

AN INVESTIGATION INTO STUDENTS' PERCEPTIONS OF TEACHER INTERACTION WITH STUDENTS IN THE MIDDLE SCHOOL SCIENCE CLASSROOMS

Lin Htet San¹ and Khin Mar Khine²

Abstract

The main purpose of this study is to investigate the students' perceptions of teacher interaction with students in the middle school science classrooms. In this study, the descriptive research design was used. The six Basic Education High Schools were selected from Taungoo Township by using simple random sampling method. The participants were 302 Grade Six students from the selected schools. The questionnaire was used as an instrument in this study. In the data analysis, the data were analyzed by using descriptive statistics (percentage) to compare the mean differences on the students' perceptions of teacher interaction in four scales of the questionnaire. Moreover, the data were analyzed by using independent samples *t*-test to compare the differences between male and female in students' perceptions of teacher interaction. In the first part, the results of this study showed that most of the students in Basic Education High School perceived a moderate level in perceptions of teacher interaction. In the second part, the results of this study showed that there were no significant differences between male and female on students' perceptions of teacher interaction in science classroom. Therefore, the research findings proved that the students had positive attitudes towards teacher interaction in the science classroom. In addition, this study is expected to enhance the students' positive perceptions of teacher interaction in all schools in Myanmar.

Keywords: Perception, Teacher Interaction, Interpersonal Behavior, Leadership, Teaching Behavior

Introduction

Teaching offers a bright and rewarding career for those who can meet the intellectual and social challenges of the job. Therefore, the task of teaching the young is simply too important and complex to be handled entirely by parents or through the informal structures of earlier eras. Hence, the modern society needs schools staffed with expert teachers to provide instruction and to care for children when parents work. In society, teachers are given professional status. As professionals, they are expected to use best practice to help students learn essential skills and attitudes. It is no longer sufficient for teachers to be warm and loving toward children, nor it is sufficient for them to employ teaching practices based solely on intuition, personal preference, or conventional wisdom (Arends, 2012).

The way teachers talk and communicate with students affects greatly the behavior of students and interaction in the classroom. And then, good communication generates a climate conducive to quality learning as students are willing to cooperate and demonstrate positive discipline. However, when teachers find their students are being boisterous, destructive and even revengeful, they may become frustrated and annoyed. Thus, the teachers should not only invite students to talk and share but also need to be good listeners. Furthermore, they have to show acceptance of students' strong emotions and feelings and be patient in listening to them, and need to trust that their students can solve their own problems. Therefore, establishing and maintaining good teacher-pupil relationships is crucial for student cooperation and effective teaching and learning (Ming-tak & Wai-shing, 2008).

Background of the Study

Education provides individuals with the opportunity to improve their lives, become successful members of their communities and actively contribute to national socio-economic

¹ Department of Curriculum and Methodology No. (7) Basic Education High School, Taungoo

² Department of Curriculum and Methodology, Yangon University of Education

development. In Myanmar society, education is traditionally valued as a key determinant for social mobility and it is widely recognized as a critical building block for nation building, national unity and sustainable development (Ministry of Education, 2016). In the basic education sub-sector, teachers will play a key role in the successful roll-out of the new curriculum, as well as adoption of new interactive pedagogy and application of a new assessment system.

Therefore, the teachers need to plan how they will treat students fairly and with respect. To do so, the teachers must make a plan for teaching students to make wise choices and training them that all of their decisions carry consequences. Moreover, the teachers also need to consider where they might need to make changes to their actual instructional practices in order to prevent behavioral issues that might occur. And then, the teachers should encourage children in areas of both strengths and weaknesses and find ways to recognize each child as special. Furthermore, they should avoid the natural tendency to compare one child with another. As every teacher knows, students often enter a classroom with a multitude of problems that can get in the way of learning. Moreover, they may also be experiencing anxiety about something going on at home, a situation with the peer group, a future test in another class, or other concerns. Therefore, the teacher should plan strategies that do not result in anxiety. Rather than the typical practice of calling a name, asking a question, and expecting the answer, a few more successful strategies should be used such as allowance for sufficient think time; allocated time for sorting notes or cards related to the questions beforehand; or permitting partners to think of the answer together before calling on students to answer the question. In sum up, the teachers should offer procedures for students to seek help during activities (Walters & Frei, 2007).

Purpose of the Study

The main purpose of this study is to investigate students' perceptions of teacher interaction with students in the middle school science classrooms. The specific objectives are as follows:

1. To investigate students' perceptions of teacher interaction with students in the middle school science classrooms through comparison of mean differences in four scales of the questionnaire
2. To examine the differences between male and female on students' perceptions of teacher interaction with students in the middle school science classrooms
3. To suggest ways for developing the middle school students' perceptions of teacher interaction

Research Questions

1. Are there any significant differences in the students' perceptions of teacher interaction with students through comparison of mean differences in four scales of the questionnaire?
2. Are there any significant differences between male and female on the students' perceptions of teacher interaction with students in the middle school science classrooms?

Scope of the Study

1. This study is geographically restricted to Taungoo Township in Bago Region (East).
2. Sample schools are selected by using random sampling method.
3. Participants of this study are 302 Grade Six students from the selected schools in the academic year (2022-2023).

Definition of Key Terms

Perception: Perception is defined as the process of information extraction to determine how humans interpret their surroundings (Forgus & Melamed, 1976).

Teacher interaction: Teacher interaction is defined as the good interaction between teachers and students that will create positive relationships in the classroom and contribute to effective learning (Ahmad, Shaharim & Abdullah, 2016).

Interpersonal Behavior: The interpersonal behavior is defined as a prerequisite for engaging students in learning activities and a crucial element in the teaching-learning process (Telli, den Brok & Cakiroglu, 2017).

Leadership: Teacher leadership is defined as the teachers extend their influence beyond their own classrooms while continuing to teach students, and the motivation for assuming leadership varies (Arends & Kilcher, 2010).

Teaching behavior: Teaching behavior is instructionally supportive (e.g., providing opportunities for students to respond, to choose, or to receive positive feedback) promotes academic achievement (Curby, Rudasill, Edwards, & Perez-Edgar, 2011).

Significance of the Study

The teacher-student relationship, in all educational systems, is a key feature of an effective instructional environment that has extensively studied from many perspectives. Thus, the students' perception of their teacher's behavior and of their relationship with the teacher are important not only for their school achievement but also for a larger perspective. Moreover, the studies on teacher-student relationship, as they are perceived by the students during the school years showed that learning experience related changes impact the students' perceptions of their teachers (Negovan, Raciuc & Vlad, 2010).

Furthermore, the communication in the classroom can be defined as the interchange of thoughts, feelings and information between the teacher and the pupils. Through good communication, the teacher motivates, guides and encourages student learning and without such interaction, good relationships cannot be established and maintained nor can the teacher meet pupils' needs. Thus, the good teachers must be able to communicate with students, colleagues, administrators, parents and many others. Moreover, teaching is not simply the delivering of knowledge, but requires a blending of competent teaching techniques and communication skills that motivate and encourage students to learn and through their effective use of communication skills teachers convey respect, care and concern for students. Therefore, the good teachers are good managers of communication (Ming-tak & Wai-shing, 2008).

Review of Related Literature

Theoretical Framework: Teacher interaction with students in the classroom depends on the interpersonal behavior of the teacher. The theories and systematic procedures used for the interpersonal behavior might be called a dynamic behaviorism (Leary, 1957). In the conceptualization of the interpersonal perspective on teaching, some concepts of the so-called systems approach to communication are important (Watzlawick, Beavin, & Jackson, 1967). Therefore, the theoretical framework for this study is based on behaviorism and communication theory.

Behaviorism: Behaviorism is a theory of animal and human learning that focuses upon the behavior of the learner and the change in behavior that occurs when learning takes place. Learning in the context of behaviorism can be defined as the acquisition of a new behavior or the modification of behavior as a result of teaching, training or tutoring. Behaviorism is supported by empirical data obtained through careful and controlled observation and measurement of observable behavior under laboratory conditions or within defined social environments such as the classroom, workplace, community hall and home. Behaviorism asserts that from conception the mind is influenced by the environment and experiences, and that the environment, experiences and actions of other people influence a person's motivation and behavior (Woollard, 2010).

Communication Theory: Interpersonal communication (IPC) is one of the most popular teaching subjects and research areas in communication studies. IPC is important to study for a number of reasons. First, people create meaning through communication - learn through communication with others and, more importantly, the communication with others influences how can think about and feel about. Second, IPC is important for practical reasons - need to be able to talk to people in order to get things done and make positive impressions. Third, IPC is important physically - people who have good interpersonal relationships are physically and mentally healthier. Fourth, humans are social animals, and IPC helps to fulfill the social needs - understanding the IPC process will provide insight into how relationships can be more successful and satisfying. Finally, IPC research is important because how people think they communicate in relationships and how they actually communicate in relationships are very different (Littlejohn & Foss, 2009).

Leary model of interpersonal behavior: Behavior which is related overtly, consciously, ethically, or symbolically to another human being is interpersonal. The interpersonal behavior refers to private perceptions, conscious reports, symbolic and unwitting expressions, as well as to overt actions. Leary (1957) believed that the way humans communicate is indicative of their personality. The Leary model of interpersonal behavior (1957) provided the measurement framework for the study. It basically states that people communicate according to two dimensions - Dominance-Submission and Cooperation-Opposition. Leary concluded that a person's interpersonal behavior could be described with two dimensions, which he named Proximity and Influence. The Proximity dimension could be indicated on a continuum that has cooperative behavior at one end and oppositional behavior at the other. The Influence dimension could be indicated on a continuum that has dominant behavior at one end and submissive behavior at the other. Adapting the Leary Model to the context of education, Wubbels, Creton and Hoymayers (1985) used the two dimensions, which they called Influence (Dominance-Submission) and Proximity (Opposition-Cooperation) to structure the perception of eight behavior segments: leadership, helpful/friendly behavior, understanding behavior, giving students freedom, uncertain, dissatisfied, admonishing, and strict behavior.

Interpersonal Teacher Behavior: Interpersonal behavior and communication style have long been thought of as important components of teacher effectiveness. Interpersonal communication can mean the ability to relate to people in written as well as verbal communication. This type of communication can occur in both a one-on-one and a group setting. Gestures such as eye contact, body movement, and hand gestures are also part of interpersonal communication. When students meet a teacher in a new class, they will be relatively open to any impression the teacher can make.

After the first lesson, the students will have tentative ideas about the pattern of relationship with this particular teacher. After a few lessons, tentative ideas about the teacher will have stabilized and students can tell what kind of teacher someone "is". It is essential that students perceive teachers as confident, in charge, and fair. For this to happen, the teacher must establish himself/herself as an appropriate authority figure and role model (den Brok, Brekelmans & Wubbels, 2004).

Teacher-Student Interactions: Good interaction between teachers and students will create positive relationships in the classroom and contribute to effective learning. In fact, effective teachers can assess changes in students' behavior and understand the needs of students in the classroom. Moreover, the teachers can shape the classroom environment to be comfortable and therefore improve the ability of students to learn. Conducive classroom environment emphasizes cooperation and openness between teachers and students. Therefore, in learning and teaching especially science subjects, students should be allowed to interact with teachers, classmates and surroundings. Interaction with the environment during learning process will stimulate all students' senses and encourage students to learn in a creative and innovative way. Communication is crucial for good teacher-pupil relationships. Communication in the classroom can be defined as the interchange of thoughts, feelings and information between the teacher and the pupils. Through good communication, the teacher motivates, guides and encourages student learning; and without such interaction, good relationships cannot be established and maintained nor can the teacher meets pupils' needs. The way teachers talk and communicate with students affects greatly the behavior of students and interaction in the classroom. Good communication generates a climate conducive to quality learning as students are willing to cooperate and demonstrate positive discipline. Establishing and maintaining good teacher-pupil relationships is crucial for student cooperation and effective teaching and learning (Ming-tak & Wai-shing, 2008). Therefore, the teacher-student interpersonal behavior is a crucial element in the teaching learning process in any country. The teachers' behavior such as compliments and punishment have a strong impact on students' learning.

The Validity and Development of the Questionnaire on Teacher Interaction (QTI): Wubbles, Creton and Hooymayers, (1985) developed a model to map interpersonal teacher behavior extrapolated from the work of Leary (1957). This model has been used in Netherlands in the development of an instrument, the Questionnaire on Teacher Interaction (QTI). The original version of the QTI in Dutch language consisted of 77 items. After extensive analysis, the 77-item Dutch version was reduced to a 64-item version. Later an Australian version of the QTI containing 48 items was developed (Fisher, Henderson, & Fraser, 1995). The behavior aspects measured by QTI are Leadership, Helping/Friendly, Understanding, Student Responsibility/Freedom, Uncertain, Dissatisfied, Admonishing and Strict. Fisher, Rickards, Goh and Wong (1997, cited in Koul & Fisher, 2004) carried out a study by using QTI which was involving 720 students in Singapore and 705 students in Australia. Khine and Fisher (2001, cited in Koul & Fisher, 2004) administered the QTI to 1188 students from 54 science classes in Brunei. This study provided further validation data on QTI and indicated that this tool is a valid and reliable instrument to be used in this context (Koul & Fisher, 2004). In this study, only the four of the eight scales are used to investigate teacher-student interactions. The four scales used in this study are leadership, helping/friendly, understanding and strict. The specific meaning for each of the four scales describes as follows:

- (i) Leadership - the extent to which teacher provides leadership to class and holds student attention.
- (ii) Understanding – the extent to which teacher shows understanding, concerning and caring to student.
- (iii) Helping/Friendly – the extent to which teacher is friendly and helpful towards student.
- (iv) Strict – the extent to which teacher is strict with and demanding student.

Research Method

The main purpose of the study is to investigate the students' perceptions of teacher interaction with students in the middle school science classrooms. This section is concerned with research design and procedure, population and sample size, instrument and data analysis.

Research Design and Procedure

The research design for this study was a descriptive design and sought to investigate the students' perceptions of teacher interaction with students in the middle school science classrooms. In this study, data were collected through a questionnaire. After the research design was selected, the instrument was used to investigate students' perceptions of teacher interaction. All of the items in Questionnaire on Teacher Interaction (QTI) developed by Fisher, Henderson and Fraser (1995) were adapted to Myanmar nature. After preparing the items for each category, expert teachers' review was conducted for questionnaire validity. A review for instrument was undertaken by eight experienced teacher educators from Department of Curriculum and Methodology, Yangon University of Education. And then, the pilot testing was conducted and the internal consistency (Cronbach's alpha) of Questionnaire on Teacher Interaction (QTI) is (0.79). Therefore, the main study was conducted in November, 2022.

Population and Sample Size

The samples for this study were chosen from six Basic Education High Schools in Taungoo Township. Though there are three districts in Bago Region (East), one district was randomly selected for this study. In Taungoo District, there are five townships. And then, one township was randomly selected from Taungoo District (see Table 1).

Table 1. Selected Township in Taungoo District

District	Township	Selected Township
Taungoo District	Taungoo Yedashe Oaktwin Htantabin Phyu	Taungoo

The sample schools for this study were selected by using the random sampling technique. The number of students selected were (302). Participants in this study are all Grade Six students. Table 2 shows the sample size of the selected schools.

Table 2. Sample Size

No.	Township	School	Number of participants
1	Taungoo	BEHS 1	39
2	Taungoo	BEHS 2	68
3	Taungoo	BEHS 3	35
4	Taungoo	BEHS 4	80
5	Taungoo	BEHS 5	37
6	Taungoo	BEHS 7	43
Total			302

Note: BEHS = Basic Education High School

Research Instrument

The instrument, the Questionnaire on Teacher Interaction (QTI) developed by Fisher, Henderson and Fraser (1995) was used for this study. In the questionnaire, closed-ended questions were used to avoid personal bias. The closed-ended questions were prepared based on five-point Likert scales ranging from (1) strongly disagree to (5) strongly agree. For this study, the questionnaire involved (24) items with four dimensions.

Data Analysis

The data were analyzed by using the Statistical Package for Social Sciences (SPSS). The mean, standard deviation and percentage were calculated to know the level of students' perceptions of teacher interaction. To compare the mean differences between the two groups (male and female) of Grade Six students, inferential statistics (independent samples *t*-test) was used.

Findings

This section is concerned with the findings based on the quantitative study. It includes two parts. The first part is the findings of students' perceptions of teacher interaction with students by comparing the mean differences and the second part is the findings of students' perceptions of teacher interaction with students between male and female students.

Findings of Students' Perceptions for the Comparison of Means in Each Scale

In order to examine the percentage of the low, moderate, and high level for the students' perceptions of teacher interaction with students in the middle school science classrooms, a descriptive statistics (percentage) was used. The percentage level of all participants' responses in leadership scale was presented in Table 3.

Table 3. Percentage of Levels for Students' Perceptions in Leadership

Level of students' perceptions	Score	No. of participants	Percentage (%)
Low	$x < 23.98$	40	13%
Moderate	$23.98 \leq x \leq 29.14$	230	76%
High	$x > 29.14$	32	11%
Total		302	100%

The result in Table 3 showed that most of the middle school students in Basic Education High School perceived a moderate level in science teachers' leadership scale. Thus, it can be interpreted that most of the students have the positive attitudes toward their science teachers' leadership. Table 4 shows the findings of the students' perceptions in understanding scale.

Table 4. Percentage of Levels for Students' Perceptions in Understanding

Level of students' perceptions	Score	No. of participants	Percentage (%)
Low	$x < 21.98$	30	10%
Moderate	$21.98 \leq x \leq 28.20$	238	79%
High	$x > 28.20$	34	11%
Total		302	100%

According to the above result, most of the middle school students in Basic Education High School perceived a moderate level in science teachers' understanding scale. The findings of the students' perceptions of teacher interaction in helping/friendly scale were presented in Table 5.

Table 5. Percentage of Levels for Students' Perceptions in Helping/Friendly

Level of students' perceptions	Score	No. of participants	Percentage (%)
Low	$x < 18.83$	35	12%
Moderate	$18.83 \leq x \leq 26.59$	223	74%
High	$x > 26.59$	44	14%
Total		302	100%

According to Table 5, most of the middle school students in Basic Education High Schools perceived a moderate level in science teachers' helping/friendly scale. Therefore, it can be interpreted that the science teachers are warm, helpful and friendly to the students. The findings of the students' perceptions of teacher interaction in strict scale were presented in Table 6.

Table 6. Percentage of Levels for Students' Perceptions in Strict

Level of students' perceptions	Score	No. of participants	Percentage (%)
Low	$x < 18.72$	41	14%
Moderate	$18.72 \leq x \leq 26.78$	205	68%
High	$x > 26.78$	56	18%
Total		302	100%

According to the above results, most of the middle school students in Basic Education High School perceived a moderate level in science teachers' strict scale.

Findings of Students' Perceptions for the Comparison of Means in Four Scales

In order to find out the students' perceptions of teacher interaction with students in the middle school science classrooms, the questionnaire was used with four scales. According to the results, the findings of the students' perceptions of teacher interaction were presented in Table 7.

Table 7. Means of Students' Perceptions of Teacher Interaction in the Selected Basic Education High Schools

Dimensions	No. of participants	Mean	Std. Deviation	Minimum	Maximum
Leadership	302	26.56	2.57	15	30
Understanding	302	25.09	3.10	10	30
Helping/Friendly	302	22.71	3.88	6	30
Strict	302	22.75	4.03	6	30

The mean comparison of students' perceptions on the four scales of teacher interaction was illustrated in Figure 1.

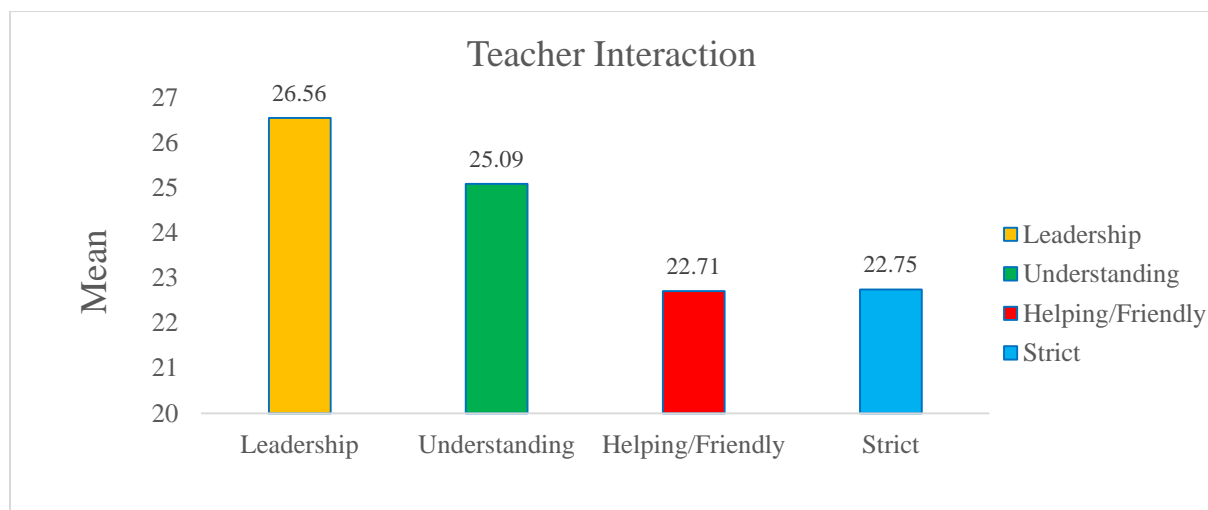


Figure 1. The Comparison of the Means of the Students' Perceptions on the Four Scales of Teacher Interaction

According to the results, the percentage of the low, moderate, and high level for the students' perceptions of their classroom environment was presented in Table 8.

Table 8. Percentage of Levels for Students' Perceptions of Teacher Interaction

Level of Students' Perceptions	Score	No. of Students	Percentage (%)
Low	$x < 94.63$	43	14%
Moderate	$94.63 \leq x \leq 108.75$	217	72%
High	$x > 108.75$	42	14%
Total		302	100%

Figure 2 shows the percentage of students' perceptions of teacher interaction.

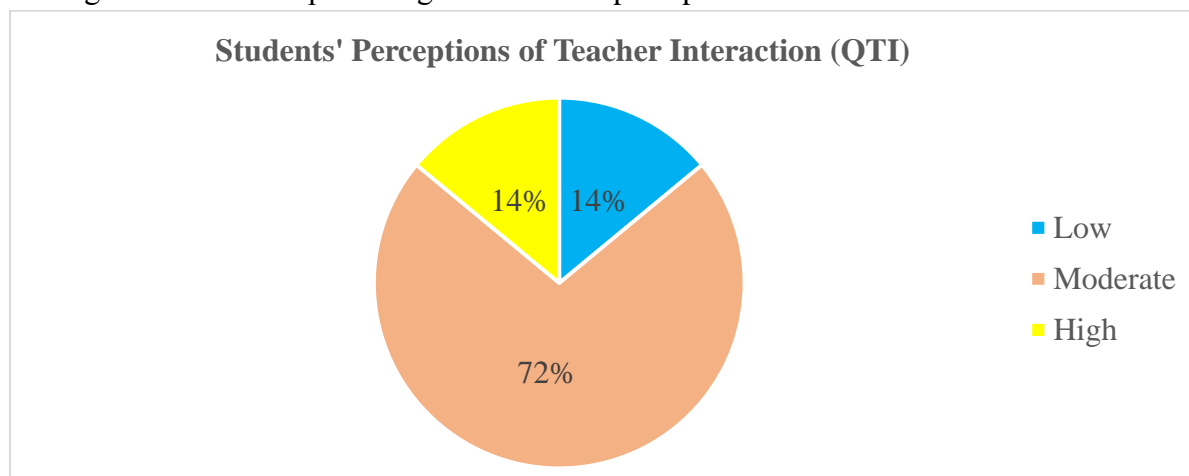


Figure 2. Students' Perceptions of Teacher Interaction

According to the above results, most of the students in Basic Education High School perceived a moderate level in perceptions of teacher interaction. According to Table 7, the highest mean and the lowest mean were (26.56) and (22.71) respectively. It can be interpreted that the mean of students' perceptions of the science teachers' leadership is the highest and that of helping/friendly is the lowest. Thus, the science teachers should help the students as much as possible. Moreover, the science teachers should treat the students with friendly mind.

Findings of Students' Perceptions of Teacher Interaction between Male and Female Students

By using independent samples *t*-test, the data were analyzed to compare the differences between male and female in students' perceptions of teacher interaction (See Table 9).

Table 9. Results of the Differences between Male and Female Students

Gender	N	Mean	Std. Deviation	Mean Difference	<i>t</i>	<i>df</i>	Sig. (2-tailed)
Male	163	97.15	11.384	.08	.07	300	.943 (ns)
Female	139	97.06	8.675				

Note: ns = not significant

According to the results, there was no significant difference between male and female for the students' perceptions of teacher interaction in the middle school science classroom and it was shown in Figure 3.

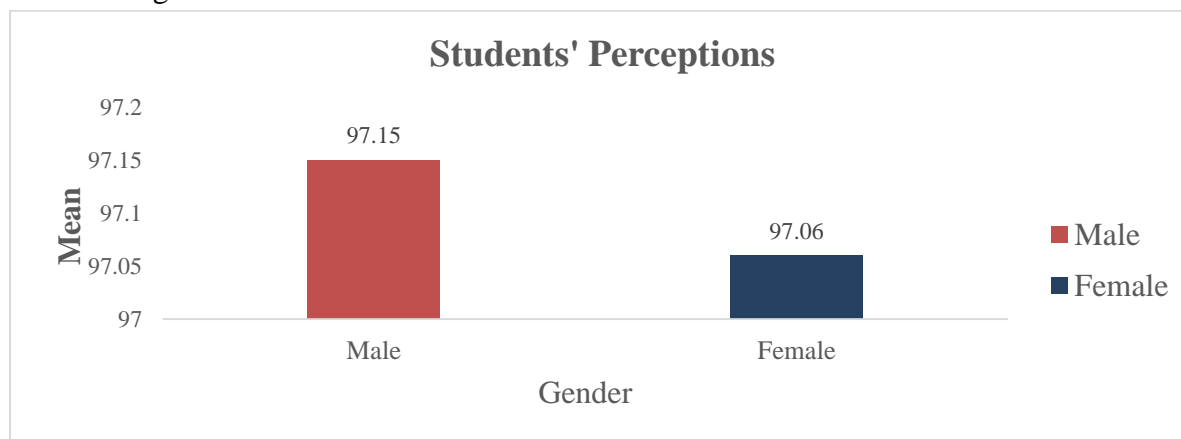


Figure 3. Comparison of Mean Scores on the Differences between Male and Female Students

Discussion

In this study, the comparison of the mean differences in four scales of the students' perceptions of teacher interaction can be investigated. According to the findings, the highest and the lowest mean scores were (26.56) and (22.71) respectively. The high mean scores proposed that the positive perceptions of teacher interaction. Thus, the students' perceptions were mostly positive in teachers' leadership and understanding. The mean scores for these two scales are (26.56), and (25.09) respectively. According to the results, it can be interpreted that the students' perceptions of teacher interaction were positive. Thus, this study recommended that the students' perceptions of teacher interaction can be determined by using the four scales to know their positive perceptions of teacher interaction in the middle school science classroom. This result is not in line with the study of Khine (2005) who studied the students' perceptions of teacher interaction in Singapore. According to his result, the students did not perceive positive interaction with their teachers and the students perceived their teachers to be in general authoritative in the classroom.

Moreover, this result is in line with the study of Henderson, Fisher and Fraser (1994) who studied the students' perceptions of teacher interaction. In their study, the students positively perceived science teachers' leadership, understanding and helping/friendly. Therefore, this study pointed out that the students' positive perceptions of teacher interaction can be determined by using the four scales in the questionnaire.

The data were analyzed by using independent samples *t*-test to compare the differences between male and female in students' perceptions of teacher interaction. According to the results,

there was no significant difference between male and female for the students' perceptions of teacher interaction. Therefore, it can be interpreted that the students' perceptions of teacher interaction between male and female were the same and thus their classroom learning may be fair, happy and friendly.

This result is not in line with the study of Negovan, Raciú and Vlad (2010) who studied the students' perceptions of teacher interaction in Turkey. In their study, there were significant differences in the comparison of male and female students. According to their results, the female students perceived more positively than the male students in the perceptions of teacher interaction.

Suggestions

The science teachers should possess positive relationships with their students and they should understand the students' behaviors in the classroom. Moreover, the science teachers should have good leadership to guide and get attention of their students. Furthermore, the science teachers should understand the needs of the students in the classroom in order to contribute the effective learning. And then, the good communication between science teachers and students should be created to motivate and encourage the students' science learning. The most important factor is that science teachers should have good behaviors because the teacher was an ideal person for the students. In addition, the science teachers should possess friendly and helpful mind to get belief from their students as a good leader. Moreover, the science teachers should have friendly interaction with students to create the positive classroom environment in the teaching-learning process.

It can be suggested for the students that they should have positive interaction and communication with their science teachers. In order to have good interaction and communication between teachers and students, the students should possess positive view of their science teachers. And then, communication in the classroom can be defined as the interchange of thoughts, feelings and information between the teachers and the pupils (Ming-tak & Wai-shing, 2008). Therefore, the students should believe their science teachers as good leaders and should follow under the guidance of their teachers. Moreover, this study can suggest that the students should perceive positive attitudes on leadership, understanding, helping/friendly and strict behaviors of their science teachers in order to develop their positive perceptions on teacher interaction.

Recommendations

Based on the findings of this study, the following recommendations are made for the development of students' perceptions of teacher interaction with students.

1. This study was carried out for middle school students in learning science.
2. This study helped the students to perceive the positive perceptions of teacher interaction in the science classrooms and assisted them to have the good communication and positive attitudes towards their science teachers.
3. This study was conducted with science teachers and students in the middle school classrooms, but the other subjects and the other school levels should be selected.
4. In this study, sample schools were randomly selected from Taungoo Township. Further research should be conducted for the rest states and regions.
5. This study was conducted by using only questionnaire due to time limitation.
6. Further research should be conducted by using observation and interview with students to know the students' perceptions of teacher interaction thoroughly.
7. Further research should be carried out for the development of students' achievement related to the students' perceptions of teacher interaction.

Conclusion

The main purpose of this study is to investigate the students' perceptions of teacher interaction with students in the middle school science classrooms. In this study, a descriptive research design was used. The questionnaire was used to investigate the students' perceptions of their classroom learning environment. For quantitative data collection, simple random sampling method was used for selecting the schools. The selected schools were from Taungoo Township and the data were collected from 302 students in these schools. In this study, the comparison of the mean differences in four scales of the questionnaire was conducted. And then, the comparison between male and female students was conducted by using independent samples *t*-test. According to the results, there was no significant difference between male and female in the students' perceptions of teacher interaction.

From the results of comparing mean differences in four scales, it was found that the students perceived positive perceptions of teacher interaction in the middle school science classroom. The friendly interaction between teachers and students will create positive relationships in the classroom and contribute to effective learning. Therefore, the teachers can shape the classroom environment to be comfortable and improve the ability of students to learn. Moreover, the interaction with teachers and environment during the learning process will stimulate all students' sense and encourage students to learn in a creative and innovative way. In addition, the teachers' attitude, pedagogy, planning, preparation, and management are going to affect how the students respond in the classroom. Thus, it is essential that students should perceive teachers as the confident, and fair teacher. By the results of this study, it is proposed that the students' positive perceptions of teacher interaction can be determined by four scales of the questionnaire. Therefore, the students' positive perceptions of teacher interaction can allow them to feel safe and good feeling in their classroom and can develop their effective learning. In conclusion, this study is expected to enhance the students' positive perceptions of teacher interaction in all schools in Myanmar.

Acknowledgements

We would like to express our respectful gratitude to Dr. Kay Thwe Hlaing (Rector, Yangon University of Education), Dr. May Myat Thu (Pro-Rector, Yangon University of Education), Dr. Khin Khin Oo (Pro-Rector, Yangon University of Education), and Dr. Nyo Nyo Lwin (Pro-Rector, Yangon University of Education) for the administrative support and permission for this study.

References

- Ahmad, C. N. C., Shaharim, S. A., & Abdullah, M. F. N. L. (2016). Teacher-student interactions, learning commitment, learning environment and their relationship with student learning comfort. *Journal of Turkish Science Education*, 14(1), 57-72.
- Arends, R. I. (2012). *Learning to teach* (9th ed.). New York: The McGraw-Hill Companies, Inc.
- Arends, R. I., & Kilcher, A. (2010). *Teaching for student learning: Becoming an accomplished teacher*. New York: Routledge.
- Curby, T. W., Rudasill, K. M., Edwards, T., & Perez-Edgar, K. (2011). The role of classroom quality in ameliorating the academic and social risks associated with difficult temperament. *School Psychology Quarterly*, 26(2), 175-188.
- den Brok, P., Brekelmans, M., & Wubbles, T. (2004). Interpersonal teacher behavior and student outcomes. *School Effectiveness and School Improvement*, 15(3-4), 407-442.
- Fisher, D. L., Henderson, D., & Fraser, B. J. (1995). Interpersonal behavior in senior high school biology classes. *Research in Science Education*, 25(2), 125-133.
- Forgus, R. H., & Melamed, L. E. (1976). *Perception: A cognitive-stage approach*. New York: McGraw-Hill.
- Henderson, D. G., Fisher, D. L., & Fraser, B. J. (1994). *Learning environments and student outcomes in senior high school biology classes*. Paper presented at Annual Meeting of National Association for Research in Science Teaching, Anaheim, CA.

- Khine, M. S. (2005). *Self-perceived and students' perceptions of teacher interaction in the classrooms*. A paper presented at the Conference on Redesigning Pedagogy, Research, Policy Practice, Singapore.
- Koul, R. B., & Fisher, D. (2004). *A study of students' perceptions of science classroom learning environment and teacher-student interaction in Jammu: A cultural perspective*. Paper presented at the AARE Annual Conference, Melbourne.
- Leary, T. (1957). *An interpersonal diagnosis of personality*. New York: Ronald Press Company.
- Littlejohn, S. W., & Foss, K. A. (Ed.). (2009). *Encyclopedia of communication theory*. New York: SAGE Publications, Inc.
- Ming-tak, H., & Wai-shing, L. (2008). *Classroom management: Creating a positive learning environment*. Hong Kong: Hong Kong University Press.
- Ministry of Education (2016). *National education strategic plan*. The Government of the Republic of the Union of Myanmar: Ministry of Education.
- Negovan, V., Raci, A., & Vlad, M. (2010). Gender and school-related experience differences in students' perception of teacher interpersonal behavior in the classroom. *Procedia Social and Behavioral Sciences*, 5(2010), 1731-1740.
- Telli, S., den Brok, P., & Cakiroglu, J. (2017). Students' perceptions of science teachers' interpersonal behavior in secondary schools: Development of a Turkish version of the questionnaire on teacher interaction. *Learning Environ Res*, 10, 115-129.
- Walters, J., & Frei, S. (2007). *Practical strategies for successful classrooms: Managing classroom behavior and discipline*. USA: Shell Education.
- Watzlawick, P., Beavin, J. H., & Jackson, D. (1967). *The pragmatics of human communication*. New York: Norton.
- Woollard, J. (2010). *Psychology for the classroom: Behaviorism*. New York: Routledge.
- Wubbles, T., Creton, H. A., & Hooyamers, H. P. (1985). *Discipline problems of beginning teachers: Interactional teacher behavior mapped out*. Paper presented at the Annual Meeting of American Education Research association, Chicago, IL.