THE RELATIONSHIP BETWEEN TEACHER INTERPERSONAL BEHAVIOR AND STUDENT ATTITUDE TOWARD SCIENCE LEARNING IN PRIMARY SCHOOL: INDONESIAN CASE STUDY

Mustafa Kamal Nasution, M.Ed

ABSTRACT

This study proposes to assess the relationship between student perceptions on teacher interpersonal behavior and student attitude toward Science in Indonesian Primary school. This research engaged 143 students from SDN 47 Jambi, Indonesia. To gather the data, two types of questionnaires were used; Test of Science Related Attitude (TOSRA) and the Indonesian version of the Questionnaire Teacher Interpersonal (QTI). SPSS program were applied to process the data statistically. The result shows that the questionnaires are relatively reliable for Indonesian primary students. Acceptability of Cronbach alpha coefficient was found in both actual and preferred situation. The findings also reveal that from the students' view, their teachers have relatively good Leadership and Understanding in the classroom, less Uncertainty, Dissatisfaction and Admonishment toward students. However, the students perceive to some extent unfavorable perceptions on their Freedom and teacher Strictness. Another analysis describes that there are significant differences between actual and ideal perceptions on the whole scale of QTI except on Uncertainty. Furthermore, between male and female perceptions, this study finds that there are significant differences on Helping, and Strictness. Lastly, the multiple correlation analysis explaines that there is a correlation between the scale of QTI and Enjoyment toward science, in which Uncertainty and Admonishment scales are significantly negative affect students' enjoyment in science classroom.

Keywords: *relationship, interpersonal behavior, primary students, Indonesia*

A. RATIONALE

How to encourage student learning subjects has always been a question and interest for educators and researchers. For over the decade, emphasizing on student performance can be found in enormous research areas such as learning environment research, teaching of specific subjects, and school and teacher effectiveness research. In this particular study, we will gauge how teacher behavior is related to student attitude of Science in Indonesia.

An enormous number of studies on teacher interpersonal behavior in many countries around the world such as Brunei (Brok, Fisher, & Scott, 2005), Singapore (Goh, & Fraser, 1998), Korea (Lee, Fraser, & Fisher, 2003) Netherlands (Brekelmans, Wubbels, & Créton, 1990) and Australia (Evans, 1998; Henderson, 1995; Rawnsley, 1997), have shown a growing attention. Lately, the 2010 International Conference on Interpersonal Relationships in Education in Colorado, (USA) has confirmed that interpersonal behavior in education has been an international issue and again, revealed the importance of this area in education internationally (ICIRE, 2010).

Despite an increasing number of studies appeared in international journals and books, there were several reasons to conduct this particular research. The most important is that although many studies have been investigating this issue in different parts of the world, only few numbers have reported from Indonesia, specifically primary Indonesian students. The present study, therefore, attempts to provide a foundation and comparison across the culture, grade, and geographical boundary. Furthermore, in recent study, Wahyudi and Treagust (2006) reported that educational research has been implemented since 1960 and became a salient research area in Indonesian education. However, the development of research in the education, especially interpersonal behavior, during last four decades displayed an apparent lack of attention

by Indonesian educators or researchers to conduct their research. The discontinuity of the studies during these decades suggests that the status of interpersonal behavior studies in Indonesia has discarded, and that there is opportunity for further study. Therefore, this study was conducted and emphasized on interpersonal behavior of teachers and their students' attitude toward science learning process in Indonesian primary school.

B. THE AIM OF THE STUDY

This study aims to assess the connection between students' view on teacher interpersonal behavior and their attitude toward science in Indonesian primary school. In more detail, this was designed to answer questions as follows:

1. Does the questionnaire show reliability for Indonesian primary students?
2. How do the students view on their teacher interpersonal behavior?
   a. To what extent the discrepancies between male and female students' perceptions on their teachers' interpersonal behavior?
   b. To what extent the discrepancies between actual and preferred teachers' interpersonal behavior?
3. Is there any connection between students' view on teacher interpersonal behavior and their attitude toward science?

C. METHOD

This research engaged primary students in 4-6 grades science classes in SDN 47 Jambi, Indonesia. The sample encompasses 143 students and 5 teachers in one school. The 40-items Indonesian version of the Questionnaire Teacher Interpersonal (QTI) in eight attitudes scales was applied to assess students' perceptions of student-teacher interpersonal behavior. Student attitude or enjoyment was measured by eight-items Test of Science Related Attitude (TOSRA). The wording of the item in this attitude scale is such that they can be used well in science classroom.

Using SPSS program, the data were statistically analyzed. First, descriptive statistic was used on actual and preferred of each scale to indicate the QTI reliability; if it shows more than 0.5 the reliability of Cronbach alpha is acceptable. Second, to gauge the actual and preferred teacher interpersonal behavior, Paired Sample t-tests was used by comparing between actual and preferred means and of each scale. Slightly similar, male and female students' perceptions on their teachers' interpersonal behavior was analyzed by Independent Sample t-test and comparison between actual mean of both sexes in every scale. Last, the relationship between students' view on teacher interpersonal behavior and their attitude toward science was analyzed by using Simple Correlations (*r*) and Linear Regression Analysis (β).

D. FINDINGS AND DISCUSSION

The Indonesian version of QTI reliability

Using descriptive statistic, Table 1 reveals some statistics on the QTI for the present sample of science classes. Due to the result, two units of analysis of the Cronbach alpha reliabilities are reported; the actual and the preferred situation. As predicted, the preferred situation reliability was higher than the preferred. The table also displays the reliability for different QTI scales dispersed from 0.52 to 0.92 for actual situation. On the other hand, preferred situation which is noticeably higher than the actual, except Students Responsibility Scale which only shows 0.47 (<0.5). Overall, it can be inferred that the Indonesian version of QTI questionnaire is relatively reliable to be used for primary students in Indonesian school.

This finding is consistent with others which revealed that the QTI has been successfully translated and used in a number of countries, such as Indonesia (Margianti, 2002), Brunei (Brok, Fisher, & Scott, 2005; Khine, 2002), Thailand (Wei & Onsawad, 2007), Singapore (Goh and Fraser, 1998), India (Brok,

Fisher, and Koul, 2005), Korea (Lee et al., 2003), Turkey (Telli et al., 2007), The Netherlands (e.g. Brekelmans et al., 1990; Brok et al., 2004), Cyprus (Kyriakides, 2005), Australia (Brok, Fisher, & Scott, 2005), and the USA (Wubbels and Levy, 1991,1993).

Table 1. Cronbach alpha reliability of QTI scales
(Descriptive Statistic)
Students' Perceptions toward Teacher Interpersonal Behavior

Scale	Alpha	
	Actual	Preferred
Leadership	0.73	0.96
Helping/Friendly	0.71	0.85
Understanding	0.66	0.84
Students Responsibility/ Freedom	0.59	0.47
Uncertain	0.87	0.83
Dissatisfaction	0.93	0.94
Admonishing	0.78	0.86
Strict	0.52	0.51

In response to the second research question (point a), paired sample t-tests were used to examine the discrepancies between actual and ideal teacher interpersonal behavior. Table 2 explains that on actual situation the students agree that their teachers have displayed good Leadership (3.20±0.54) and less Uncertainty (1.39±0.40). Students also view that that their teachers are Helpful (2.66±0.54) and express less Dissatisfaction (1.45±0.53). Similarly, the teachers show positive understanding (3.19±0.55) and being less admonishing (1.66±0.50) to the students during the class room activities. Finally, the teachers were viewed has good performance in giving responsibility/freedom and less strict to the students. Therefore it can be inferred that the teachers have relatively good interpersonal behavior from the students' point of view. On entire scales of QTI, the findings also reveal significant differences between actual and preferred teacher interpersonal behavior. Due to this result, it can be inferred that the teachers have good interpersonal behavior. Nevertheless, they have not been accomplished

students preferred toward their interpersonal behavior.

Another response to the second research question (point b) is the discrepancies between male and female students' perceptions toward their teacher interpersonal behavior. Using independent sample t-test, Table 3 explains that male students' perceptions are relatively higher than the female. Nevertheless, it can be clearly seen that there are entirely no significant different between male and female students' perceptions. In other words, the students perceive that their teachers treat both sexes equally during learning process. These findings suggest that both sexes of Indonesian students prefer more positive interpersonal behavior than was perceived as being actually present. This is in line with other finding by Wubbels et al., (2006).

The findings also indicate that, in the Indonesian context, students agreed that an ideal science teacher should be strong leader, helpful/friendly, and give some freedom and understanding to students. On the contrary, the ideal teacher should not be admonishing, dissatisfied, uncertain, and strict. This is in accordance with the research on ideal teachers' interpersonal behavior in other countries (e.g. Wubbels, 1993, Fisher, Waldrip, & Brok, 2005).

Table 2. Students' perceptions on the actual and preferred teacher interpersonal behavior
(Paired sample t-tests)
** $\rho < 0.01$; * $\rho < 0.05$; 0-1.4=poor; 1.5-2.4=fair; 2.5-3.4=good; 3.5- 4=very good

Scale	Average Item Mean		Average Item Standard Deviation		t value
	Actual	Preferred	Actual	Preferred	
Leadership	3.20	3.83	0.54	0.30	-10.47**
Helping/Friendly	2.66	3.55	0.62	0.48	-14.66**
Understanding	3.19	3.76	0.55	0.35	-9,47**
Students Responsibility/ Freedom	2.09	2.58	0.55	0.69	-7.81**
Uncertain	1.39	1.47	0.40	0.59	-1.62*
Dissatisfaction	1.45	1.23	0.53	0.46	3.71**
Admonishing	1.66	1.42	0.50	0.55	5.15**
Strict	2.48	2.60	0.54	0.67	-2.05*

Table 3. Male and female students' perceptions on the actual teacher interpersonal behavior
(Independent sample T test)

Scale	Average Item Mean		Average Item Standard Deviation		t value
	Male	Female	Male	Female	
Leadership	3.09	3.30	0.46	0.59	-1.89
Helping/Friendly	2.44	2.84	0.53	0.64	-3.16
Understanding	3.15	3.23	0.48	0.61	-0.71
Students Responsibility/ Freedom	2.13	2.06	0.49	0.61	0.54
Uncertain	1.39	1.39	0.42	0.38	0.03
Dissatisfaction	1.55	1.36	0.59	0.47	1.63
Admonishing	1.68	1.65	0.51	0.50	0.23
Strict	2.62	2.36	0.56	0.50	2.31

** $\rho < 0.01$; * $\rho < 0.05$; 0-1.4=poor; 1.5-2.4=fair; 2.5-3.4=good; 3.5- 4=very good

Note: the values of mean and standard deviation on the last four scales are interpreted reversely

The Relationship between teacher Interpersonal Behavior and Student Attitude

Another desirable response of this study is the capability to measure relationship between student attitude and teacher interpersonal behavior. There are two ways used to gauge the connection between the Test of Science Related Attitude (TOSRA) and student attitude. First, simple correlations were applied to calculate each QTI scale and the attitude scales. Then, a linear regression analysis was conducted in order to assess the relative weighting of the TOSRA scales as joint predictor of attitude. The applicable statistics are informed on Table 4.

All eight simple correlations between QTI scales and their students' attitude were insignificant and low ($r <$ 0.5). The multiple correlation analysis shows that there was no overlap between the QTI scales, with two scales showing significant regression coefficient ($p<0.05$). In classes where the students perceive high Uncertain and Admonishing Behavior from their teachers, there were dissatisfied attitude

toward the students. The relevance was true when the teachers were perceived as showing low favorable behavior. It is obvious that teachers' behavior has inconsiderable effect on their students' attitudes toward science. Generally, a cooperative and somewhat dominant teacher behavior seems to not contribute to a favorable students' attitude where as oppositional submissive behavior has the opposite effect. This is in line with previous research by Wubbels and Levy (1993) and suggests that if the teachers wish to improve their student s' attitudes toward science, they should ensure that they reveal the cooperation behaviors and reduce the opposition behaviors.

Table 4. Correlation of QTI scales to students attitude toward Science *(Simple correlations and linear regression analysis)*

Scale	Enjoyment	
	Correlation (*r*)	Standardized Regression Coefficient (β)
Leadership	0.04	-0.115
Helping/Friendly	0.05	0.068
Understanding	0.05	-0.048
Students Responsibility/ Freedom	-0.07	-0.011
Uncertain	-0.28	-0.306*
Dissatisfaction	-0.18	0.143
Admonishing	-0.27	-0.333*
Strict	0.14	0.213

** $\rho < 0.01$; * $\rho < 0.05$

E. CONCLUSION

Before concluding the findings of this research, it is significant to acknowledge that the small-scale sample used in this study only allows some preliminary conclusions regarding teacher-student interpersonal relations in Indonesian context. As a result of the sample, most of the analysis could not be conducted at the class level and the statistical role was limited for establishing associations between variables. Moreover, it remains indistinct whether the findings can be comprehensively accepted in Indonesian primary education.

The findings of this study conclude that the Indonesian version of

QTI questionnaire is relatively reliable to be used for Indonesian primary students. Due to the students' perceptions, firstly, there are entirely no significant differentce between male and female student perceptions of teacher interpersonal behavior. In other words, the students perceive that the teacher equally treats the male and female students during learning process. However, secondly, there are significant differences between actual and ideal teacher interpersonal behavior on the whole scales of QTI. Therefore, even thought the teachers have good interpersonal behavior, it has not been accomplished students' ideal wishes toward teacher's interpersonal behavior. Finally, the teachers' behavior has inconsiderable result on their students' attitudes toward science. Generally, a cooperative and somewhat dominant teacher behavior seems to not contribute to a favorable students' attitude where as oppositional submissive behavior has the opposite effect.

These findings recommend some directions for the science teaching-learning process of the Indonesian primary school in the future; the teachers should make more improvement to make the gap between actual and preferred teacher interpersonal behavior become narrow, and if the science teachers wish to improve their students' attitude, they should make sure that they demonstrate the favorable interpersonal behavior and decrease dissatisfied attitude.

The outcome of this study has implication for science educators who concern in developing learning environments for their students. Although this research was made particularly for science classes, principally can also be applied to the learning process or other educational studies.

REFERENCES

Brekelmans, M., Wubbels, T., & Creton, H. A. (1990). A study of student perceptions of physics teacher behaviour. *Journal of Research in Science Teaching*, 27, 335–350.

Brok, P. den, Fisher, D., & Koul, R. (2005). The importance of

teacher interpersonal behaviour for secondary science students' attitudes in Kashmir. *Journal of Classroom Interaction*, 40(2), 5–19.

Brok, P. den, Fisher, D., & Scott, R. (2005). The importance of teacher interpersonal behaviour for student attitudes in Brunei primary science classes. *International Journal of Science Education*, 27, 765–779.

Brok, P.den, Brekelmans, M., & Wubbels, T. (2004). Interpersonal teacher behaviour and student outcomes. *School Effectiveness and School Improvement*, *15* (3/4), 407-442.

Evans, H. (1998). *A study on students' cultural background and teacher-student interpersonal behaviour in Secondary Science classrooms in Australia*. Unpublished doctoral dissertation. Perth: Curtin University of Technology.

Fisher, D., Waldrip, B., & den Brok, P. (2005). Students' perceptions of primary teachers' interpersonal behaviour and of cultural dimensions in the classroom environment. *International Journal of Educational Research*, 43, 25–38.

Goh, S. C., & Fraser, B. J., (1998). Teacher interpersonal behaviour, classroom environment and student outcomes in primary mathematics classes in Singapore. *Learning Environments Research*, *1*, 199-229.

Henderson, D. G. (1995). *A study of the classroom and laboratory environments and student attitude and achievement in senior Secondary Biology classes*. Unpublished doctoral dissertation. Perth: Curtin University of Technology.

ICIRE, (2010). the *International Conference on Interpersonal Relationships in Education* organised in Boulder, Colorado, the United States of America.

Khine, M. S. (2002). Study of learning environments for improving science education in Brunei. In M. S. Khine & S. C. Goh (Eds.), *Studies in educational learning environments* (pp. 131–152). Singapore: World Scientific.

Kyriakides, L. (2005). Extending the comprehensive model of educational effectiveness by an empirical investigation. School *Effectiveness and School Improvement*, 16, 103–152.

Lee, S. S. U., Fraser, B. J., & Fisher, D. L. (2003). Teacher-student interactions in Korean high school science classrooms. *International Journal of Science*

and Mathematics Education, 1, 67–85.

Margianti, E. S. (2002). Learning environments research in Indonesia. In M. S. Khine & S. C. Goh (Eds.), *Studies in educational learning environments* (pp. 153–168). Singapore: World Scientific.

Rawnsley, D.G. (1997). *Associations between classroom learning environments, teacher interpersonal behaviour and student outcomes in secondary Mathematics classrooms*. Unpublished doctoral dissertation. Perth: Curtin University of Technology.

Telli, S., den Brok, P., & Cakiroglu, J. (2007). Students' perceptions of science teachers' interpersonal behaviour in secondary schools: Development of a Turkish version of the Questionnaire on Teacher Interaction. *Learning Environments Research*, 10, 115–129.

Wahyudi and Treagust F. (2006). Science education in Indonesia: a class room learning environment perspective. In Fisher D.L and Khine M.S. *Contemporary approach to research on learning environment*. World Scientific Publishing, Singapore. 221-242.

Wei, M., & Onsawad, A. (2007). English teachers' actual and ideal interpersonal behaviour and students' outcomes in secondary schools of Thailand. *The Journal of Asia TEFL*, 4(2), 1–29.

Wubbels, Th. (1993). Teacher-student relationships in science and mathematics classes (What research says to the science and mathematics teacher, No.11). Perth, Australia: National Key Center for School Science and Mathematics, Curtin University of Technology.

Wubbels, Th., & Levy, J. (1991). A comparison of the interpersonal behavior of Dutch and American teachers. *International Journal of Intercultural Relations*, 15, 1–18.

Wubbels, Th., & Levy, J. (1993). Do you know what you look like? *Interpersonal relationships in education*. London: Falmer.

Wubbels, Th., Brekelmans, M., den Brok, P., & van Tartwijk, J. (2006). An interpersonal perspective on classroom management in secondary classrooms in the Netherlands. In C. Evertson & C. S. Weinstein (Eds.), *Handbook of classroom management*: Research, practice and contemporary issues (pp. 1161–

1191). New York: Lawrence Erlbaum Associates.