Measuring School Climate in the Era of Industrial Revolution 4.0: A Statistical Analysis

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Abstract. School climate is a key factor in shaping a student's identity. The fourth industrial revolution has been a hot topic in addressing today's student challenges. Today's reality shows that human resource development is a major focus of organizations in addressing environmental change. Social problem symptoms are often caused by demotivate environment among secondary students. The school climate has a great impact on student self-esteem. This is not only for oneself but for the organization as a whole, including humanity and the unity of ummah. The main objective of the study is to investigate the influence of school climate on student self-esteem based on the strategies and practices used at the school. This quantitative approach employs survey design using questionnaire as a research instrument. A total of 368 respondents from religious secondary schools were tested using descriptive and inferential statistics. The correlation between variables physical environment, community and leadership were tested. The study found that school climate has a significant impact on student self-esteem. Then regression analysis was used to predict the contribution from each variable. The contribution of this study is obvious as the resulting outcomes can be capitalized as guidelines as the level of student achievement influence by high school climate implementation. Therefore, school climate studies should be conducted in order to establish a concept that can be used by all types of schools in Malaysia to create a good identity. The implications of this study are to shape the good generation who are ready to complement their individual capabilities in addressing the challenging industry 4.0 challenges.

Key words: school climate, industri revolution 4.0, physical environment.
1. Introduction
In the history of development economics, school climate has been thought of as a key factor used in school.

Research on school climate has emerged to a great extent from three conventions: hierarchical, school impacts, and mental, each creating to some degree various definitions and models of school climate [1]. Hierarchical writing is established in grant on the mental climate of business associations [2]. It depicts the view of individuals from the school and the impacts on their conduct, most regularly estimated through educators' view of the school condition [3]. Interestingly, researchers in the school impacts investigate custom view school climate as school-level qualities inside the more extensive school culture that separates compelling and insufficient schools [4]. At last, inquire about from the mental custom has contributed instruments that measure the view of understudies and educators, regularly referencing a definition or model from another exploration convention however without unequivocally testing a hypothetical model.

The possibility of connections inside the school is another focal part of school climate. Connections offer association, backing, alliance, and belongingness. These characteristics of connections between individuals in various job bunches in the school, including between understudies what's more, staff, mirror the convictions and estimations of its individuals and may impact the practices, choices, and commitment designs crosswise over job gatherings. Thusly, view of connections is a second significant segment of school climate. Factors identified with connections are nearly all around incorporated into school climate models and scientific classifications. These incorporate educator alliance [2], connections crosswise over job bunches inside the school [4]–[6] associations with guardians and the network [7], the idea of collaborations and the casual principles that oversee them [8], and joint effort and participation [9].

2. Literature Review
A study on school climate has been widely examine since 1908 by Arthur Perry to provide students with a quality learning environment. School climate also encourage fellow administrators to make it their school's responsibility to provide something more than just a home. Research on school climate experiences conflicting definitions and scientific categorizations, and school climate has frequently been conflated with related attributes, for example, school setting, structures, also forms. In the former areas, we portrayed basic topics that rose up out of explore on school climate and featured the presumptions of basic school climate models. Our proposed hypothetical structure for school climate depends on topics recognized in conceptual framework (Figure 1). In this hypothetical structure, we arrange school climate inside the school microsystem and recognize a variety of natural factors that may add to its advancement.
2.1 Physical environment
Physical condition depicts the physical and basic highlights, support, and assets of a school and is impacted by the board of school initiative and by assets in the more extensive network [10], [11]. These variables may help shape impression of the school; be that as it may, we contend that these substantial, physical attributes of the school are logical parts of the microsystem and may give proof of qualities and convictions that are regular to the school network as opposed to as a piece of school climate itself. The physical introduction and support of the school building might be straightforwardly watched and estimated. Exceptional presentations of understudy work and accomplishments, proof of school pride including standards or grants from games groups, or regular territories pure by spray painting and litter make a situation that conveys messages about the mutual convictions of a school with respect to its worth and reason [12].

2.2 Community
Communities can be defined as the quality of relationships between school members (teachers, students, and administrators) that influence student behavior and achievement. Relationships between students and teachers influence their relationships in class, self-esteem, and grades. Aspects community of the school climate also refer to the quality of relationships within the school such as relationships among students, teachers, staff, parents and the surrounding community. It also includes school networks, respect for each other, tolerance between the school and parents, and sharing with other members of the community [13], [14].

The formation of a school climate emphasizes the behavior of the surrounding community. Ibn Khaldun emphasized the practice of social behavior as the behavior or actions of the community will affect the behavior of students [15]. The events surrounding the students will influence their behavior. If they are in a good situation, then the other students will follow the good example and vice versa. In summary, community is the environment of individuals living in one place and interacting with each other that engages in interpersonal relationships, enabling behavioral change. This environment involves elements of cooperation, mutual help, sharing of ideas, and feelings of love [14], [16].
2.3 Leadership
Leadership is the most powerful factor in shaping the school environment and making the school effective [17]. School climate and leadership are two very important things [18]. In recent decades, organizational culture has drawn on themes from anthropology, sociology, social psychology, and cognitive psychology. It has become a field of its own and is closely linked to the broader cultural studies that have been nurtured by globalization in recent times.

Principals play a significant role in promoting and fostering a positive school climate for staff, teachers, students, and parents. Positive school climate has an impact on the educational environment and can improve teacher and staff performance and improve student achievement. Previous studies have found that school effectiveness starts with strong leadership, good school climate and effective communication. Thus, elements of leadership, good curriculum learning and indirect community attitudes can influence academic achievement as well as student attitudes [18].

2.4 Student outcomes
In this research, student outcomes typically refers to the ideal learning goals or standards that schools and teachers want students to achieve via holistic achievement such as academic, cocurricular and attitude. The instructive, cultural, and life impacts that outcome from understudies being taught [19]. In the first case, student outcomes are the intended goals of a course, program, or learning experience in school. In the second case, student outcomes are the real outcomes that students either achieve or fail to accomplish during their training or later on throughout everyday life.

3. Methodology
The aim of this paper attempts to measure school climate in the era of industrial revolution 4.0 for enhancing learning with innovative way by incorporating big data framework in utilizing various sources of information and knowledge in education setting. A variety of methods are used to assess school climate. Each has its advantage and drawbacks to see how learning environment can engage with the current trend of big data era, we created this model by examining literature reviews from peer-reviewed journals, books and conference papers by using keywords school climate and student outcomes. Systematic literature review was conducted to integrate, evaluate and interpret the findings of multiple research studies. As a result, a statistical analysis was conducted by using questionnaire. By the end of survey period, data had been collected from 368 students in Islamic secondary school. Ideas extracted to identify their common features, elements, and functionalities can be integrated and used to propose a reference model.

4. Result and Discussion
The discussion of the results begins with descriptive analysis. Table 1 shows the mean of the overall level of school climate strategy in this study that are at a high level. This analysis shows the mean, and standard deviation values. Student outcomes (M = 4.20, SD = 0.35), Physical environment (M = 4.31, SD = 0.53), Community (M = 3.90, SD = 0.71) and Leadership (M = 4.30, SD = 0.57). Overall, the level of school climate strategy is at a high level.
Table 1. Descriptive statistic

|                      | Mean | SD   | Interpretation |
|----------------------|------|------|----------------|
| Student outcomes     | 4.20 | 0.35 | High           |
| Physical environment | 4.31 | 0.53 | High           |
| Community            | 3.90 | 0.71 | High           |
| Leadership           | 4.30 | 0.57 | High           |

**Figure 2**: Descriptive statistics

The overall response to this question was very positive. The correlation between physical environment and student outcomes is significant ($r=0.50$). The correlation between community and student outcomes is significant ($r=0.55$). The correlation between leadership and student outcomes is significant ($r=0.49$). The empirical findings in this study provide a new knowledge of school climate. The results of the correlation analysis pointed that there was have relationship between the responsibility factors of student outcomes with any of the school climate factors. However, the results also revealed that responsibility factor is the major contributor towards student outcomes.

Table 1. Correlation

|                     | Student outcomes | Physical environment | Community | Leadership |
|---------------------|------------------|----------------------|-----------|------------|
| Pearson correlation |                  |                      | 0.55      | 0.49       |
| Student outcomes    | 1.00             | 0.50                 | 0.55      | 0.49       |
| Physical environment| 0.50             | 1.00                 | 0.65      | 0.73       |
| Community           | 0.55             | 0.65                 | 1.00      | 0.65       |
| Leadership          | 0.49             | 0.73                 | 0.65      | 1.00       |

This regression analysis aims to see the difference in influence that exists between independent variables and dependent variables. The analysis involved three variables (leadership, physical
environment, and community relations). From this analysis the variants can tell whether the model is able to contribute significantly or not to the dependent variables created. These findings will be of broad use to scientific and biomedical communities of the two predictor variables. The findings show that these three variables contribute significantly to student suicide. The three variables are community (β = 0.34, sig = 0.00) physical environment (β = 0.16, sig = 0.01) and leadership (β = 0.16, sig = 0.02) as shown in Table 3 below.

Table 2. Coefficient

| Model | Unstandardized Coefficients | Standardized Coefficients | T | Sig. | R² | Effect % |
|-------|----------------------------|---------------------------|---|------|----|---------|
|       | B                          | Standard error            | Beta | T     | Sig. |        |
| 1     | (Constant)                 | 3.15                      | 0.085 | 37.135 | 0.000 |        |
|       | Community                  | 0.27                      | 0.021 | 0.551  | 12.624 | 0.000 |
| 2     | (Constant)                 | 2.75                      | 0.122 | 22.454 | 0.000 |        |
|       | Community                  | 0.19                      | 0.028 | 0.390  | 6.949  | 0.000 |
|       | Physical environment       | 0.16                      | 0.037 | 0.247  | 4.392  | 0.000 |
| 3     | (Constant)                 | 2.67                      | 0.13  | 21.11  | 0.000 |        |
|       | Community                  | 0.17                      | 0.03  | 0.34   | 5.81   | 0.00   | 0.30   | 30.3% |
|       | Physical environment       | 0.11                      | 0.04  | 0.16   | 2.46   | 0.01   | 0.34   | 33.8% |
|       | Leadership                 | 0.10                      | 0.04  | 0.16   | 2.42   | 0.02   | 0.35   | 34.9% |

a. dependant variabel: student outcomes

5. Conclusion

The conclusions can be drawn from the present study about school climate is a good approach for current generation in this era. This study has given bits of knowledge on the connection between school climate and student outcomes among Islamic secondary school; therefore it is significant in a few regions. Firstly, there is a lack of studies examining school climate and student outcomes among Islamic secondary school; in actuality this investigation is the first of its sort in the state Kelantan. This study will contribute to the progression of the group learning by filling in as a further research apparatus to depict a scope of impacts with respect to school climate and student outcomes among Islamic secondary school. Secondly, in terms of practice and policy improvement, this examination can possibly give rules to both the state and the government of Malaysia in defining better terms and states of administration for the students explicitly in Islamic secondary schools. The conclusions of this study could serve as a guide in the administrators’ understanding of how the school climate affects their student outcomes. In addition, to the extent preparing and approach improvement, this research can offer principles to all of Islamic secondary school.

Finally, this investigation means to build the domain of information by testing the theoretical constructs of student outcomes and school climate as they applied to Islamic secondary school. However, the results of this research have implications not only for the principals of the schools that participated in the study, but also for all principals in the field that strive in providing a positive school climate and care about their student outcomes. It is hoped that the outcome of the study will help principals and students to better understand the relationship between school climate and student outcomes. Additionally, the findings would be useful to the State Education Office as it manages the educators and the schools under their consideration to more readily comprehend the hierarchical circumstance of the schools. Likewise the exploration results, would give them bits of knowledge to more readily help principals. These findings
also be useful to the Ministry of Education as explanation behind future change in policies and education system development.

Reference

[1] T. P. L. Salle, J. Meyers, K. Varjas, and A. Rouch, “A Cultural-Ecological Model of School Climate,” Int. J. Sch. Educ. Psychol., vol. 3, no. 3, pp. 157–166, Jul. 2015.

[2] W. K. Hoy and J. W. Hannum, “Middle School Climate: An Empirical Assessment of Organizational Health and Student Achievement,” Educ. Adm. Q., 1997.

[3] J. M. Aldridge, K. Mchesney, and E. Afari, “Relationships between school climate, bullying and delinquent behaviours,” Learn. Environ. Res., 2017.

[4] K. M. Rudasill, K. E. Snyder, H. Levinson, J. L. Adelson, J. L. Adelson, and J. L. Adelson, “Systems View of School Climate: a Theoretical Framework for Research,” Educ. Psychol. Rev., vol. 30, no. 1, pp. 1–26, 2017.

[5] G. W. McGiboney, The Psychology of School Climate. 2016.

[6] T. N. Sulak, “School climate: the controllable and the uncontrollable,” Educ. Stud., vol. 44, no. 3, 2018.

[7] National.Education.Association, “Importance of School Climate,” Natl. Educ. Assoc., pp. 1–4, 2013.

[8] M. O’Malley, A. Voight, T. L. Renshaw, and K. Eklund, “School climate, family structure, and academic achievement: A study of moderation effects,” Sch. Psychol. Q., vol. 30, no. 1, 2015.

[9] S. Ghavifekef and N. Sheila, “The relationship between school ’ s organizational climate and teacher ’ s job satisfaction : Malaysian experience,” Asia Pacific Educ. Rev., vol. 17, no. 1, pp. 87–106, 2016.

[10] K. J. Zullig, R. Collins, N. Ghani, J. M. Patton, E. Scott Huebner, and J. Ajamie, “Psychometric support of the school climate measure in a large, diverse sample of adolescents: A replication and extension,” J. Sch. Health, 2014.

[11] K. J. Zullig et al., “Preliminary development of a revised version of the School Climate Measure,” Psychol. Assess., 2015.

[12] Y. Kondakci and H. Sivri, “Salient characteristics of high-performing Turkish elementary schools,” J. Educ. Adm., vol. 52, no. 2, pp. 254–272, 2014.

[13] Ting. L. S., “Hubungan Persekitaran Kekeluargaan Dengan Pencapaian Akademik Pelajar Siam Sekolah Menengah,” Tesis doktor Falsafah UPM, 2003.

[14] Wang, M.T., Degol, J.L, School Climate : A Review of the Construct , Measurement , and Impact on Student Outcomes. Educational Psychology Review, 2016.

[15] Ibn Khalidun. Abd Ar Rahman bin Muhammed ibn Khalidun. translated by Franz Rosenthal, The Mughaddimah. 1969.

[16] J. P. Preston, “Community involvement in school: Social relationships in a bedroom community,” Can. J. Educ., vol. 36, no. 3, pp. 413–437, 2013.

[17] Gu Saw Lan, “The Relationship Between Instructional Leadership Behaviour, School Climate And Teacher Efficacy In Secondary Schools In Kedah,” 2014.

[18] Kelly&Robert C, “Relationships Between Measures Of Leaderships And School Climate,” J. Sch. Res. Inf., no. 1979, pp. 1–7, 2005.

[19] C. K. Tanner, “Effects of school design on student outcomes,” J. Educ. Adm., 2009.