	0.151
Average	0.6857	0.197

$$\begin{aligned} \text{The GOF value is } & \sqrt{0.685 \times 0.197} \\ & = 0.3675 \end{aligned}$$

According to Tenenhaus (2004), a small GoF value is 0.1, a medium GoF value is 0.25, and a large GoF value is 0.38. The result of the GoF calculation is 0.367 or 36.75%. This shows that the model obtained is good for making predictions. This means that the model has a high ability to explain empirical data.

Hypothesis Testing

Hypothesis testing is a test conducted to determine whether the hypothesis that has been formed in the study is accepted or rejected. Hypothesis testing can be done by comparing the P value with the significance value (α) in the Smart PLS bootstrapping menu. A P value that is smaller or equal to the significance value (α) indicates that the hypothesis is accepted, while a P value that is greater than the significance value (α) indicates that the hypothesis is rejected. The results of hypothesis testing in this study are presented in Table 8 below

Table 8
Hypothesis Testing Results

Independent Variables	Dependent Variable	Significance Value	Information
Job Stress	Emotional Intelligence	0.894	Rejected
Thermal Comfort	Emotional Intelligence	0.038	Accepted
Job Stress	Teacher Performance	0.044	Accepted
Thermal Comfort	Teacher Performance	0.294	Rejected
Emotional Intelligence	Teacher Performance	0.002	Accepted

From table 8 above, the direct influence of each variable can be explained according to the previous hypothesis formulation, namely as follows.

1. The effect of work stress on emotional intelligence

The results of bootstrapping testing on the variable of work stress on emotional intelligence show a P value of 0.894 or greater than 0.050. This proves that work stress

does not have a significant effect on emotional intelligence. Therefore, hypothesis 1, which states that work stress affects emotional intelligence, is rejected (H1 is rejected).

2. The effect of thermal comfort on emotional intelligence

The results of bootstrapping testing on the variable of work stress on emotional intelligence show a P value of 0.038 or less than 0.050. This proves that thermal security has a significant effect on emotional intelligence. Therefore, hypothesis 2, which states that work stress affects emotional intelligence, is rejected (H2 is accepted).

3. The effect of work stress on teacher performance

The results of bootstrapping testing on the variable of work stress on teacher performance show a P value of 0.044 or less than 0.050. This proves that work stress has a significant influence on teacher performance. Therefore, hypothesis 3, which states that work stress affects emotional intelligence, is accepted (H3 is accepted).

4. The effect of thermal comfort on teacher performance

With the results of bootstrapping testing on the thermal comfort variable on teacher performance, the P value is 0.294 or greater than 0.005. This proves that thermal comfort does not have a significant effect on teacher performance. Therefore, hypothesis 4 which states that thermal comfort affects teacher performance, is rejected (H4 is rejected).

5. The influence of emotional intelligence on teacher performance

With the results of bootstrapping testing on the emotional intelligence variable on teacher performance, the P value is 0.002 or less than 0.050. This proves that emotional intelligence has a significant influence on teacher performance. Therefore, hypothesis 5, which states that work stress affects emotional intelligence, is rejected (H5 is accepted).

To see the indirect influence in this study, we use specific indirect influences, which can be seen in Table 9.

Table 9
Indirect Influence

	Original Sample (O)	Sample Mean (M)	Standard Deviation (STDEV)	T Statistics (O/STDEV)	P values
KT -> KES -> KG	0.022	0.023	0.102	0.216	0.024
SK -> KES -> KG	-0.002	0.008	0.058	0.033	0.005

SmartPLS 4.0 Output

1. The effect of thermal comfort on teacher performance through emotional intelligence, based on the results of bootstrapping testing, shows that the P value is 0.024 (less than 0.05). Therefore, it can be concluded that the effect of thermal comfort on teacher performance through emotional intelligence is significant. Therefore, hypothesis 6, which states that thermal comfort affects teacher performance through emotional intelligence, is accepted (H6 is accepted).
2. The effect of work stress on teacher performance through emotional intelligence, based on the results of bootstrapping testing, shows that the P value is 0.005 (less than 0.05). Therefore, it can be concluded that the effect of work stress on teacher performance through emotional intelligence is significant. Therefore, hypothesis 7, which states that work stress affects teacher performance through emotional intelligence, is accepted (H7 is accepted).

Results

In this study, researchers also used a measuring instrument. The image is a data report from a temperature and humidity measuring instrument. This tool is used to monitor temperature and humidity conditions in a room or a certain area over a certain period.

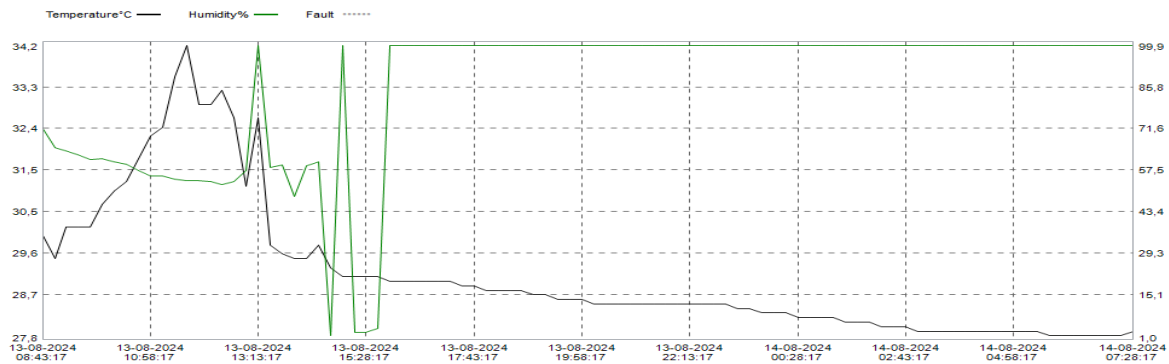


Figure 2
Temperature And Humidity (One Class)

Meanwhile, the results of the temperature and humidity test tool are:

X-axis: Shows the time span of the measurement, in this case from August 13, 2024 to August 14, 2024. The vertical lines divide the time into certain intervals, possibly every hour or a few minutes.

Y-axis: Divided into two axes:

Temperature (degrees Celsius): The black line shows the temperature change over time. There is a significant temperature fluctuation, with the highest value being around 34.2 degrees Celsius and the lowest being around 27.8 degrees Celsius.

Humidity (%): The green line shows the change in humidity. The humidity value also fluctuates, with the highest value approaching 100% and the lowest value approaching 1%.

The measurement results in several classes and in one of the classrooms at 08:41:45, the temperature was 27.7°C and the humidity was 64.0%. While at 12:56:45, the temperature was 34.2°C and the humidity was 54.2%. Based on the data, at 08:41:45, the thermal conditions can be considered slightly uncomfortable because the temperature and humidity are not ideal. At 12:56:45, the thermal conditions are very uncomfortable because the temperature is very high and the humidity is not ideal. The results of the PMV measurement show that the PMV value in the Binawirawan Catholic Middle School classroom is outside the comfortable range

The Effect of Work Stress on Emotional Intelligence

These results indicate that a person's level of work stress does not directly affect their ability to manage emotions or emotional intelligence. Other factors may play a greater role in shaping a person's emotional intelligence. Goleman (2001) in his book "Working with Emotional Intelligence" states that emotional intelligence (EQ) only contributes 20% to success, while 80% is the contribution of other strength factors, including intellectual intelligence (IQ). Aghdasi et al. (2011) found that emotional intelligence did not directly affect work stress. However, emotional intelligence had a negative effect on work stress. This shows that emotional intelligence is not always directly affected by work stress.

The Effect of Thermal Comfort on Emotional Intelligence

These results indicate that thermal safety has a significant effect on emotional intelligence. An environment that is too hot or too cold can cause physiological stress that can interfere with concentration and the ability to think clearly. This, in turn, can affect a person's ability to manage emotions. Optimal thermal comfort can improve mood and reduce negative feelings such as anger, frustration, or sadness. These positive emotions can support the development of emotional intelligence. Fanger (1970) in the PMV model combines four

physical variables and two personal variables to predict thermal comfort. This shows that thermal comfort has complex psychological and physiological aspects.

The Effect of Work Stress on Teacher Performance

These results indicate that work stress has a significant effect on teacher performance. Stress can interfere with teachers' ability to focus on teaching tasks, such as compiling lesson materials, giving instructions, or providing feedback to students. This study is in line with research conducted by Pratiwi (2022), which states that work stress affects teacher performance.

The Effect of Thermal Comfort on Teacher Performance

These results indicate that thermal comfort has no significant effect on teacher performance. Research shows that other factors are more dominant in influencing teacher performance, such as workload, support from administration, or the quality of interpersonal relationships. These factors may exceed the influence of thermal comfort. Most likely, teachers in dry tropical areas do have a higher tolerance level for heat compared to people who live in temperate climates. For that reason, there has been no research examining this, and this is a novelty. These results are supported by the results of PMV measurements on several classes of Temperature and Humidity Range: Temperature ranges from 27.8°C to 34.2°C, while humidity ranges from 1.0% to 99.9%. This range is quite wide, indicating significant fluctuations in temperature and humidity during the measurement period.

Average Temperature: The average temperature is 29.1°C, which indicates quite hot environmental conditions.

Relative Humidity: The average relative humidity was 85.2%, indicating moderately humid conditions. The combination of high temperature and high humidity can increase sensations of heat and discomfort. Teachers who are exposed to environments with significant fluctuations in temperature and humidity, as indicated by these data, have likely developed a high degree of adaptation to these conditions. They may have developed strategies to cope with heat and humidity, such as adjusting their work schedules, wearing appropriate clothing, or seeking shade.

The Influence of Emotional Intelligence on Teacher Performance

These results indicate that emotional intelligence has a significant influence on teacher performance. Emotional intelligence is not only a cognitive ability, but also includes social-emotional skills that are very important in the learning process. Teachers with high emotional intelligence tend to be better able to build good relationships with students, create a positive learning atmosphere, and motivate students to learn. Mangkunegara & Puspitasari (2015): This study found that teacher emotional intelligence has a positive and significant effect on the performance of teachers at Senior High Schools in South Tangerang City. Teachers with good emotional intelligence are able to motivate themselves, have empathy and can build good relationships between school residents, so that they can achieve their performance.

The Effect of Thermal Comfort on Teacher Performance Through Emotional Intelligence

These results indicate that thermal comfort affects teacher performance through emotional intelligence. Good thermal comfort can improve mood and reduce stress, which in turn can improve teachers' emotional intelligence. High emotional intelligence then allows teachers to be more effective in managing the classroom, motivating students, and building positive relationships. Although many studies discuss the effects of thermal comfort and emotional intelligence separately, studies that specifically examine the relationship between these three variables are still relatively limited.

The Influence of Work Stress on Performance Through Emotional Intelligence

These results indicate that work stress affects teacher performance through emotional intelligence. These findings emphasize the importance of the physical environment, especially thermal comfort, in supporting teacher performance. Emotional intelligence acts as a link between thermal comfort and teacher performance. This suggests that a comfortable physical environment can indirectly improve teacher performance through its influence on their emotions and social abilities. Schools need to pay more attention to the quality of the learning environment to create optimal conditions for teachers and students. Research conducted by Swandewi et al. (2024) shows that emotional intelligence has a positive and

significant effect on teacher performance. The results of the study indicate that emotional intelligence has a significant contribution to teacher performance.

CONCLUSION

Teacher performance is not only influenced by one factor, but by a combination of several factors. Work stress, thermal comfort, and emotional intelligence are three main factors that are interrelated and influence teacher performance.

Job stress has a significant effect on teacher performance. Stress can disrupt concentration, disrupt interpersonal relationships, and reduce work motivation. Thermal comfort does not show a significant direct effect on teacher performance. However, thermal comfort has a positive effect on emotional intelligence. A comfortable environment can improve mood, reduce stress, and support the development of emotional intelligence. Emotional intelligence has been shown to have a very significant effect on teacher performance. Teachers with high emotional intelligence are better able to build good relationships with students, create a positive learning atmosphere, and motivate students. This study shows that thermal comfort affects teacher performance through emotional intelligence. A comfortable environment can improve teachers' emotional intelligence, which in turn will improve their performance.

Suggestion

1. **Prioritize Thermal Comfort:** Schools, especially Binawirawam Catholic Middle School, need to allocate sufficient budget to repair and maintain physical facilities, especially air conditioning, ventilation, and lighting systems.
2. **Continuing Professional Development:** Schools/foundations need to organize professional development programs that focus on increasing emotional intelligence and awareness of the importance of a comfortable work environment.
3. **Multidisciplinary Collaboration:** Foundations/schools involve experts from various disciplines (psychology, architecture, environmental engineering) in designing optimal learning environments.

4. Periodic Evaluation: Schools and foundations need to conduct regular evaluations of the conditions of the learning environment and the level of teacher satisfaction with these conditions.

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