Exploring Positive Classroom Climate Factors for Technical Education in the SEAMEO Country Region

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Abstract

The classroom climate is an important factor of effective classroom management. Although there are some uncertainties about the cause and effect of classroom management, the relationship established between the classroom climate and many other aspects of academic activities makes the classroom climate a valuable organizing principle for enhancing instruction. A quantitative research method was employed to identify the effective classroom climate factors for technical education in the 11 SEAMEO countries. A cross-sectional survey design was used with principal component analysis (PCA) approach to analyze data from 855 technical education students. Four components were explored namely: Teachers' Effective Instructional Management (TIM), Student Learning (SL), Students' Interpersonal Skills (SIS) and Teachers' Professional Practices (TPP). The linear and multiple regressions were used to test hypotheses. The results pave the way for further actions on classroom management techniques, pedagogical and content knowledge.

Key Words: classroom climate, technical education, teachers, factor

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Introduction

Education is a long-term investment in hope of getting productive returns later on. Specifically, technical and vocational education and training (TVET) plays an integral part of education in equipping youth with concrete skills and knowledge for immediate work (Subrahmanyam, 2020). TVET institutions are growing rapidly to provide relevant skills and competencies for youth in hope of finding out decent jobs for subsistence livelihood. Therefore, TVET might produce productive people for knowledge society.

As part of TVET system, TVET teachers are the frontline to ensure TVET system relevant and quality. Teachers have potentials and power to pave the way to manage the classroom making decision of any certain kinds of technological tools, teaching methods, and the levels of subject matters can be applied to students (Ottestad, Kelentrić, & Guðmundsdóttir, 2014). Teachers are the driving force for skill development among TVET students within the classroom (Paryono, Heusinger, & Bock, 2017). Both teachers and students satisfy with the current situation of classroom climate interacted between them (Djigic & Stojiljkovic, 2011). To enable favorable changes within the classroom, teachers and students might develop closer and better relationships to get positive expectations (Laslett & Smith, 2002). Therefore, teachers' behaviors to students within the classroom might reflect the students' learning outcomes increasing their satisfaction levels to teachers (Barr, 2016).

Classroom context can shape student learning and experience during a class hour (Reichert, Chen, & Torney-Purta, 2018). Classroom climate can be productive or not depending on teachers and students to steer it. Classroom climate can be a positive factor to ensure that students learn productively during each class hour (Wheelock, 2005). Teachers can enhance student learning within the classroom to ensure the productive environment with necessary skill acquisition (Paryono et al., 2017). In other words, students should be active in initiating and exchanging ideas and searching for interesting and relevant learning contents for classroom learning (Djigic & Stojiljkovic, 2011). Hence, teachers might play more active in coordinating, managing and leading the classroom to achieve the objectives of lesson plans during each class hour.

Classroom climate is the standard, norm, beliefs, and rituals that teachers and students can feel and do academic activities (Wheelock, 2005). Classroom climate encompasses the aspects of teachers' behaviors, teaching methods, disciplinary enforcement, and interaction between teachers and students (Djigic & Stojiljkovic, 2011). Classroom climate is the environment

requiring teachers and students to communicate each other by discussing, writing, speaking, making gestures, and explaining in a mutually respected way (Martin, 2002; Erdogan & Kurt, 2015). The main elements of classroom climate are students, teachers, their relationships, teachers' classroom management styles, activities and interaction, and classroom norms (Mithans & Grmek, 2020). The interactions among teachers and students within the classroom and their engagements in the lesson plans developing an individual sense of collective community create classroom climate (Barr, 2016). Classroom climate might be one of the indicators measuring the school success and quality service deliveries (Petrík, 2019). The positive classroom climate is based on mutual respect, caring, appreciation, and consultation among teachers and students (McLeod, Fisher, & Hoover, 2003). Thus, positive classroom climate is shaped by productive interactions between teachers and students within the classroom with effective communication, cooperative learning, and mutual supports (Huang, 2021).

There are different strategies and techniques for effective classroom climate management. Three types of classroom management consist of personality, teaching and discipline (Djigic & Stojiljkovic, 2011). Each type has the same three descriptions including interventionalist, non-interventionalist and interactionist. Four golden rules are always implemented by outstanding teachers for classroom climate management (Laslett & Smith, 2002; McManus, 1989). They are (1) getting them in, greeting, seating, and starting; (2) getting them out, concluding, and dismissing; (3) getting on with it, content, and manner; and (4) getting on with them, who's who, and what's going on.

Classroom climate can be positive according to teachers who effectively inspire, encourage, and manage the classroom (Petrík, 2019). However, many countries have not provided rigorous supports for TVET teachers technically and financially (Paryono et al., 2017). There were a few focuses for the course on classroom climate management techniques for teacher education program (Tauber, 2007). There are ineffective classroom management techniques reflecting negative classroom climate (Boynton & Boynton, 2005; Sowell, 2013). There is limited classroom climate quality such as overcrowded classes, and poor appearance in some Swedish schools hindering students learning (Danielski, Svensson, Weimer, Lorentzen, & Warne, 2022). In addition, some classroom climate factors are not pronounced well such as regulations and procedures for effective classroom climate (Marzano, 2005). The effective factors of classroom climate are always neglected without tackling important points of fostering a motivation climate and professional learning community (Shindler, 2010). Unproductive classroom

climate is one of the root causes of student dropouts and disengagement in classroom activities (Lerdpornkulrat, Koul, & Poondej, 2018). Ineffective factors of classroom climate management enable teachers to leave their profession (Ingersoll & Smith, 2003; Oliver & Reschly, 2007). Lack of competences and skills in implementing effective instructional practices hinders productive classroom climate (Conroy & Sutherland, 2012). Therefore, negative classroom climate might fail students at risk for academic and social failure (Lane, Wehby, & Cooley, 2006; Conroy & Sutherland, 2012).

Instructional processes are the social activities as teachers should be mindful of the effectiveness and quality of those activities ensuring student learning (Henry, 2022). To unsure the classroom climate safe, inspiring, polite, and productive, classroom regulations and procedures should be spelled out engaging students and teachers to develop them (Marzano, 2005). To this end, the findings will provide insights for stakeholders to be considered. Policy makers and curriculum developers will design the classroom climate management strategies functionally. School management will be alerted to effective factors of classroom climate management to provide rigorous and consistent supports. Teachers will be guided academically on what classroom climate management techniques should be applied. Students will better understand teaching methods, engage and involve more actively in the classroom activities. Finally, positive and productive classroom climate will be reached as teachers follow an interactionist style (Djigic & Stojiljkovic, 2011).

Positive classroom climate promotes learning processes and developing students' thinking skills (Khalfaoui, García-Carrión, & Villardón-Gallego, 2021). Positive classroom climate requires active interaction and communication between teachers and students within the classroom following teachers' instructions and guidelines (Ginner, Ferrer-Wreder, & Allodi, 2021). The climate can change students' mindset gradually pushing up social, emotional and academic development (Rucinski, Brown, & Downer, 2018). Positive classroom climate also motivates students learning enabling them to actively engage in the class activities (Lerdpornkulrat et al., 2018). Therefore, classrooms with strict disciplinaries affects students' self-efficacy resulting in a reduction of students' achievement gap (Cheema & Kitsantas, 2014).

The research objective is to identify effective classroom climate factors for technical and vocational high schools. One research question is that "What are the effective classroom climate factors for technical education in the 11 SEAMEO member countries?"

There are four hypotheses for testing as follows:

H1: Teachers' effective instructional management (TIM) influences student learning (SL).

H2: Teachers' professional practices (TPP) predicts students' international skills (SIS).

H3: Students' interpersonal skills (SIS) predict student learning (SL).

H4: Teachers' effective instructional management (TIM), students' interpersonal skills (SIS), and teachers' professional practices (TPP) affect student learning (SL).

Literature Review

Classroom climate involves interpersonal relationships and interaction between teachers and students following the classroom regulations and procedures (Petrík, 2019). Many theories and frameworks have been raised to describe what effective factors of classroom climate management are. However, the literature encompasses a wide variety of concepts and theories, this review will depict four main topics that can be seen recurrently throughout the literature review. The literature highlights the topics in different settings and situations requiring this study to specifically go into each effective factor and their relationships. The lack of recent initiatives suggest that existing classroom climate management factors might not respond to the emerging problems.

Effective Factors of Classroom Climate Management

There are a variety of existing factors addressing classroom climate management raised by research. The effective school management performance doesn't ensure quality education as the positive classroom climate might entail increased academic achievements (Oliver & Reschly, 2007). The key factors of classroom climate include instructional management, students' interpersonal skills, and teachers' professional practices (Mira-Galvañ & Gilar-Cobi, 2021; Carbonero, Martín-Antón, Román, & Reoyo, 2010; Martin & Dowson, 2009; Jennings & Greenberg, 2009). A quasi-experimental study in Israel employing pre-test and post-test model to 204 for experimental group and 106 for control group found that teachers' motivation effectively reflects positive classroom climate (Hugerat, Kortam, Kassom, Algamal, & Asli, 2021). The classroom climate factors in Spain covered teacher support for student learning, teacher and student participation, and affiliation (Jiménez et al., 2021). Positive classroom climate focuses on instructional communication and interaction consisting of teachers' instructional management and professional practices, and students' interpersonal skills within a classroom (Johnson, 2009). Another study found that classroom factors encompassed teacher effective instructional practices and positive relationship between teachers and students within

a classroom (Conroy, & Sutherland, 2012). Therefore, there is a variety of empirical studies capturing effective factors employing different research settings and research methods.

Teachers' Effective Instructional Management and Teachers' professional Practice

Three domains of teachers' professional practice encompass classroom management discipline and socialization (Woolfolk & Weinstein, 2006; Egeberg, McConney, & Price, 2021). For teachers' professional practice, the practical skills can be enhanced in collaboration between teachers and industries by implementing a joint project funded by industries (Subrahmanyam, 2020). Teachers' competencies influence students' competencies in terms of content, pedagogical, and technological knowledge (Brust-Nemet & Velki, 2016). Teachers' instructional management and professional practice such as classroom regulation enhancement and motivation might influence productive classroom climate (Ingemarson, Rosendahl, Bodin, & Birgegård, 2020). Wyatt (2016) undertook a quantitative study to six high school instructors found that teachers supported and communicated functionally within a classroom ensuring effective instructional management and professional practices. Finally, teachers' effective instructional management reflects students' academic achievements (Morin, Marsh, Nagengast, & Scalas, 2014).

Teachers play important roles in to ensure positive classroom climates encouraging an interaction and communication between their peers and teachers and students as parts of instructional management and professional practices within a classroom (Johnson, 2009). Teacher effective professional practice and their effective instruction are predictors of positive classroom climate (Wang, Li, Luo, & Zhang, 2020). Teachers' effective professional practices engage student learning building positive teacher-student relationship (Conroy & Sutherland, 2012). Thus, teachers play an integral part in ensuring the effective classroom climate.

Student Learning and Students' Interpersonal Skills

Students develop their interpersonal skills within the classroom with peer interactions (Huang, 2021). Interpersonal skills such as teamwork, problem-solving, communication and entrepreneurship are crucial to support students' academic achievements (Subrahmanyam, 2020). Huang (2021) employing structural equation modeling (SEM) to 312 Chinese students identifying the effect of classroom climate and learning effectiveness found that teachers provided rigorous supports to student learning. Mithans and Grmek (2020) using the descriptive statistics to 58 secondary school students in Slovenia found that students learn a lot by actively involving in the class activities assigned by teachers creating a positive classroom

climate. Therefore, the better relationship between teachers and students reflects student learning (McLeod et al., 2003).

Positive classroom climate encourages behavioral changes developing better relationships between teachers and students (Laslett & Smith, 2002). Interpersonal skills among students within the classroom result from effective classroom climate (Mira-Galvañ & Gilar-Cobi, 2021). A case study research to examine the effectiveness of teachers teaching at-risk students creating positive classroom climate found that positive classroom climate reflects student learning (Pierce, 1994). Another mixed method study in Spain analyzing the process of classroom climate and motivation was enhanced found that students learn and have responsibilities academically within the classroom (Valero-Valenzuela, Camerino, Manzano-Sánchez, Prat, & Castañer, 2020). A positive classroom climate is resulted from peer relations and communications building up students' interpersonal skills to enhance their learning (MacLeod, Yang, Zhu, & Shi, 2018).

The Relationships between Effective Classroom Climate Management Factors

Effective classroom management establishes positive relationship among teachers and students engaging student learning (Egeberg et al., 2021). Owusu, Dramanu, and Amponsah (2021) employing the descriptive statistic approach to examine the classroom management strategies to 48 Ghana teachers and 297 students identified the good relationship between teachers and students reflecting students' academic performance. A quantitative study to 160 Pakistani teachers using the descriptive statistics found that teachers' instructional management enhance students learning (Qamar, Arshad, Ahmad, & Ahmad, 2018). Teachers' pedagogical knowledge influences positive classroom climate (Brust-Nemet & Velki, 2016). Indoor plants push up positive classroom climate contributing to students learning (Danielski et al., 2022). Finally, teachers' instructional management reflects student learning (Centre for Education Statistics and Evaluation, 2020).

Another quantitative study exploring students' perceptions of classroom climate factors to 650 German high school students found that teachers' effective instructional management and teachers' professional practices influenced positive classroom climate (Hoffmann, Närhi, Savolainen, & Schwab, 2021). Positive interaction and communication between students and teachers within a classroom enhancing student learning and developing their interpersonal skills (Berkowitz, Moore, Astor, & Benbenishty, 2017). A qualitative study in South Korea to identify the perception of students and teachers on the classroom climate revealed that positive

classroom climate expressing the important roles of teachers and students reflected student learning outcomes (Misco, 2016). Kwitonda (2017) exploring the foundation aspects of classroom climate in Rwanda to 529 students employing structural equation modeling approach suggested that teachers' activities such as effective instructional management and professional practices reflected classroom democracy and learning developing students' interpersonal skills. Therefore, classroom climate factors are intertwined one another grounded from different contexts and research approaches targeting a common goal that is student learning.

Research Methods

Research methods are used to explore results scientifically as follows:

1. Data Collection

Data was collected in a google form sent to participants and coordinators to facilitate the collection process. Researchers sent the consent letter along with the google form to relevant organizations to facilitate data collection in the 11 SEAMEO member countries. The google form for data collection is effective and time providing a quick and easy form of collection (Creswell, 2012). The random sampling approach was used targeting the participants. The google form questionnaire was sent to facilitators and then facilitators passed google form link to target participants following the request from researchers.

Data collection facilitators are teachers, principals and administrators of the 77 Southeast Asian vocational and technical high schools. The 77 vocational and technical high schools cover 11 SEAMEO member countries consisting of Brunei Darussalam, Cambodia, Indonesia, Laos PDR, Malaysia, Philippines, Singapore, Myanmar, Thailand, Timor-Leste, and Vietnam.

2. Research Instrument

To collect data from participants, the google form questionnaire was used. The research instrument was adapted from Zbar, Marshall and Power (2007) to ensure the content validity. Content validity refers to the extent that the instrument measures what it tends to measure (Leedy & Ormrod, 2010).

The google form questionnaire obtained an introduction section, classroom climate factors, and demographic information. For classroom climate factors, there are 43 items for rating. The likert type 5-poin scale was used such as 1 (strongly disagreed), 2 (disagreed), 3 (not sure), 4 (agreed), and 5 (strongly agreed). For example, item 1 specified "My teachers treat students in

class fairly". Item 2 mentioned "My teachers help me with my work". Finally, the demographic information was used to ensure the sample representing the population.

3. Participant Selection

855 participants as technical education students currently studying at technical and vocational high schools in the 11 SEAMEO member countries were accessed for data collection. The larger the sample size for over 500 participants the more representative it is (Balnaves & Caputi, 2001). Certain participants were selected to fill out the google form questionnaire following the criteria of currently studying any trade at technical and vocational high schools in the 11 SEAMEO member countries, and volunteering to fill out the form. The participants were accessed following the consent forms under a coordination of their school management and facilitators. Researchers sent content forms by emails to their school management and supervising ministry officers to seek permissions for online data collection with a deadline of returning the completed form. Frequent emails and What's up messages were also sent.

4. Data Analysis

The SPSS version 25 was used to analyze quantitative data. The cross-sectional survey design was employed to explore data on point in time (Creswell, 2012). Interestingly, principal component analysis (PCA) was used to answer research questions. To test four hypotheses, linear and multiple regressions were used.

5. Findings

Findings highlight the results of data analysis. Among the 11 SEAMEO country members, 362 (42.3%) participants as technical students are from Singapore, followed by 244 (28.5%) from Cambodia and 219 (25.6%) from Viet Nam. Male participants account for 57.3%. Mostly participants age 17 (28%), followed by age 16 (17%) and age 18 (20.1%). For trades, 282 (33%) participants major in Mechanics/Electronics/Electricity/Manufacturing as 294 (34.4%) major in other fields. 521 (60.9%) participants are from polytechnic college as 303 (35.4%) participants are from Vocational and technical high schools. Finally, 372 (43.5%) participants are in grade 10 (year 1 at vocational and technical high schools) as 300 (35.1%) are in grade 11 (year 2).

The 43-item scale reported a reliability Cronbach Alpha of $\alpha=0.974$ (n=855). It means an excellent internal consistency within the scale of all items. The KMO test for classroom climate factor scale of 43 items yielded a score of 0.980 that was greater than 0.6. Furthermore, the

Bartlett's Test of Sphericity yielded a significant level of 0.000 which was less than 0.05 (P<0.05). Thus, the collected data fit the factor analysis.

The Kolmogorov-Smirnov and Shapiro-Wilk's test are used to decide a sample coming from the population ensuring the data normal distribution. In this case, The Kolmogorov-Smirnov and Shapiro-Wilk's test were statistically significant for all 43 items with level of 0.000 (P<0.05). This meant that a set of data was normally distributed being appropriate for further analysis. The single-factor test was conducted with the non-rotation for a fixed number of one factor to check common method variance of data set. The result of Harman's single-factor test indicated that all 43 items didn't load into one common factor with its total variances of 49.398 before the total variances explained didn't exceed 50%. As shown in **Table 1**, the eigenvalues of 60.15% explain the total variances for four factors.

Table 1. Total Variances Explained (N=855)

Component	Initial Eigenvalues		
	Total	% of Variance	Cumulative %
1	21.241	49.398	49.398
2	1.788	4.158	53.556
3	1.757	4.085	57.641
4	1.079	2.508	60.150

The rotated component matrix in **Table 2** shows four components with a category of scores as the option blank was employed (.50), which forces SPSS not to emerge any correlations which are less than .50. The low correlation was removed automatically.

Table 2. Rotated Component Matrix (N=855)

No.	Items	Components			
		1	2	3	4
1	My teachers put a lot of energy into teaching our class	.741			
2	My teachers give me helpful comments about my work	.716			
3	My teachers tell me when I make a mistake	.696			
4	My teachers explain things clearly to me	.694			
5	My teachers encourage me to improve my standard of work	.694			
6	My teachers are inspiring to listen to	.671			
7	My teachers are well-prepared	.670			
8	My teachers show me how to do things when I am having difficulties	.649			
9	My teachers keep control of my classes in a firm but pleasant way	.647			
10	My teachers make me work hard	.646			

No.	Items				
11	My teachers praise me when I do well	.628			
12	My teachers take time to help me when I have trouble with my work	.614			
13	My teachers make the work we do in class interesting	.576			
14	My teachers acknowledge me when I do well	.545			
15	I feel I have much to be proud of		.753		
16	On the whole I am satisfied with myself		.746		
17	I feel I have a number of good qualities		.683		
18	I take a positive attitude towards myself		.639		
19	I respect myself		.625		
20	Learning in my school is fun		.609		
21	I try very hard in school		.602		
22	I enjoy the work I do at school		.598		
23	I look forward to going to school		.594		
24	I am accepted by others at this school		.554		
25	I am keen to do extremely well at my school		.549		
26	Doing well in my school is extremely important to me		.539		
27	I get on well with others at my school		.523		
28	I have not been deliberately hit or kicked by another student recently			.773	
29	I have not been bullied at my school recently			.743	
30	I have not been teased recently at my school			.685	
31	Other students never spread rumors about me at my school			.579	
32	My teachers give me challenging work which I am expected to finish				.700
33	My teachers are easy to understand				.534
34	The work I do is well-organized				.525
35	My teachers expect high standards of work from me				.501

One research question namely What are the positive classroom climate factors for technical and vocational high schools? Responding to the question, four factors consisting of teachers' effective instructional management (TIM), student learning (SL), students' interpersonal skills (SIS) and teachers' professional practices (TPP) as shown in **Table 3**.

Table 3. Grounded Factors and Inter-Item Correlation in Magnitude

No.	Items	Grounded Factor	Inter-Item Correlation in Magnitude
1	My teachers put a lot of energy into teaching our class		
2	My teachers give me helpful comments about my work		

3	My teachers tell me when I make a mistake	Teachers' Effective Instructional Management (TIM)	60%
4	My teachers explain things clearly to me		
5	My teachers encourage me to improve my standard of work		
6	My teachers are inspiring to listen to		
7	My teachers are well-prepared		
8	My teachers show me how to do things when I am having difficulties		
9	My teachers keep control of my classes in a firm but pleasant way		
10	My teachers make me work hard		
11	My teachers praise me when I do well		
12	My teachers take time to help me when I have trouble with my work		
13	My teachers make the work we do in class interesting		
14	My teachers acknowledge me when I do well		
15	I feel I have much to be proud of	Student Learning (SL)	58%
16	On the whole I am satisfied with myself		
17	I feel I have a number of good qualities		
18	I take a positive attitude towards myself		
19	I respect myself		
20	Learning in my school is fun		
21	I try very hard in school		
22	I enjoy the work I do at school		
23	I look forward to going to school		
24	I am accepted by others at this school		
25	I am keen to do extremely well at my school		
26	Doing well in my school is extremely important to me		
27	I get on well with others at my school		
28	I have not been deliberately hit or kicked by another student recently	Students' Interpersonal Skills (SIS)	62.9%
29	I have not been bullied at my school recently		
30	I have not been teased recently at my school		
31	Other students never spread rumors about me at my school		
32	My teachers give me challenging work which I am expected to finish	Teachers' Professional Practices (TPP)	55.4%
33	My teachers are easy to understand		
34	The work I do is well-organized		
35	My teachers expect high standards of work from me		

Hypothesis 1: Teachers' effective instructional management (TIM) influences student learning (SL).

Figure 1. Hypothesis 1 Model

To test hypothesis 1, a linear regression was used because the two variables are continuous. The results indicate that the regression model predicts the dependent variables significantly well with β=0.818; t=41.47; F(1, 853)=1720.23; p=0.000. It is statistically significant because the regression model run with p=0.000, which is less than 0.05. It fits the data well. This means that teachers' effective instructional management (TIM) influences student learning (SL), as shown in **Figure 1**.

Hypothesis 2: Teachers' professional practices (TPP) predicts students' interpersonal skills (SIS).

Figure 2. Hypothesis 2 Model

To test hypothesis 2, a linear regression was used. The results indicate that the regression model influences the dependent variables significantly with β=0.655; t=25.334; F(1,853)=641.825; p=0.000. It is statistically significant because the regression model run with p=0.000, which is less than 0.05. It fits the data well. This means that teachers' professional practices (TPP) predicts students' interpersonal skills (SIS), as shown in **Figure 2**.

Hypothesis 3: Students' interpersonal (SIS) skills predict student learning (SL).

Figure 3. Hypothesis 3 Model

To test hypothesis 3, a linear regression was employed. The results indicate that the regression model predicts the dependent variables with β=0.818; t=41.476; F(1,853)=1,720.230; p=0.000. It is statistically significant because the regression model run with p=0.000, which is less than 0.05. It fits the data well. This means that students' interpersonal (SIS) skills predict student learning (SL), as shown in **Figure 3**.

Hypothesis 4: Teachers' effective instructional management (TIM), students' interpersonal skills (SIS), and teachers' professional practices (TPP) affect student learning (SL).
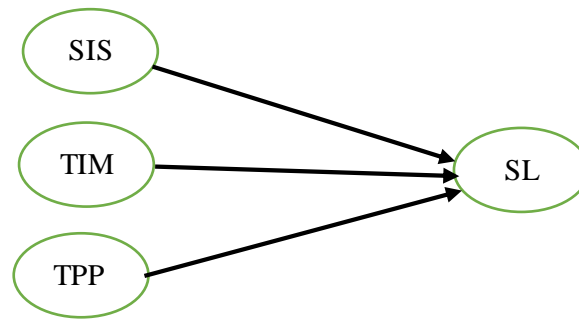
Figure 4. Hypothesis 4 Model

The multiple regression was employed to test hypothesis 4. Following Table 4.5, R^2=0.702 (70.2%) that three independent variables (SIS, TIM, and TPP) explain 70.2% of the variability of one dependent variable (SL).

Three independent variables (SIS, TIM, and TPP) statistically significant predict one variable (SL) with $F(3,851)$=0.12, p=0.000 ($p<0.05$). This means that the regression model is a good fit of data. All three independent variables (TIM, TPR, and SIS) influence one variable (SL) well. It is statistically significant with p=0.000 ($p<0.05$). The standardized coefficients β=0.574 for teachers' effective instructional management (TIM), β=0.213 for teachers' professional relationship (TPP), and β=0.118 for students' interpersonal skills (SIS).

Discussion and Conclusion

Effective teaching requires firmness, caring, and warmth from teachers to ensure positive classroom climate (MacLeod et al., 2003). Teachers should not use the punishment to gauge the student learning as a classroom management strategy (Owusu et al., 2021). The results underline teachers' effective instructional management (TIM), student learning (SL), students' interpersonal skills (SIS) and teachers' professional practices (TPP). The effective factors reflect positive classroom climate with active and productive participation from teachers and students in the classroom. It might be due to the strict classroom regulations and school rules of each SEAMEO member country.

The results were consistent with previous literature. There are five effective factors ensuring positive classroom climate consisting of student learning, students' interpersonal skills, and students' competitiveness for the best academic performance (Zedan, 2010). In line with hypothesis 2 that teachers' professional practices reflecting student learning, professional practices of computing skills enable positive classroom climate (MacLeod et al., 2018). Positive classroom climate pushes up students' academic achievements with student learning

(López-González, Amutio, & Herrero-Fernández, 2018). Teachers have their effective instructional management within the class enabling student learning (Aydin & Karabay, 2020). Students and teachers have productive relationship with each other for student learning creating positive classroom climate (Walker & Graham, 2021). Students' learning styles as inter-personal skills and learning strategies predict student learning (Cheema & Kitsantas, 2016). Therefore, supportive relationships between teachers and students might enable positive classroom climate engaging student learning (Conroy & Sutherland, 2012).

The findings of this study shed light of some limitations for consideration. For research participants, 74.4% is Singaporean students rating the questionnaire. This might be due to students' interests and their masteries in technological skills in filling out the google form questionnaire. There are some academic majors that students belong to but they rated *others* 34.4% dominating other particular majors. This means that more participants study other academic majors out of the rating list. 60.5% of participants study at polytechnic schools. Most of the polytechnic schools have technical and vocational high schools inside. Therefore, research drawbacks can be acceptable for scientific results because data represents generalization.

Reflecting the results, relevant policies and frameworks on teachers' professional development programs should be developed and enhanced to support classroom climate management (Subrahmanyam, 2020). Diversities of classroom context such as different instructional methods from time to time and different classroom regulations with different activities should be considered to nurture students learning (Reichert et al., 2018). If students play active roles during an instructional process in the classroom, a productive, inspiring, and learning classroom climate will be reached (Djigic & Stojiljkovic, 2011). In other words, TVET teachers should be committed to upgrade competencies continuously to catch up with new emergence of technologies and labor market needs (Subrahmanyam, 2020). Training TVET teachers about the effective instructional practices and providing them with support system such as mentoring and coaching can help support positive classroom climate (Conroy & Sutherland, 2012). To expose TVET teachers to effectively professional development programs, incentives and career progress/pathway linkage should be considered (Subrahmanyam, 2020). If the people-centered and people-oriented environment can be achieved, an inclusive community and equitable access to opportunities for all can be reached to spur economic growth for ASEAN people (ASEAN, 2016). Therefore, positive classroom climate can be reached with active and

participation and contribution from principals, teachers, students and school administrators (Reichert et al., 2018).

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Conflict of Interest

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