New Trends and Issues Proceedings on Humanities and Social Sciences

Volume 8, Issue 3 (2021) 92-97

www.prosoc.eu

Selected Paper of 13th World Conference on Educational Sciences (WCES-2021) 04-06 February 2021, University of Cadi Ayyad, Marrakech, Morocco

Impact of teacher communication behaviour on student's motivation in learning primary school science

Sunitha Menon, Faculty of Education, University Malaya, 50603 Kuala Lumpur, Malaysia
Chin Hai Leng*, Faculty of Education, University Malaya, 50603 Kuala Lumpur, Malaysia
Zahra Naimie, Faculty of Dentistry, University Malaya, 50603 Kuala Lumpur, Malaysia
Mahmoud Danaee, Faculty of Medicine, University Malaya, 50603 Kuala Lumpur, Malaysia
Rana Ahmad Abuzaid, Educational Development Consultant, Al Bayan Model School for Girls, Jeddah 23326, Saudi Arabia

Suggested Citation:
Menon, S., Leng, C. H., Naimie, Z., Danaee, M., & Abuzaid, R. A. (2021). Impact of teacher communication behaviour on student's motivation in learning primary school science. *New Trends and Issues Proceedings on Humanities and Social Sciences. 8*(3), pp 92–97. https://doi.org/10.18844/prosoc.v8i3.6401

Received from February 13, 2021; revised from May 22, 2021; accepted from August 15, 2021.
Selection and peer review under responsibility of Assoc. Prof. Dr. Jesus Garcia Laborda, University of Alcala, Spain.
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Abstract
Interactions between teachers and students occur rapidly in and out of a classroom. A good teacher-student relationship motivates and enhances the teaching and learning process. One of the most significant factors is teacher communication behaviour. This conceptual paper purports to investigate the multidimensional aspect of teacher communication behaviour and its effect on student's motivation towards science learning. Based on a thorough review of existing literature, The Teacher Communication Behaviour Questionnaire (TCBQ) and Student's Motivation Towards Learning Science (SMTSL) Questionnaire could be used to explore the factors of teacher's communication behaviours and its relationship to students' motivation in learning science among primary school students. From the result results it will be of possible benefit specifically for school administrators and teacher preparation programs. Teachers, however, may also use the teacher communication behaviour to evaluate an indicator of their communication skills

Keywords: teacher communication, student motivation, science education, primary school,

* ADDRESS FOR CORRESPONDENCE: Chin Hai Leng, Faculty of Education, University Malaya, 50603 Kuala Lumpur, Malaysia.
E-mail address: chin@um.edu.my

1. Introduction

Malaysia's results at TIMSS 2011 plunged below international level with the steepest fall in mathematics and science (Meisenberg & Woodley, 2013) raising an alarm among Malaysian policymakers and educators. In 2018, Malaysia managed to raise its placing from lowest third of 74 participating countries in PISA 2009 to below average in 2018. Vietnam, by comparison, ranked 17 out of 65, while Singapore, South Korea and China ranked among the top. Despite an increase in improvement of rankings from 54th to the 48th placing in the PISA assessment, a comparison of PISA scores between countries indicates that an average 15-year-old Malaysian will take at least 3 years of extracurricular education to meet high-performance students from Singapore and South Korea (Chapman, 2015).

Nevertheless, the government has responded positively to emerging facts, and in 15 years Malaysia is aiming to move into the top three in PISA and TIMSS achievement among countries. However, establishing the right institutional structure for evaluating learning progress is necessary if Malaysia is to tackle the ongoing educational crisis (Asadullah, 2014). Published national examination records in Malaysia tend to show remarkable changes in mathematics and science grades over time, whereas data from TIMSS and PISA suggest the contrary. It is, therefore, a daunting task to determine that students develop minimum skills in essential areas of learning science and mathematics on the basis of national assessment grades (Asadullah, 2014). Factors which contribute to the decline in the achievement of students in science and mathematics remain poorly understood and need to be studied from all angles, while study has explored factors affecting science learning in Malaysia (Rahman, 2012; Talib et al., 2009). The Malaysia Education Blueprint (PPPM) 2013–2025 aim to produce quality teachers was initiated in 2013 with hopes to improve the learning standards in Malaysian schools. The Ministry of Education Malaysia had approved a fund of RM5mil for Sultan Idris Education University (UPSI) under the National Innovation Centre Research Grant Scheme titled Development of a Teacher Education Model for Preparing Quality Teachers for the Future (Yassin, 2015). Researchers are concerned, however, as measurable teacher evaluation methods provide little insight into student success (Mansor et al., 2012).

Therefore, attempts were made to examine teachers' measurable steps and how this affects the learning of the students. There have been several studies involving conceptualisation, of assessment and analysis of psychosocial dimensions of teacher communication style in the 'classroom environment' (Kearney & McCroskey, 1984; Urea, 2012), 'teacher influence' (McCroskey & Richmond, 1990) and 'constructivist classroom environments' (Taylor et al., 1997). A major factor influencing student growth, school involvement and academic motivation is the relationship between teachers and students that forms the basis of the social context in which learning takes place (Hughes & Chen, 2011; Knoell, 2012; Roorda et al., 2011; Spilt et al., 2011). Positive communication is one of the elements which define successful relationships between students and teachers. Therefore, this paper will explore into the aspects of teacher communication behaviour (TCB) and its relationship to student's motivation in learning science among Malaysian primary school students.

2. Conceptual framework

Communication behaviour provides unique ways of receiving and interpreting a message; personal attributes in the handling or understanding of messages; unique ways of responding and personal response particularities. A positive student–teacher communication acts as a medium for bridging the gap between teachers and students, thereby creating a better classroom environment. This is because students spend 5–7 hours a day in school with teachers for a duration of 10 months, and good communication between teachers and students transpires. Teachers may be knowledgeable, but if the knowledge is not delivered using the right communication skills, the teaching effort is futile. For example, a teacher who has a good lesson planned on paper but whose students are bored and frustrated due to poor communication will not be able to achieve the standard of good and quality

teaching. How skilful a teacher is in communicating determines students' engagement in learning (Biggs, 1999; Chikering & Hanson, 1987; Urea, 2012). Palmer (1999) believes that a good ability of teachers to communicate is the factor that influences students' motivation in learning.

In general, researchers consider two primary forms of motivation: intrinsic and extrinsic. Intrinsic motivation is the ability to do or do something, because one genuinely desires and takes satisfaction in doing so, or recognises value. Extrinsic motivation is the desire to do or achieve something not for the enjoyment of the thing itself, but because doing so leads to a certain result (Pintrich & De Groot, 2003). How students think about their own learning abilities may affect how academically motivated they are (Barry, 2007; Murray, 2011). In line with the behaviour of teacher communication and its impact on motivation of students in learning science, a conceptual structure of the study is developed to represent a research that can provide an integrated result based on the limitations described in the literature. Figure 1 shows an overview of the conceptual structure on how TCB impacts student's motivation in learning science. There seems to be a void in the literature concerning the communication behaviour of science teachers and its effect on learning motivation of students in Malaysia. The goal of this study is, therefore, to examine the perceptions of students from primary science classes on TCB and its effect on student learning.

There are several factors that contribute to the lack of interest and negative attitude of students towards learning science, particularly school science. Osborne et al. (2009) cited the fact that previous studies have established gender, temperament, systemic variables, classroom climate, teacher factors and curriculum variables as factors that affect attitudes towards science in general. It is challenging to involve students fully in the learning process throughout the full lesson. If students are actively involved in the teaching and learning process, they should learn effectively. Otherwise they are not involved and thus may show a negative attitude towards learning. It depends primarily on the teachers to get the students interested in their learning process and to make them pay attention to the entire lesson. A professional and tactful teacher should be able to manage the class in a positive way as well as to achieve teaching–learning objectives.

Talib et al. (2009), in the Malaysian context, took a conservative approach to analysing the features of successful Malaysian students. The theory is that students must have the right characteristics to begin with, and their performance would have been stronger with a friendly classroom atmosphere and successful teaching. In his *Good Science Student Framework*, Talib et al. (2009) identified important factors contributing to excellent science learning results, which was classified into seven dimensions: learning strategies and styles, attitude and motivation towards science, learning ability and talent, language abilities, family participation, interaction with peers and teachers and extra classes. This research zooms in the attitude and motivation for science learning.

In this framework, it was found that teacher's attitude and communication skills play an important role in engaging students' motivation towards science learning. Thus, there is a need to look into how TCB could increase student's motivation in learning science. To measure motivation, a 5-point Likert scale questionnaire by Tuan et al. (2005) could be used to measure student's motivation towards science learning. There are six constructs that describes motivation: 'self-efficacy', 'science learning values', 'active learning strategies', 'performance goals', 'achievement goals' and 'learning environment stimulation'. Similarly, a framework of quality teacher (Hammond, 2000) was studied and it was found that one of the criteria that explains a quality science teacher is communication skills. The framework is divided into sections which are thinking skills, professional attributes, ongoing professional learning, work integrated learning, content knowledge and strategies and skills. Under the strategies and skills comes communication skills that teachers should have.

Quality teachers are equipped with approaches that they can rely on in a variety of circumstances that never fail, and they have outstanding management and leadership qualities. Strategies and skills can be built through work experience, combining study and peer discussion with comprehensive learning. Instruction methods include group learning, experiential learning, and learner-centred

instruction. Teaching skills can be classified as subject skills; hard skills such as lesson planning, classroom management and monitoring assessments; and soft skills that include communication skills in establishing student relationships, developing student morale and making good use of verbal and non-verbal communication. By reflecting on this factor in communication skills, the TCB questionnaire by She and Fisher (2002) could be used to measure teacher's communication skills. There are five constructs that describes TCB which are 'challenging', 'encouragement and praise', 'non-verbal support', 'understanding and friendly' and 'controlling'.

3. Problem statement

It can be inferred from the literature reviewed that there is some effect between the behaviour of teacher communication and the motivation of students to learn the science. Ebenezer and Zoller (1993) and Haladyna et al. (1982) stressed that the most important variable influencing the conduct of students in their study was the form of science that students learned in classroom. Hendley et al. (1996) found in their study that a student's teacher-related commentary was one of the most common reasons for liking or disliking the subject. These studies indicate that teachers play a key role in engaging the students and in deciding a positive attitude that enhances the quality of learning. However, in Malaysia, research to examine such a relationship is still non-existence. Therefore, to make teaching–learning an effective process, the teacher–student relationship, interactions as well as communication have to be taken into account. It is important to explore the teachers' communication behaviour in the age of teaching that focuses on student-centred teaching. This research hypothesises that communication activity influences the learning of the students. It is also apparent that in this analysis, the independent variables comprising all of the five TCB constructs appear to affect the six student's motivation towards learning science (SMTSL) constructs known as dependent variables. The hypothesised model proposed in Figure 2 conceptualises the dependent and independent variables and their relationships which could be researched as follows:

Hypothesis 1 (H1): There is a positive relationship between challenging and TCB.

Hypothesis 2 (H2): There is a positive relationship between understanding and friendly and TCB.

Hypothesis 3 (H3): There is a positive relationship between encouragement and praise and TCB.

Hypothesis 4 (H4): There is a positive relationship between non-verbal support and TCB.

Hypothesis 5 (H5): There is a positive relationship between controlling and TCB.

Hypothesis 6 (H6): There is a positive relationship between self-efficacy and SMTSL.

Hypothesis 7 (H7): There is a positive relationship between performance goal and SMTSL.

Hypothesis 8 (H8): There is a positive relationship between science learning value and SMTSL.

Hypothesis 9 (H9): There is a positive relationship between active learning strategies and SMTSL.

Hypothesis 10 (H10): There is a positive relationship between learning environment stimulation and SMTSL.

Hypothesis 11 (H11): There is a positive relationship between achievement goal and SMSTSL.

Hypothesis 12 (H12): There is direct effect of TCB towards SMTSL.

4. Methodology

This study was conducted by collecting data through survey of questionnaires which are the TCB and Student's Motivation towards Science Learning questionnaire. Quantitatively, the sampling procedure was based on Krejcie and Morgan's (1970) technique. A total number of 400 samples was collected from primary school students. The measuring instrument was initially accessed by

exploratory factor analysis and then accessed by means of a confirmatory factor analysis (CFA). CFA enabled researchers to study how far the theoretical model reflects the actual data (Hair et al., 2010). The suitability of the measurement models is assessed on the basis of goodness-of-fit, reliability, convergent validity and discriminatory validity of all models. The quality of these models was assessed on the basis of three criteria: overall fitness, the statistical power of the estimated path coefficients and the capacity of the model to justify the variance in the dependent variables using AMOS.

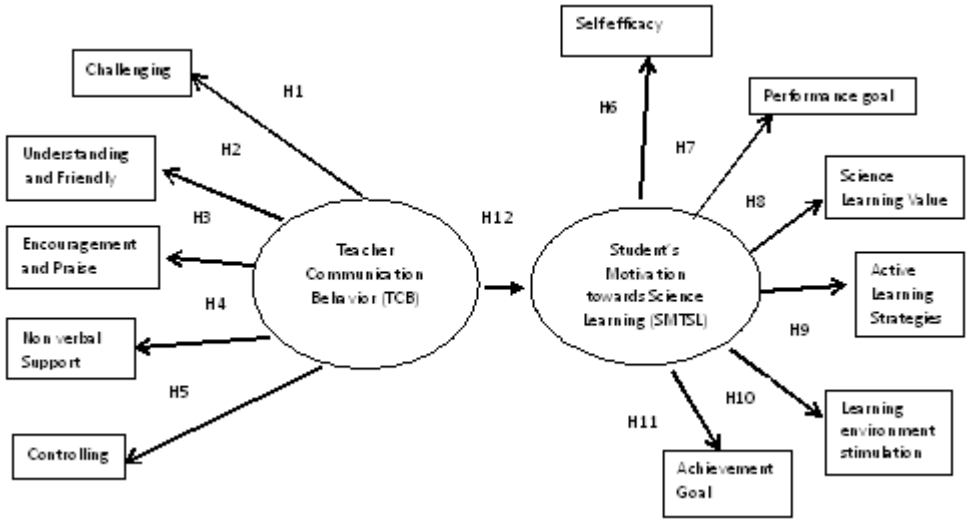

Figure 2. Hypothesised structural model on the impact of TCB towards student's motivation in learning science

5. Conclusion

This research will be of possible benefit specifically for school administrators and teacher preparation programmes. Teachers, however, may also use the TCB to evaluate an indicator of their communication skills. Administrators may get an idea of the capacity of a potential teacher to interact effectively. The use of descriptive and inferential statistics would provide insights into the instrument, while at the same time making use of classical theory to provide insights into the sample population. Finally, the work of this study could gain a deeper understanding of the TCB in science classrooms.

References

Asadullah, M. N. (2014). *Managing Malaysia's education crisis*. East Asia Forum. www.eastasiaforum.org

Barry, M. (2007). Realism, rational action, and the human theory of motivation. *Journal of Ethical Theory and Moral Practice, 10*(3), 231–242.

Biggs, J. (1999). What the student does: teaching for enhanced learning. *Higher Education Research and Development*, *18*(1), 57–75.

Chapman, K. (2015). *Malaysia at 52 in global school placing*. The Star Online. http://www.thestar.com.my/news/nation/2015/05/15/malaysia-at-52-in-global-school-placing/

Chikering, A. W., & Gamson, Z. F. (1987). Seven principles for good practice in undergraduate education. *AAHE Bulletin, 39*(7).

Ebenezer, J. V., & Zoller, U. (1993). Grade 10 students' perceptions of and attitudes toward science teaching and school science. *Journal of Research in Science Teaching, 30*(2), 175–186.

Hair, J. F., Black, B., Babin, B. J., & Anderson, R. E. (2010). *Multivariate data analysis*. Prentice Hall.

Haladyna, T., Olsen, R., & Shaughnessy, J. (1982). Relations of student, teacher and learning environment variables to attitudes to science. *Science Education*, *66*(5).

Hammond, D. L. (2000). Teacher quality and student achievement. *Education Policy Analysis Archives*, *8*(1).

Hendley, D., Stabbles, S., & Stabbles, A. (1996). Pupil's subject preferences at Key Stage 3 in South Wales. *Educational Studies, 22*, 177–187.

Hughes, J. N., & Chen, Q. (2011). Reciprocal effects of student–teacher and student–peer relatedness: Effects on academic self-efficacy. *Journal of Applied Developmental Psychology, 32*(5), 278–287.

Kearney, P., & McCroskey, J. C. (1984). Power in the classroom VI: Verbal control strategies, nonverbal immediacy and affective learning. *Communication Education, 35*(1), 43–55.

Knoell, C. M. (2012). *The role of the student-teacher relationship in the lives of fifth graders: A mixed methods analysis* (Doctoral dissertation, University of Nebraska).

Krejcie, R. V., & Morgan, D. W. (1970). Determining sample size for research activities. *Educational and Psychological Measurement, 30*(3), 607–610.

Mansor, A. N., Wong, K. E., Rasul, M. S., Hamzah, M. I. M., & Hamid, A. H. A. (2012). Effective classroom management. *International Education Studies, 5*(5), 35.

McCroskey, J. C., & Richmond, V. P. (1990). Willingness to communicate: Differing cultural perspectives. *Southern Journal of Communication, 56*(1), 72–77.

Meisenberg, G., & Woodley, M. A. (2013). Global behavioural variation: A test of differential-K. *Personality and Individual Differences, 55*(3), 273–278.

Murray, G. (2011). *Identity, motivation and autonomy: Stretching our boundaries. Identity, motivation and autonomy in language learning*. Multilingual Matters.

Osborne, J., Simon, S., & Collins, S. (2009). Attitudes towards science: A review of the literature and its implications. *International Journal of Science Education*, *25*(9), 1049–1079.

Palmer, P. J. (1999). Evoking the spirit in public education. *Educational Leadership, 56*, 6–11.

Pintrich, P. R., & De Groot, E. V. (2003). Motivational and self-regulated learning components of classroom academic performance. *Journal of Educational Psychology, 82*(1), 33.

Rahman, A. D. (2012). *Memartabatkan Profesion Perguruan Melalui Bahagian Teknologi Pendidikan Negeri (BTBTN)*. In paper presented at the 5th UPSI-UPI Conference On Education.

Roorda, D. L., Koomen, H. M., Spilt, J. L., & Oort, F. J. (2011). The influence of affective teacher–student relationships on students' school engagement and achievement a meta-analytic approach. *Review of Educational Research, 81*(4), 493–529.

She, H. C., & Fisher, D. (2002). The development of a questionnaire to describe science teacher communication behavior in Taiwan and Australia. *Science Education, 84*(6), 706–726.

Spilt, J. L., Koomen, H. M., & Thijs, J. T. (2011). Teacher wellbeing: The importance of teacher–student relationships. *Educational Psychology Review, 23*(4), 457–477.

Talib, O., Luan, W. S., Azhar, S. C., & Abdullah, N. (2009). Uncovering Malaysian students' motivation to learning science. *European Journal of Social Sciences, 8*(2), 266–276.

Taylor, P. C., Fraser, B. J., & Fisher, D. L. (1997). Monitoring constructivist classroom learning environments. *International Journal of Educational Research, 27*(4), 293–302.

Tuan, H. L., Chin, C. C., & Shieh, S. H. (2005). The development of a questionnaire to measure students' motivation towards science learning. *International Journal of Science Education, 27*(6), 639–654.

Urea, R. (2012). The influence of the teacher's communication style on the pupil's attitude towards the learning process. *Procedia-Social and Behavioral Sciences, 47*, 41–44.

Yassin, M. (2015). *Address teacher quality issues*. The Star Online. http://www.thestar.com.my/news/nation/2015/03/14/address-teacher-quality-issues-says-muhyiddin/