Chapter 21

SCHOOL CLIMATE IN INDONESIAN JUNIOR SECONDARY SCHOOLS

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This chapter describes the working environments in an Indonesian junior secondary school context. Using the Indonesian version of the School Level Environment Questionnaire (SLEQ), the study found that teachers view their school environments positively on all scales, except that of Staff Freedom. A comparison between actual and preferred perceptions showed statistically significant differences on all scales, except Staff Freedom and Work Pressure. Teachers prefer a working environment that provides more student support, better affiliation among teachers and other staff, strengthens their professional interest, provides teachers with greater opportunity to participate in decision making, has better resources, places more emphasis on accomplishing tasks, and offers more innovation. It was also found that urban school teachers viewed their school environment less favourably than did their counterparts in rural and suburban schools. Statistically significant differences were found on the Participatory Decision Making and Work Pressure scales. Urban and suburban school teachers participated more in their schools' decision making, and perceived greater work pressure in their working place than did teachers at urban schools. Finally, based on subject taught the study indicated that generally non-science teachers held a more positive view of their working environment on all scales, except Staff Freedom, than did biology and physics teachers. Biology teachers shared similar views to Physics teachers on four scales, namely, Students Support, Affiliation, Professional Interest, and Innovation. On the other hand, biology teachers perceived more Staff Freedom and Work Pressure, but less Participatory Decision Making and Resource Adequacy than did physics teachers. This study suggests that these findings should be used as a starting point for improving working environments in rural, suburban, and urban schools in Indonesia.

1. Introduction

> *Much like the air we breathe, school climate is ignored until it becomes foul* (Freiberg, 1998).

The working environment or school climate may influence teachers in conducting their teaching processes and thus determine student learning and student outcomes. The notion that learning environment plays an important role can be found in the science curriculum documents of Indonesian lower secondary schools. Explicitly, it is stated that along with teacher, teaching methods, curriculum, and resources, the learning environment (natural, social and cultural) determines teaching and learning processes and thus in turn influences students' outcomes (Kurikulum sekolah lanjutan tingpat pertama: Petunjuk pelaksanaan proses belajar mengajar [Curriculum for lower secondary school: Guide for conducting teaching and learning process], 1994). This notion parallels the findings of research emphasising that a good school environment is linked with student achievement. The simple assumption is that if teachers have a good working environment, then better student achievement will result. For example, Brookover, Schweitzer, Schneider, Beady, Flood, and Weisenbaker (1978) suggested that the quality of school climate could influence the behaviour of all participants and particularly students' academic achievement. Purkey and Smith (1985) noted that research is persuasive that student academic performance is strongly affected by school culture. Furthermore, Hughes (1991) emphasized that every school has a pervasive climate, which influences the successful outcomes of behaviour of teachers and students in teaching and learning.

Freiberg's (1998) notion of the marginalisation of school climate as a factor that determines learning process is rendered in the practice of an Indonesian educational context. Despite acceptance of the notion that school environment is vital for enhancing teaching and learning processes, only a few studies of school environment have been done in Indonesia. Therefore, more research in this area is needed in the Indonesian educational context. Accordingly, this study was done to fill this gap and to provide evidence of the importance of school environment upon teaching and learning processes in schools.

2. Theoretical and Historical Background

2.1. The importance of school environment

School environment is defined as a set of factors that give each school a personality, a spirit, a milieu, a culture and an atmosphere (Fisher & Fraser, 1990; Tye, 1974). Over the last three decades, school environment has consistently been identified as one of the main factors that affect the effectiveness of a school (Creemers, Peters, & Reynolds, 1989). In conjunction with curriculum, resources, and leadership, the school environment plays a significant role in creating a school's effectiveness. The better the school environment, the more effective is the school. This notion is confirmed by the findings of various studies. For example, Fisher and Fraser (1990) believed that the improvement of school environment could enhance school effectiveness, and in turn provide students with better learning.

Freiberg (1998) claimed that a healthy school climate contributes to effective teaching and learning. Establishment of a conducive school working environment enables all members of the school community to teach and learn at optimum levels. Van de Grift, Houtveen, and Vermeulen, (1997) measured instructional climate in 121 Dutch senior secondary schools and showed that student achievement in mathematics is positively influenced by students' enjoyment of maths, attitude toward high grades, appreciation of teachers' efforts, and an orderly instructional climate. Atwool (1999) suggested that a school climate, wherein children have the opportunity to establish meaningful connections within the school environment, is pivotal to enhance student ability to learn, to facilitate appropriate behavior and has the potential to counteract the impact of difficulties at home. Moreover, Samdal, Wold, and Bronis, (1999) have also identified three aspects of psychosocial school setting as predictors of students' perception of their academic achievement. These are students' satisfaction with school, students' feeling of appropriate teacher expectation, and a good relationship with their fellow students. They suggested that interventions that enhance the students' satisfaction with school are likely to improve their achievement as well. Hoy and Hannum (1997) claimed that school environment with better teacher affiliation, resource support, academic expectation, and institutional integrity promoted better student achievement. Furthermore, Sweetland and Hoy (2000) indicated that school climate which has

strong teacher empowerment is crucial for school effectiveness thus affecting student achievement.

Past research has also provided evidence of the association between school environment and student satisfaction and achievement. Generally, student achievement and satisfaction are greater in the schools that have better student support. It is asserted that more effective and satisfying student learning is significantly linked to teachers' friendliness and supportiveness (Griffith, 2000; Hoy, Tarter, & Bliss, 1990; Moos, 1979; Stockard and Mayberry, 1992). In turn, student satisfaction leads to positive attitudes toward subject matter. Papanastasious (2002) found that school climate has a direct and indirect effect on student attitude toward science.

2.2. Instruments for assessing school environment

The development of instruments to describe organisational working environments can be traced back to the late 1950s when Pace and Stern (1958) developed the *College Characteristics Index* (CCI) to measure students' or teachers' perceptions of 30 environmental characteristics. Based on this instrument, Stern (1970) constructed the *High School Characteristics Index* (HSCI) to measure high school climate. Among the existing instruments, perhaps the most widely used instruments for measuring an organisational working environment were the *Organizational Climate Description Questionnaire* (OCDQ; Halpin & Croft, 1963) and the Work Environment Scale (WES; Moos, 1974). Later, these two instruments were used as a basis for the development of new instruments, namely, *School Level Environment Questionnaire* (SLEQ; Rentoul & Fraser, 1983) and *School Organisational Climate Questionnaire* (SCOQ; Giddings & Dellar, 1990) that are more suitable to a secondary school environment.

2.3. The descriptions of the original SLEQ

When they developed the School Level Environment Questionnaire (SLEQ), Rentoul and Fraser (1983) recognised and considered the potential strength and problems associated with the existing school environment instruments. Therefore, they explored the SLEQ's validity through intensive interviews with teachers, to ensure that dimensions and individual items covered what teachers saw as salient, and that only material which was specifically relevant to the school was included.

They also attempted to achieve questionnaire economy by keeping to a relatively small number of reliable scales, each containing seven items. In order to capture all aspects of school environment, the SLEQ also covers Moos' three general categories of dimensions, namely, relationship, personal development and system maintenance and system change. A description of the scales of the SLEQ is provided in Table 21.1 together with sample items.

Table 21.1. Description of Scales in SLEQ

Scale	Description of Scale	Sample Item
Student Support	There is good rapport between teachers and students, and students behave in a responsible self-disciplined manner.	There are many disruptive, difficult students in the school. (-)
Affiliation	Teachers can obtain assistance, advice and encouragement and are made to feel accepted by colleagues.	I feel that I could rely on my colleagues for assistance if I should need it. (+)
Professional Interest	Teachers discuss professional matters, show interest in their work and seek further professional development.	Teachers frequently discuss teaching methods and strategies with each other. (+)
Staff Freedom	Teachers are free of set rules, guidelines and procedures, and of supervision to ensure rule compliance.	I am often supervised to ensure that I follow directions correctly. (-)
Participatory Decision Making	Teachers have the opportunity to participate in decision-making.	Teachers are frequently asked to participate in decisions concerning administrative policies and procedures. (+)

Table 21.1 (Continued)

Scale	Description of Scale	Sample Item
Innovation	The school is in favour of planned change and experimentation, and fosters classroom openness and individualisation.	Teachers are encouraged to be innovative in this school. (+)
Resource Adequacy	Support personnel, facilities, finance, equipment and resources are suitable and adequate.	The supply of equipment and resources is inadequate. (-)
Work Pressure	The extent to which work pressure dominates the school environment.	Teachers have to work long hours to keep up with the workload. (+)

Items designated (+) are scored by allocating 5, 4, 3, 2, 1, respectively, for the responses Strongly Agree, Agree, Not Sure, Disagree, and Strongly Disagree. Items designated (-) are scored in reverse manner. Omitted or invalid responses are given a score of 3.

2.4 Study using the SLEQ

Many studies employing the School Level Environment Questionnaire (SLEQ) have been conducted and the questionnaire is seen to have maintained its validity and reliability. For example, Fisher and Fraser (1991a) investigated 109 primary and high schools teachers' perceptions of their school environments. They found that primary teachers held more favourable perceptions of their school environment than did high school teachers. Previously, Fisher and Fraser (1990b) presented the validity and reliability of each of the SLEQ scales, and offered a case study that used the SLEQ to improve school environment. They indicated that school environment could be improved by harmonizing the level of teachers' actual and ideal perceptions of their school environments. Furthermore, Dorman and Fraser (1996) used a modified SLEQ to investigate the differences between Catholic and government school environments. With a considerably large sample of 208 science and religion teachers from 32 schools, they maintained that Catholic school teachers viewed their schools as more empowering and higher on

Mission Consensus than government school teachers did. More recently, Templeton and Johnson (1998) have employed the SLEQ to assess school environment of an urban school in the USA to clarify factors that play roles in developing a safer school environment. They indicated that teachers desired more student support, more resources and less work pressure as conditions of a "safer" school environment. In the Indonesian educational context, Irianto (2002) has used the Indonesian version of the modified SLEQ to measure working environment at The Centre for Development and In-service for Science Teachers in Indonesia. He documented that trainers in this institution perceived positively their working environments on five scales, namely, Affiliation, Professional Interest, Mission Consensus, Empowerment, and Innovation and viewed less favourable Resource Adequacy and Work-Pressure scales.

2.5 The objectives of the study

The objectives of this study were to develop and use a questionnaire for assessing school environments in an Indonesian educational context. More specifically, the objectives were formulated in the following research questions:

1. Is it possible to validate and use the Indonesian version of modified SLEQ for measuring school environments in Indonesian lower secondary schools?
2. What are teachers' perceptions of their school environment in Indonesia?
3. In Indonesia, are there any significant differences between rural, suburban and urban school teachers' perceptions of their school environments?
4. Are there any significant differences between science and non-science teachers' perceptions of their school environments in Indonesia?

3. Significance of the Study

This study is distinctive in that it will bring teachers', principals', and school administrators' attention to the importance of working environment to enhance educational practice in their schools.

Hence, the significance of this study is that it will:

1. fill the absence of research particularly in working environment area at urban and rural lower secondary schools in Indonesia;
2. provide information to the Ministry of National Education (MONE) of the Republic Indonesia about the status of rural and urban school working environments, which can be used to formulate further policy;
3. help principals and teachers to improve their practice in conducting science education; and
4. assist principals and teachers to enhance their school working environment.

4. Research Methods

4.1 The development of the Indonesian SLEQ

After conducting an intensive literature review, the SLEQ was chosen as the main instrument for two reasons. First, it has been validated and proven as a robust instrument to measure secondary school environment (Fisher & Fraser, 1990). Secondly, it is relatively simple and easy to administer. The original SLEQ contains 56 items, which disperse equally into eight scales namely, Students support, Affiliation, Professional Interest, Staff Freedom, Participatory Decision Making, Innovation, Resource Adequacy, and Work Pressure.

The teacher needs to spend approximately 30 to 45 minutes to complete the questionnaire. In addition, all statements on the SLEQ are non-threatening so that this feature may enhance a teacher's willingness and honesty in answering the questionnaire.

Modifications were made in order to ensure the instrument's suitability for measuring school level environment in an Indonesian educational context. Those modifications included combining both Actual and Preferred Forms in one package of questionnaire, and a contextual rather than textual translation and back translation of the original version of SLEQ. The integration of both forms of the questionnaire was made to reduce the bias of teachers answering the questionnaire repetitively. It is assumed that when respondents are given similar questionnaires in different times, the later feedback is commonly

inconsistent with the previous. Therefore, integration of both forms was considered in this instrument development.

To ensure that the original meaning of the SLEQ is captured in the Indonesian version, Brislin's (1980) suggestion is observed. First, the first author translated the English version of the SLEQ into the Indonesian language. Second, this translation was given to an independent person who is fluent in both English and Indonesian to be back translated into English. This back translation was compared with the original version of the SLEQ, to check whether or not the Indonesian version of the SLEQ had captured the original one.

4.2 Sampling

A combination of purposive and stratified sampling methods was employed in this study. A stratified sampling method was used to ensure that the sample used in this study was representative of all types of schools. Purposive or purposeful sampling (Merriam, 1990) as a non-probabilistic sampling method was used, with the assumption that the researcher wanted to discover, understand, gain insight and choose the sample which will lead to the most understanding (Merriam, 1990). Consequently, purposive sampling permits the researcher to decide prior to the study who and what schools are to be included in the data collection. In so doing, a consultation with the Ministry of National Education of Kalimantan Selatan was sought. As a result, the samples involved in this study were composed of willing and chosen participants. There were 25 non-science teachers and 106 science teachers of urban and rural junior secondary schools from Kalimantan Selatan, Indonesia.

4.3 Data collection

A questionnaire survey was used as the main data collection method. However, teachers' interviews regarding their work environment were also conducted. The interviews were semi-structured, and were aimed to scrutinize teachers' expressions of their working environment. To increase the validity of the data, the interview transcript was given to the teacher as a method of checking and re-checking.

4.4 Data analysis

Data from the questionnaire survey were analysed using the SPSS 10.0 program. This study also aimed to cross validate the Indonesian version of the SLEQ. Therefore, internal consistency reliability or Cronbach alpha coefficient and mean correlation of each scale were calculated. In addition, an analysis of variance or ANOVA test was also conducted to check whether or not the Indonesian version of SLEQ is able to differentiate different groups of teachers' perceptions. To explore the nature of the working environment of the schools, the mean of the standard deviation of each scale was calculated. Furthermore, the differences between science and non-science teachers', and between rural, suburban and urban school teachers' perceptions of their working environment were also investigated. To increase the robustness of the findings, data from teacher interviews were analysed using interpretive methods.

5. Findings and Discussions

5.1 Validation of the Indonesian version of SLEQ

The final version of the Indonesian SLEQ comprised eight scales in which each scale has seven items. The results for the Indonesian version of the SLEQ are presented in Table 21.2. The final version of the Indonesian SLEQ comprised eight scales in which each scale has seven items. The Cronbach alpha coefficients for all scales ranged from 0.64 to 0.82, except Staff Freedom, Participatory Decision Making, and Work Pressure where the range was from 0.41 to 0.54. These relatively low reliabilities imply that teachers perceived most items in each scale of these three scales inconsistently. While most items in the original SLEQ measure aspects of school environment which are appropriate for western school culture, yet these items may not perfectly fit into Indonesian school culture. For example, the responses to the items in Participatory Decision Making scale are most contradictory of each other. This is probably due to cultural bias which may be held by teachers when they interpreted the item. While teachers in Western countries can provide 'yes' or 'no' answers towards such items or questions that ask about their role in determining their school program, seldom are teachers in Indonesia able to do this. The following interview transcripts support this interpretation.

I: When the school conducts a program, such as additional lessons after school hours, especially for Year nine students, are you and other teachers involved in determining that program?

T: There were many stages to determine a program. First, the school calls for inputs from all teachers about the proposed program. Second, the school invited BP3 (Parent Association) representative to discuses the proposed program. Finally, the school [the principal and his or her staff] organised the program.

Table 21.2. Cronbach Alpha Coefficient (Internal Consistency Reliability), Discriminant Validity, and ANOVA Results of the Actual Form of the Indonesian Version of SLEQ (n = 131)

Scale	Number of Items	Alpha Coefficient	Mean correlation with other scales	Eta^2
Student Support	7	0.64	0.31	0.11***
Affiliation	7	0.67	0.35	0.04**
Professional Interest	7	0.65	0.39	0.09***
Staff Freedom	5	0.54	0.20	0.00
Participatory Decision Making	5	0.48	0.33	0.12***
Innovation	7	0.72	0.45	0.15***
Resources Adequacy	7	0.82	0.37	0.08**
Work Pressure	7	0.54	0.18	0.19***

** $p<0.01$ and *** $p<0.001$

Teacher responses as illustrated in the transcript reveal a 'diplomatic response' rather than a direct yes or no answer. If teachers respond to the questionnaire in this way, no doubt their responses in such scales as Innovation, Staff Freedom and Participatory Decision Making were somewhat variable which resulted in a relatively low scale reliability. Consequently, changes in items are needed, particularly on these three scales for which the reliabilities are less than 0.60, in order to improve their reliabilities. Nevertheless, these values are considered acceptable because of the considerably small sample (Stevens, 1992). Therefore, all 56 items in both actual and preferred versions of the Indonesian SLEQ were maintained for further analysis to explore the nature of school level learning environment.

The mean correlations of all scales ranged from 0.18 to 0.37, with the exception of Innovation which had the highest mean correlation (0.45). These values are comparable to those of previous studies (Irianto, 2002) and show that each scale of the Indonesian SLEQ measures a distinct aspect of the school environment, although overlapping still exists to a degree. Furthermore, the analysis of variance (ANOVA) results show that all scales in the Indonesian SLEQ, except Staff Freedom, are capable of differentiating between perceptions of teachers from different groups. The eta^2 values ranged from 0.04 (Affiliation, $p<0.01$) to 0.19 (Work Pressure, $p<0.001$). These features support the reliability and validity of the Indonesian SLEQ, allowing the claim that the Indonesian SLEQ is a reasonably robust instrument to measure Indonesian secondary schools' environments can be made with confidence, however, it could be improved even more before a future use.

5.2. Teachers perceptions of schools' environment

To describe Indonesian teacher perceptions of their learning environments, the average item means and the average item standard deviations of each scale for both the actual and preferred versions were calculated. A t-test for paired samples was conducted to investigate whether or not the teacher perceptions of their actual and preferred school environment were significantly different. A summary of the average item means and average standard deviation for the two versions of the questionnaire is reported in Table 21.3 and the same data graphed in Figure 21.1.

Results from the t tests for paired samples show that there are statistically significant differences ($p<0.001$) between teachers' perceptions of their actual and preferred working environment on all scales except Staff Freedom and Work Pressure scales. Furthermore, we can draw tentative assertions from Figure 21.1. First, teachers hold their views of their school environment positively, except on Staff Freedom. Interestingly, teachers indicate they prefer school environments that have less staff freedom than they perceive to be actually present. An explanation of this is that teachers might be accustomed to work under certain orders and procedures provided by the principal or school administrator.

Table 21.3. Average Item Mean, Average Item Standard Deviation, Different Effect Size and *t* Test for Paired Samples for Differences Between Actual and Preferred Forms of The Indonesian School Level Learning Environment (n=131)

Scale	Average item mean		Average Standard Deviation		t
	A	P	A	P	
Student Support	3.94	4.42	0.46	0.43	-9.17*
Affiliation	3.87	4.18	0.40	0.49	-7.08*
Professional Interest	3.81	4.17	0.42	0.45	-8.36*
Staff Freedom	2.73	2.65	0.54	0.71	1.57
Participatory Decision Making	3.22	3.52	0.56	0.59	-4.23*
Innovation	3.53	4.16	0.53	0.46	-12.78*
Resources Adequacy	3.22	4.49	0.76	0.48	-16.60*
Work Pressure	3.15	3.20	0.52	0.57	-1.09

*p<0.001

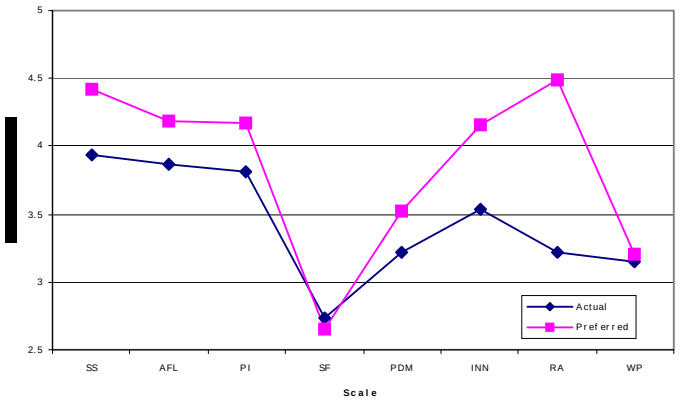

Figure 21.1. Comparison between teachers' perceptions of the actual and preferred school level learning environments.

Alternatively, teachers tend to work constantly in order to cover all material for final examination purposes. Therefore, they are content to work in an environment that has certain procedures set down rather than in a completely unstructured free atmosphere. Secondly, the greatest difference between actual and preferred perception, which is more than twice the standard deviation occurs on the Resource Adequacy scale. This means that teachers want their schools to have more resources, such as more textbooks and laboratory equipment, to support them in conducting teaching and learning practices. Thirdly, teachers also tend to have desired school environments in which more innovations occur. This may contradict with teachers' perceptions on Staff Freedom scale, since innovation calls for staff freedom. However, it can be explained that teachers' preference for more innovation in their school environments has a collective meaning. Fourth, teachers have similar degrees of preference for their schools environments to have more affiliation and student support, and provide them with more professional development and more teacher involvement in school decision making. Fifth, teachers are content with the extent to which schools emphasise work pressure as no significant difference is found on this scale. A better explanation for this is that teachers tend to be happy with the degree of work pressure set by their school at slightly above 'sometimes'. They did not want their schools to exert higher work pressure since it will require them to stay longer at school and to do extra jobs. In fact, most teachers in Indonesia have a second or even third job teaching at other schools to make additional income. Therefore, being happy with their perception of work pressure scale at 'sometimes' level is reasonable.

5.3 Comparison of teachers' perception of their school environments based on locality and subject matter

In order to answer the third and fourth research questions, an investigation of the differences in teacher perceptions of their school environment based upon school locality and subject matter taught by the teachers was conducted. In doing so, a one-way between groups ANOVA with post-hoc comparisons was carried out. All eight scales of the Indonesian SLEQ were placed as the dependent variables, whereas school locality and subject matter variables were placed as the determinant variables, respectively. The Tukey's honesty significant difference (HSD) multiple comparison test was used to confirm

statistically significant differences that exist between groups. When school locality was used as an independent variable, the statistically significant differences only existed on the Participatory Decision Making, and Work Pressure scales. In contrast, while using subject matter as an independent variable, significant differences were found on all scales, except Affiliation and Staff Freedom. Figures 21.2 and 21.3 provide comparisons of the average item means for eight scales of the Indonesian SLEQ based on school locality and teachers' subject matter, respectively.

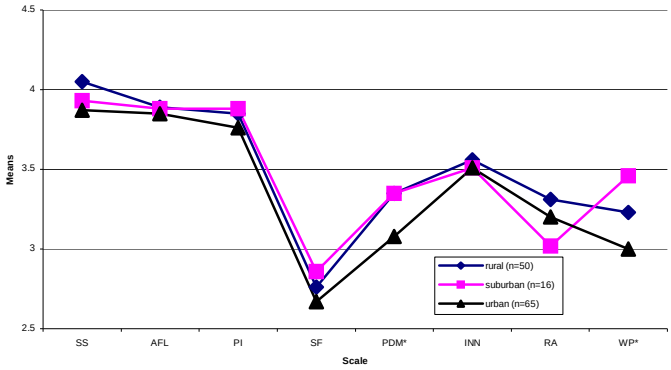

Figure 21.2. Comparison of teacher perceptions of the actual school environments based on school locality.

Generally teachers in rural (n=50) and suburban (n=16) schools experienced a more favourable working environment than do teachers at urban schools (n=65). When all teachers share relatively similar perceptions on three scales, namely, Affiliation, Professional Interest, and Innovation, their perceptions were slightly different on Student Support, Staff Freedom, and Resource Adequacy. Only the Work Pressure scale is perceived significantly different by all groups, while Participatory Decision Making is viewed similarly by rural and suburban teachers, but significantly differently between them and teachers at urban schools.

Figure 21.2 shows that teacher perceptions on the Student Support scale are greater at rural schools and decrease at urban schools. This means that teachers at rural school faced fewer problems with their

students' behaviour than did urban and suburban teachers. This finding is parallel with the data that emerged from school and classroom observations followed by teacher interview. Teachers at urban and suburban schools admitted that schools were sometimes disturbed by students' disruptive behaviour such as fighting, leaving school without permission, and "off tasking" during the lessons. In contrast, rural teachers found their students as polite and good members of the class or school community. Tentatively, these differences can be explained as a result of societal differences between rural and urban settings. Dynamic rhythm of urban living affects, either positively or negatively, the value and culture held by the community members. It was reported that students' crime and misbehaving increased both quantitatively and qualitatively in urban areas and schools during the late 1990s (Kompas, 1999). On the other hand, stable rural living enabled the people to hold firm their values and culture. Consequently, students from this area are humble; respect their elder, and are cooperative with their peers.

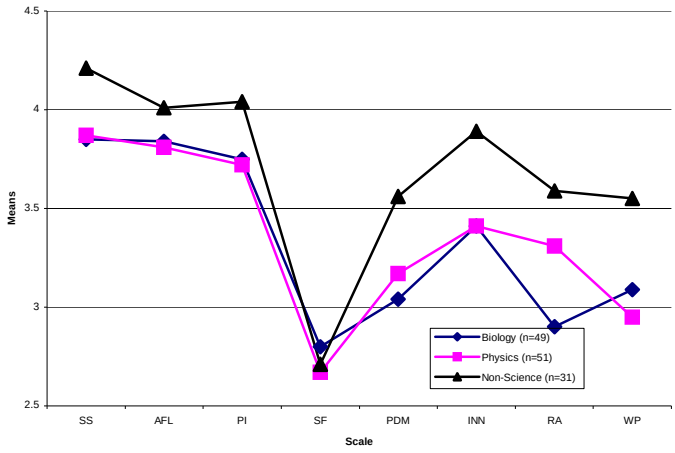

Figure 21.3. Comparison of teacher perceptions of the actual school environments based on school locality.

In general, non-science teachers (n=31) hold a more favourable view of their school working environments on all scales, except Staff Freedom, than do science teachers. Biology (n=49) and physics (n=51) teachers perceived their school environments similarly; but small

differences between their perceptions were found on three scales, namely Staff Freedom, Participatory Decision Making, and Work Pressure. Statistically significant difference between their perceptions was found on Resource Adequacy scale. Biology teachers hold a more positive view of their working environment on Staff Freedom and Work Pressure, but less favourable on Participatory Decision Making and Resource Adequacy than physics teachers did. With regard to Resource Adequacy, this finding implies that most schools have more equipment for physics than for biology. This condition may be due to the expensiveness of biology laboratory equipment. While most biology lessons require expensive consumable material, physics lessons can use materials that are readily available and much cheaper. Therefore, most schools tend to have better and more adequate physics resources than biology ones.

5.4 Concluding comments and future research direction

This study found that the Indonesian version of the SLEQ is a valid and reliable instrument for assessing the working environment at junior high school. Therefore, in conjunction with the importance of school environment for enhancing school effectiveness and the scarcity of research in this area of Indonesian schools, this study recommends use of the developed instrument for further research.

The differences between perceptions of school environments of biology and physics teachers and among rural, suburban and urban schools teachers, particularly on adequacy of resources, warrant further investigation. It is necessary to identify why their perceptions are different in order to provide an appropriate intervention.

This study indicates that the differences between teachers' views of actual and preferred school environments are not only statistically but also practically significant. Most scales, except Staff Freedom and Work Pressure, have differences between actual and preferred versions which ranged from 0.52 to 2.05. It is suggested that research for improving school environments, by matching teachers' actual and preferred perceptions, is noteworthy and needs further investigation.

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