

# Classroom Climate: Unique Dependent and Independent Variables

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## ABSTRAK

*Iklm kelas memainkan peran ganda sebagai variabel tergantung dan sebagai variabel bebas. Sebagai variabel tergantung, iklim kelas dipengaruhi oleh beberapa variabel. Di sisi lain, sebagai variabel bebas, iklim kelas berkorelasi dengan variabel lain. Tujuan penelitian ini yaitu untuk mengonfirmasi studi yang telah dilakukan sebelumnya dan memastikan bahwa variabel terkait ini adalah yang harus ditingkatkan atau menjadi dampak dari peningkatan iklim kelas. Jenis penelitian ini yaitu studi literatur yang menelusuri lebih dari 40 artikel tentang iklim kelas yang dilakukan di Indonesia dan negara lain. Teknik analisis data yang digunakan yaitu analisis deskriptif kualitatif. Hasil dari studi ini menunjukkan bahwa di antara variabel yang mempengaruhi atau berkontribusi pada iklim kelas adalah strategi simulasi, sikap siswa, perilaku guru, dan integrasi antara media dan pendekatan pembelajaran. Variabel yang dipengaruhi oleh iklim kelas meliputi perilaku siswa, prestasi siswa, motivasi siswa, hasil belajar, dan perilaku bullying. Oleh karena itu, baik guru maupun kepala sekolah direkomendasikan untuk meningkatkan variabel yang mempengaruhi iklim kelas dan iklim kelas itu sendiri, karena variabel-variabel ini juga akan mempengaruhi variabel lain. Studi ini meyakinkan pembaca bahwa iklim kelas adalah variabel perantara yang merupakan faktor kunci untuk meningkatkan proses pembelajaran.*

## ABSTRACT

Class climate plays a dual role as a dependent and independent variable. As a dependent variable, the class climate is influenced by several variables. On the other hand, as an independent variable, the class climate is correlated with other variables. This research aims to confirm the studies that have been done before and ensure that these related variables must be increased or become the impact of increasing the classroom climate. This type of research is a literature study that explores more than 40 articles about classroom climate conducted in Indonesia and other countries. The data analysis technique used is descriptive qualitative analysis. The results of this study indicate that among the variables that influence or contribute to classroom climate are simulation strategies, student attitudes, teacher behaviour, and integration between media and learning approaches. Variables that are affected by classroom climate include student behaviour, student achievement, student motivation, learning outcomes, and bullying behaviour. Therefore, teachers and principals are recommended to increase the variables that affect classroom climate and the classroom climate itself because they will also affect other variables. This study convinces the reader that classroom climate is an intermediary variable which is a key factor for improving the learning process.

## 1. INTRODUCTION

Talking about the class atmosphere must be connected to leading the class and leading the students. It is caused by the learning atmosphere being a small part of the learning leadership itself. Class is a social environment for students (Iswardhany & Rahayu, 2020; Jaya, 2017; Suprihatin, 2015). In the classroom, there is a process of interaction between students and students as well as students and teachers (Azmidar et al., 2017; Çolak, 2015; Samo et al., 2017). In the classroom, there is also physical

contact where students will be in contact with all the facilities in the classroom. Therefore the class must be well-designed to create a pleasant student environment (Daumiller & Dresel, 2019; Levrini et al., 2021; Yudhiantara & Saehu, 2017). The learning process is a set of learning activities carried out by students (students). Students carry out learning activities under the guidance of the teacher. The process of teaching and learning in the context of formal education is a radar effort and is intentional and well-organized in order to achieve the institutional goals carried out by the institution carrying out the educational mission (Chen et al., 2020; Churchill et al., 2013; S. Y. Wang et al., 2018). The teacher's task in the classroom is mostly to teach students by providing optimal learning conditions. Optimal learning conditions can be achieved if the teacher can manage students and teaching facilities and control them in a pleasant atmosphere to achieve lesson objectives (Anugrahana, 2020; Supriyoko et al., 2022).

A good class can create a situation that allows children to study hard and is the starting point for successful teaching (Indrianto & Fatmawati, 2020; Wahyu et al., 2020; Wiguna, 2017). An adequate class organisation is needed to create an atmosphere that fosters interest and motivation and improves learning achievement (Indrianto & Fatmawati, 2020; Sulistyaningsih et al., 2018). Managing a classroom is an attempt to create and maintain optimal learning conditions. Classroom management aims to create conditions that allow teaching management to take place optimally (Alaviah et al., 2016; Colidiyah, 2018; Larasati, 2018). Managing an effective class is an absolute prerequisite for an effective teaching and learning process to occur. As the person in charge of the success of the teaching and learning process, the teacher should be able to help the teaching and learning activities run smoothly so that the expected results are achieved (Shabrina & Lestarinigrum, 2020; Usman & Anwar, 2021).

A teacher must be able to manage his students well when in class, meaning setting the learning atmosphere in such a way that each student gets service according to his needs and achieves maximum educational results effectively and efficiently (Aimah et al., 2017; Alaviah et al., 2016; Colidiyah, 2018; Larasati, 2018). Thus, classroom management will create a comfortable, peaceful, calm classroom atmosphere and encourage students to learn effectively; such an atmosphere is the starting point for student success in teaching and learning. A good learning atmosphere is that learning can run as well as possible (Aslan, 2021; Indrianto & Fatmawati, 2020; Sulistyaningsih et al., 2018). In the classroom, there is also physical contact where students will relate to all the facilities in the classroom. Therefore the class must be designed in such a way by the teacher so that the class is a pleasant environment for students (Dahlan et al., 2020; Tanang & Abu, 2014).

Specific study of classroom climate has been widely developed in developed countries such as America since 1979 (Moos, 1979), and developed in Australia (Fisher & Fraser, 1982). From these two sources, studies on classroom climate have expanded to other countries such as Spain, the Netherlands, Canada, Chinese (Kang & Zhu, 2022). Many of these studies have been carried out in elementary schools up to high schools. In Indonesia, this study has begun to develop, be implemented and developed to improve the quality of learning implementation at the pre-school, primary, secondary and tertiary levels. Studies on classroom climate are still generally exploratory studies, or correlational studies. These studies are limited to being carried out by students at the undergraduate, masters and doctoral levels of education. Other research are studies on classroom climate that are used to assist teachers in improving the classroom climate (Alamos et al., 2022; Hadiyanto & Martini, 2018; Kurt et al., 2022). These studies have relatively consistent steps that can be standardized as the main steps of a classroom climate improvement study. The last-mentioned study carried out not only stated the importance of the classroom climate, but also made efforts to improve the classroom climate so that the improvement could be beneficial for improving the quality of learning in schools.

Several studies have shown that class climate as an independent variable affects several other variables (dependent variable). For example, a study shows that the classroom climate, along with other variables, has an effect on students' learning motivation (Aryanti & Muhsin., 2020). However, the class climate on the other hand also acts as a dependent variable which is influenced by other independent variables. For example, a study conducted by López-González et al. shows that classroom climate is a mediator variable between attention and academic performance (López-González et al., 2018). In addition, it was also found that the classroom climate is influenced by the competence of the teacher. While the classroom climate also affects critical thinking (Hadiyanto & Martini, 2018). Since the central role of class climate among other variables, both as dependent and independent variables, it is necessary to be convinced through a comprehensive study to find out what variables affect class climate, and what variables are influenced by class climate. This research is a new effort to convince researchers and policy makers to care and make improvements to the factors that affect the classroom climate, as well as to improve the classroom climate itself because this class climate variable affects other variables. This study aims to analyze studies that have been conducted before and ensure that these related variables are those that must be improved or become the impact of improving classroom climate.

## 2. METHOD

This study is a literature review conducted by reviewing more than 40 articles on the relationship between class climate and other variables, including variables that affect and are influenced by class climate. The articles were identified from databases such as ScienceDirect, Google Scholar, e-journals, and Mendeley. Furthermore, the articles were chosen through snowball sampling to identify additional studies that were not captured in the databases. These articles are the output of studies related to classroom climate, both conducted in Indonesia and outside Indonesia. This study adapts the steps of research literature from Galvan by using the following steps: 1) Scanning the articles to get an overview of each one, 2) Grouping the articles by category, 3) Looking for explicit definitions of key terms in the literature, 4) Paying special attention to review articles based on the topic, 5) Identifying the major trends or patterns in the results of previous studies, 6) Noting how closely each article relates to the topic, 7) Evaluating the reference list for currency and coverage (Galvan, 2017). The data analysis technique used is descriptive qualitative analysis.

## 3. RESULTS AND DISCUSSION

### Results

In the following, two groups of research results and discussion will be presented, namely: 1) the results of studies showing the variables that affect the classroom climate, and 2) the variables that are influenced by the classroom climate. **Variables Affecting Classroom Climate.** Several studies have been carried out and prove that the class climate is a unique variable related to other variables, namely as an independent variable and also as a dependent variable. As the dependent variable, class climate is influenced by other variables such as integration between media and learning approach (Febriyanti et al., 2012), student attitudes (Pelu, 2019), supportive behavior (Mainhard et al., 2011), and simulation strategy (Kocoska, 2010). **Variables Affected by Classroom Climate.** Besides being influenced by the variables mentioned above, the following results and discussion show that the classroom climate also affects other variables related to the learning process in schools.

**The Relationship between Classroom Climate and Student Behavior.** Studies on the relationship between classroom climate and student behavior have been started since 1935, including from Lewin's 1935 report, which stated that behavior is the result of the relationship between the person and the environment. This is supported by Murray who says that the behavior of students is influenced by personality and by the external environment. Murray proposes a model of needs and pressure (press) that can be likened to the person and the environment. Personal needs refer to individual motivation to achieve a certain goal, while the 'press' environment is an external situation that supports or even causes chaos in expressing personal needs (Hardiyanto, 2016).

Several studies that have been conducted show that classroom climate as one of the variables that influence student behavior, including by (Ramadhani, 2020), is related to the influence of classroom climate on student behavior in Islamic Religious Education Subjects at SMAN 1 Bangkinang City. The conclusion of the study shows that students' behavior is related to the classroom climate in which they are surrounded. A further implication of the study shows that student behavior can be improved by creating a more conducive classroom atmosphere or climate as desired by students in general.

**The Relationship between Classroom Climate and Student Achievement.** It is known that learning achievement is influenced by many other variables such as learning styles, available learning facilities, the influence of class climate on learning achievement to be very important issues. In his study, Hyman said that a conducive classroom climate can support: 1) beneficial interactions among students; 2) clarify the experiences of teachers and students; 3) foster a spirit that allows classroom activities to take place well; and 4) support mutual understanding between teachers and students (Hardiyanto, 2016).

Learning achievement of students is actually determined by many factors such as age, ability and motivation, amount and quality of teaching, natural environment in the home and classroom. The Berliner study states that a classroom climate characterized by warmth, democracy and hospitality can be used as a tool to predict student learning achievement (Peters, 2013).

Several studies (Mucherah et al., 2014) (Jamilah & Isnani, 2017) (Ramadhan & Julianto., 2020) (W. Husna, 2019) (Djigic & Stojiljkovic, 2011), showing a link, relationship or positive influence and significant classroom climate on student achievement. The conclusion of several studies mentioned above shows that the learning achievement of students is also determined by the quality of the classroom climate in which they study. A further implication of some of these studies is that student learning achievement can be improved by creating a conducive and better classroom climate as desired by students in their class.

The Relationship between Classroom Climate and Student Motivation. Learning motivation is a strength within a person which is characterized by the emergence of feelings and reactions to achieve goals. With high learning motivation, students can learn optimally. However, the learning motivation of students can become weak or slack, so that learning achievement will decrease or be low. In the learning process, learning motivation is an absolute requirement and plays an important role that gives a passion for learning. Learning motivation is not only a driving force to achieve good results but also contains efforts to achieve learning goals. With learning motivation, each student motivates himself to learn not only to know but also to better understand the learning outcomes. There are several factors that influence learning motivation, namely intrinsic and extrinsic factors. One of the factors that influence learning motivation is the environment. This environment includes the physical and psychological environment of the class which is also known as the class climate.

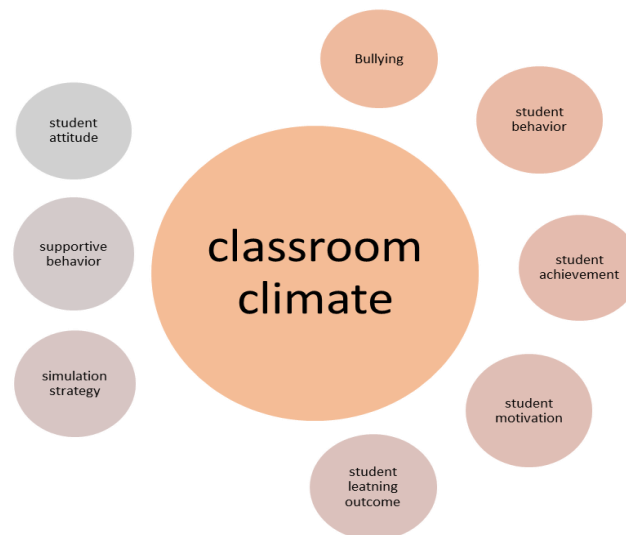
Class climate can create conducive learning, which will encourage and strengthen learning motivation in students. In a comfortable and educative classroom atmosphere, students will feel at home studying in class, don't feel bored quickly and make students excited and motivated to learn. The study stated that there was a significant influence between climate on learning motivation. Other studies that show a link between classroom climate and students' learning motivation include (Sari et al., 2018)(Kristanti & Mambur, 2019)(Aryanti & Muhsin., 2020). The conclusions of these studies show that students' learning motivation is also determined by the quality of the classroom climate in which they study. Thus, students' learning motivation can be increased by creating a conducive and better classroom climate as expected by students.

The Relationship between Classroom Climate and Learning Outcome. Learning outcomes are a very important outcome component in the learning process because learning outcomes are evaluation materials to see the success of students. Learning outcomes are also used as material for planning and implementing further learning. It is defined that student learning outcomes in essence as changes in behavior in the sense of covering the cognitive, affective, and psychomotor fields. Keller said that learning outcomes are changes from the results of personal input in the form of motivation and hope to succeed and input from the environment in the form of motivational design and management has no effect on the amount of effort devoted by students to achieve learning goals. Students can be said to have learned something if there has been a change in them. So learning outcomes are the achievement of learning objectives and as a product of the learning process.

There are several factors that influence learning outcomes, namely internal and external factors. Internal factors consist of learning ability (intelligence), learning motivation, asking and paying attention, attitudes and study habits, perseverance, physical, psychological, and environmental factors. The increase in scores on the class climate scale was followed simultaneously by an increase in the quality of student learning outcomes (Saptiawati & Hadiyanto, 2009). Therefore, improving student learning outcomes can be done by improving the class climate in question. In addition, Husna states that there is a significant influence on class climate and interest in learning on the learning outcomes of students in class XI IPS 1, class XI IPS 2 and class XI IPS 3 by 15.3% (R. Husna et al., 2013). Other studies, show that class climate along with other variables have a relationship with student learning outcomes (Hajerina, 2017)(Ningsih et al., 2021)(Kadarsih et al., 2016). This means that if the learning style and class climate are good, the learning outcomes of students will also be good, and vice versa. From these statements, it can be concluded that the class climate plays a role and affects the learning outcomes of students.

The Relationship between Classroom Climate and Bullying. It has been widely proven in various studies that class climate is one of the variables that influence other variables. One study has proven that the class climate is warm, caring, supportive, controlled, demanding, and cohesive and is one of the variables that has a correlation with bullying, the higher the warmth of the classroom climate, the smaller the students who become victims of bullying (Thornberg et al., 2018). Meanwhile, the findings of the study indicate that classes dominated by male students have more bullying than classes dominated by female students. Female students are generally more adaptive to bullying compared to classes dominated by male students (Cerezo & Ato, 2010). Another study that showed a link between classroom climate and bullying behavior (Lee & Huh, 2014; Lim & Park, 2020). These studies show the important role of teachers in preventing bullying in the classroom and even that linkage is not only at the class level but also at the school climate level (Rahmawati, 2016).

With no intention of discouraging other studies that have been conducted but are not included in this study, several studies have also shown the relationship between classroom climate and strategic variables related to the learning process or educational process in schools. Based on the results and discussions above, a scheme can be made showing that class climate is a unique variable, namely on the one hand it is a variable that is influenced by many variables, on the other hand it is also a variable that affects many other variables, such as which is illustrated in Figure 1.



**Figure 1.** Dependent and Independent Variables of Classroom Climate

The picture above shows how important the position of the classroom climate is in the implementation of education in an educational institution, both at the primary, secondary and tertiary levels. For this reason, the study of classroom climate is very important for teachers and education providers who always want to make the implementation of education in their institutions better and more optimal.

### Discussion

With the aim of finding out what variables affect class climate and what variables are influenced by class climate, this systematic review found four variables that affecting classroom climate, such as integration between media and learning approach, student attitudes, supportive behavior, and simulation strategy. These variables is the different dimensions of affecting variabels on classroom climate. Compared with the study of aspects affecting positives classroom climate in multicultural early childhood education, Khalfaoui et. al. reviewed 14 articles, and identified eight aspects contribute to class climate, such as pedagogical practices, including increased instructional time, teacher-student supportive interactions, peer interactions and friendship, child engagement, teacher training on emotionally-based relationship, suppportive environment and teacher-family trust-based relationship, structural aspects, including small peer group and materials shared among children (Khalfaoui et al., 2021). In the other hand, the result of the study is consistent with the definition of classroom climate that linked to multiple student behavioral, academic, health, and social-emotional outcomes (Alonso-Tapia & Ruiz-Díaz, 2022; Bradshaw et al., 2014).

The second group of result of the study, *first* variable affected by classroom climate is student behavior. There are many studies found that classroom climate affecting students behavior (O'Brennan et al., 2014). Based on study on impact of classroom environment on children's social behavior, that negative classroom climate correlated with children's social behavior (Obaki, 2017). The *second* variable affected by classroom climate is student achievement. The Research Alliance for New York City School recently studied how school's learning environment affect student achievement. The same results of the study is found in different journal. Jafari & Asgari found that there is significant positive relationship between academic achievement and classroom climate (Jafari & Asgari, 2020).

The added that classroom climate has a direct and meaningful effect on student academic achievement. The same result found on others articles (Barksdale et al., 2021)(Gedamu & Siyawik, 2015)(Reyes et al., 2012). Qualitative finding on the study indicated that a relationship did not exist between classroom climate and student mathematics and reading achievement (Barksdale et al., 2021). The *third* variable affected by classroom climate is student motivation. The result of the study is consitent with work of researcers (Jafari & Asgari, 2020)(Lerdpornkulrat et al., 2018)(Pham Thi Anh, 2021)(Q. Wang et al., 2020). Classroom climate by mediating educational motivation has an indirect and significant effect on student academic achievement (Jafari & Asgari, 2020). The *fourth* variabel that affected by classroom climate is learning outcome. The term of learning outcome is common in curricullum development process. It related with the measurable statement that articulate at the beginning what students should know, be able do, or value as a results of taking a subject. How ever, there are articles that

find out that classroom climate have a significant relationship with learning outcome (Wahyuni & Wisroni, 2021).

The *fifth* variabel, classroom climate affecting school bullying. Thornberg, Wanstrom & Jungert studied 1540 5th grade student from 104 classroom in sweden (Thornberg et al., 2018). The finding revealed that girls and students in classes with greater authoritative classroom climate were more inclined to defend. Boy reinforced more as did students in class with more boys and more authoritative classroom climate (Thornberg et al., 2018). De Luca et.al added that negative classroom climate is correspond with teacher competence on bullying can influence calssroom climate (De Luca et al., 2019). Pryce & Frederckson found that bullying were associated with chages in pupils sense of their classroom climate (Pryce & Frederickson, 2013). Realizing the importance of classroom climate both as an influencing variable and as an affected variable, efforts are needed to improve the classroom climate. There are five steps to improve classroom climate by comparing the classroom climate experienced and preferred by students (Fisher & Fraser, 1982). The five steps are: initial assessment (assessment), feedback, reflection and discussion, intervention and reassessment. These steps are actually Steps of Action research to improve classroom climate.

Considering that the steps for improving the classroom climate need to be started from a needs analysis of the need for improvement itself, the author feels the need to complete these steps. For this reason, this study will determine the steps for improving the classroom climate starting from a need assessment, or an analysis of whether or not a process for improving the classroom climate is needed based on a survey. In addition, considering that this study also develops the necessary instruments, the steps that will be used are a combination or adaptation of the Steps (Fisher & Fraser, 1982), and the 4-D Steps, namely Define , Design, Develop, and Dissemination (Thiagarajan, 1974), as well as the steps of development research which include: Analyze, Design, Develop (Branch, 2009). Implements, Evaluate (ADDIE). From the adaptation of the steps proposed by these experts, the syntax for improving the climate for high school classes that will be developed is: 1) Need Analysis, 2) Instrument Arrangement, 3) Assessment, 4) Feedback, 5) Reflection and Discussion, 6) Treatment, 7) Evaluation, 8) Dissemination.

*First, Need Analysis.* Needs analysis is a process to ensure that a change, in this case an improvement in the classroom climate in a work or school institution, is needed or not. To get this, researchers can conduct initial data collection as a preliminary study to the subject (teachers and students), and the research location (school) where the research will be carried out. Data collection is carried out by distributing special measuring tools for this need assessment. Second, *Instrument Arrangement.* Once it is known that a school needs improvement in the classroom climate, a research instrument is drawn up. Research instruments are made in 2 forms, actual and preferred forms. Two kinds of instruments, namely the actual classroom climate instrument and the preferred classroom climate instrument. These sets of instruments need to be tested for validity and reliability. Third, *Assessment.* The initial assessment or pre-test is carried out by distributing two types of instruments, were distributed to students and teachers. The actual form is distributed first, then followed by the preferred form some time or the following week. This can also be done by distributing the actual form to half of the students and the preferred form to the other half of the students. Fourth, *Feedback.* After the research data was processed, the class teacher was notified of the results of the analysis, both the results of the actual and the preferred form. At this stage the teacher can find out whether there is a significant difference between the class climate experienced and the class climate that students want. If there is a difference, and maybe the difference on a certain scale is very striking, the teacher can think about the need for changes to reduce the gap on that particular scale.

Fifth, *Reflection and Discussion.* At this stage the teacher is involved in both formal and informal discussions with other teachers about their teaching profile and discusses the need for improving the classroom climate. Teachers may choose which scales need to be prioritized for improvement and which scales need to be maintained according to the needs of students at that time. For example, on the innovation scale there is a marked difference between the actual and what students want, the teacher decides to reduce this gap by increasing classroom innovation. Meanwhile, teachers or other classes can choose another scale to plan intervention, for example on the satisfaction scale or the democracy scale. Sixth, *Treatment.* After the teacher chooses, for example, to improve classroom innovation, the teacher then makes that effort, for example by providing information more often about new findings in the field of learning technology and implementing them in the classroom. At this step, collaboration between teachers and researchers is needed, and if necessary, other parties, such as experts or resource persons related to the scale to be increased, are needed. This step can take two to three months, or depending on the needs. In other words, the more the scale will be changed, the longer it will take the teacher.

Seventh, *Evaluation.* After the teacher feels that the intervention steps are sufficient, the researcher or teacher conducts a reassessment or posttest by redistributing the actual form of the class

climate measurement tool. The results of the reassessment or posttest are then compared with the results of the first assessment or pretest. If there is a significant difference between the classroom climate experienced by students before and after the improvement intervention, then the improvement step can be said to be successful. However, if there is no significant difference, the teacher can repeat this step until he is sure there is an increase on the scale as he wants. Eight, *Dissemination*. Dissemination or dissemination of information is the process of informing or informing other parties, inside and outside the school, that the improvement process for the improvement intervention has been successful and provides higher results (posttest) than the pretest before the improvement intervention. This step is intended so that the success achieved can be imitated or replicated by other teachers, parties, or institutions. Thus, success information is not only for the school concerned, but can also be enjoyed and carried out by other institutions. In one research activity, if the 7th step (evaluation) has not produced optimal results, it can be repeated to the 5th step (reflection and discussion), as a second cycle activity, or even a third cycle, to produce the desired ideal outcome.

Based on the systematic review and various studies reviewed, it can be concluded that classroom climate is influenced by multiple variables, including integration between media and learning approach, student attitudes, supportive behavior, simulation strategy, pedagogical practices, teacher-student supportive interactions, peer interactions and friendship, child engagement, teacher training on emotionally-based relationship, supportive environment, teacher-family trust-based relationship, small peer group, and materials shared among children. Classroom climate is linked to multiple student behavioral, academic, health, and social-emotional outcomes. The variables affected by classroom climate include student behavior, achievement, motivation, learning outcomes, and school bullying. However, the relationship between classroom climate and academic achievement may not be consistent across studies. Additionally, negative classroom climate can be associated with negative outcomes, such as bullying. Teachers and schools should consider the importance of creating a positive classroom climate and implementing effective practices to achieve positive outcomes for students.

#### 4. CONCLUSION

*First*, student attitudes, supportive behavior, and simulation strategy are among the correlated variables that affect classroom climate. *Second*, student behavior, learning achievement, motivation, outcomes, and bullying can be influenced by the classroom climate. *Third*, to improve the classroom climate, it is necessary to take steps such as analyzing the need for improvement, developing instruments to assess the current climate, providing feedback, reflecting and discussing with teachers, implementing improvement, conducting evaluations, and disseminating information to other teachers. With the adaptation and adoption which later lead to the new syntax, it is hoped that researchers, teachers or school principals can use these steps in order to improve the classroom climate in each institution that requires it.

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