

Student-Teacher Communication Barriers in Vocational Education: A Descriptive Analysis of Physical, Language, Social, and Psychological Factors

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Abstract: This study examined student-teacher communication barriers in a vocational school in Antique Province, Philippines, for Senior High School students. It profiled students by sex and strand, identified technical, language, social, and psychological teacher-student communication barriers, found a significant relationship between student profile and classroom communication barriers, and used the findings to improve teacher-student communication. The research used descriptive surveys. The study collected sex and strand statistics from Senior High School students. The researchers collected most information through a questionnaire checklist. Most women selected SHS STEM. Their biggest communication barriers are physical (noise from various sources). Physical, verbal, social, and psychological communication issues were ‘average’ for girls. HUMMS, STEM, and ATM students encounter “average” classroom physical communication challenges. Communication efficiency depends on physical traits. STEM students have “average” language issues. In the t-test of substantial communication obstacles by sex, physical and psychological factors differ, but language and physical aspects do not. The ANOVA results on communication barriers by strand show that physical and psychological factors differ, but language and physical factors do not. Researchers provide efficient classroom communication methods. Teachers should develop action plans based on researchers' practical ideas. For optimum learning, the school head must provide ventilation and space. Teachers should be trained in classroom communication to support children with low comprehension, receptivity, and knowledge.

Keywords: Student-Teacher Communication; Communication Barriers; Classroom Communication; Senior High School Students; Physical Barriers; Language Barriers; Social Barriers; Psychological Barriers; Vocational Education; Philippines and Descriptive Survey.

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1. Introduction

The primary objective of this study was to identify the student-teacher communication barriers perceived by the Senior High School learners of a vocational school in Antique Province, Philippines, in the classroom. Communication forms an integral part of the teaching-learning process because it helps teachers to impart information, explain concepts, give instructions, clarify expectations, assess understanding, and build meaningful relationships with learners. Good classroom communication is not simply about the teacher's ability to speak clearly [1]. It also requires students to listen, understand, interpret, respond, ask questions and give feedback. Good communication between teachers and students makes classroom activities more interactive, more organized and more conducive to learning. In contrast, barriers that hinder message transmission or interpretation may lead to misunderstanding, confusion, anxiety, decreased participation, and difficulty understanding academic content [2]. This study sought specifically to: 1. Determine the profile of the students in terms of sex and strand. 2. Identify the teacher-student communication barriers experienced by students in terms of technical or physical aspects, language aspects, social aspects and psychological aspects. 3. Find out if there is a significant relationship or difference between the students' profiles and the communication barriers they experience in the classroom. 4. Use the findings as a basis for improving teacher-student communication. These aims matter because students have different Characteristics and educational backgrounds, which can affect how they communicate with teachers and how they understand classroom communication [3].

Factors such as sex, academic strand, learning preferences, language proficiency, social interaction, confidence and psychological condition can affect students' ability to receive and understand information [4]. Classroom conditions – noise, ventilation, classroom space, instructional materials, and other physical characteristics of the classroom – may facilitate or hinder communication. The study used a descriptive-survey methodology to gather information from Senior High School students about their experiences with classroom communication barriers. The main tool used to gather the necessary information was a questionnaire-checklist. The descriptive-survey method was used because it allowed the researchers to describe the current state of communication conditions experienced by the students and determine the degree to which various categories of barriers affected classroom interaction. The study provided an opportunity to understand communication not only from teachers' perspectives but also from learners' perspectives by obtaining responses directly from students [5]. This learner-centered perspective matters because communication is effective only if learners receive and understand the intended message. The respondents' profile showed that most participants were female. STEM was the most preferred Senior High School strand among the respondents. The distribution of students by sex and strand provided a basis for examining whether communication barriers differed by these characteristics. Knowing the learner profile in Senior High School is very important because students are enrolled in different academic and vocational pathways, which may need different learning activities, instructional methods, classroom interactions and communication needs [6].

For example, students who will pursue STEM, HUMSS and ATM may be exposed to different academic content and class activities that can influence how they relate to teachers and interpret instructional messages [7]. The results found that students' most common communication barriers were physical/technical, especially noise from different sources. The results demonstrate the importance of the physical classroom environment in effective communication. External noise can interfere with students' ability to hear, concentrate on and interpret information even when teachers are knowledgeable and communicate their lessons clearly. Noise can come from adjacent classrooms, school activities, students, traffic, construction, equipment or other environmental sources [8]. When noise is constant or excessive, teachers may repeat instructions, raise their voices, interrupt discussion, and have fewer chances for meaningful interaction. For students, noise can cause missed information, decreased focus, misinterpretation of instructions, and difficulty following classroom discussions. The finding that physical barriers were more prominent than other communication barriers suggests that effective communication depends on more than the quality of the verbal message itself. Students require a physical environment that provides information without undue distraction [9]. Pal et al. [6] stated that students' perception of teachers' presentation of information and instruction to facilitate learning is related to effective communication between teachers and students. Teachers transmit ideas, information, and expectations through a range of means, including verbal and written communication, gestures, facial expressions, posture, and other forms of body language [10].

These verbal and non-verbal communication channels contribute to a positive classroom environment [11]. However, the environment, physical features of the students, and other learner-related factors can also affect their ability to understand information and messages effectively. Hence, it is important to consider the physical conditions surrounding communication as a vital part of classroom learning. The results also indicated that, in the physical aspect, female students faced "average" communication barriers compared with other categories such as language, social, and psychological aspects, and compared with male students. This finding implies that although students generally encountered physical barriers, the extent of experience may vary by gender. These differences may reflect students' perceptions of their classroom environment, interaction patterns, attention to environmental distractors, or other contextual factors. Differences in perception should not be viewed as evidence that one sex is inherently more affected by communication barriers than the other [12]. Rather, the finding emphasizes the importance of considering learner characteristics when developing interventions to improve classroom communication. Across

the academic strands, HUMSS, STEM, and ATM students reported “average” communication barriers in the physical aspect of classroom communication. This result further emphasizes that physical conditions may affect students across different strands [13].

Regardless of the type of academic program students are enrolled in, they need an effective classroom environment where they can hear, see, concentrate, and interact with their teachers [14]. The physical communication barriers faced by students across multiple strands suggest that environmental factors may be a broader issue at the school level rather than limited to a specific group of learners. This finding highlights the need for school-wide approaches to improve classroom conditions. Students from the STEM strand also experienced “average” communication barriers in language aspects. Language is a key modality through which teachers explicate academic ideas, ask questions, give directions, provide feedback, and evaluate student understanding. When students have difficulty understanding the vocabulary, terminology, sentence structures or explanations teachers use, communication may suffer. This challenge is especially relevant in academic subjects that use specialized terminology [15]. Teachers should consider students' comprehension levels when introducing new material. Teachers' language should be clear, structured and accessible while still maintaining academic quality. Fundamentally, communication is the process by which people send and receive messages, verbally or nonverbally. Competence in oral communication, especially speaking and listening, is crucial for success in academic, personal, and professional life. Communication theory defines communication as a process of expression, interaction and influence, in which people interact with others and use common language and expressions to influence cognition, emotions and behavior. This process is multidirectional in the classroom, as teachers do not just transmit information to passive students [1].

They interpret information, ask questions, answer questions, express confusion, show understanding, and communicate their needs. Effective teaching therefore requires continuous interaction between teachers and learners, not a one-way transfer of information. However, several barriers may impede communication. Communication is effective when the intended message is transmitted and received without major distortion, and it serves the purpose for which it was intended [3]. If the desired effect is not achieved, then it is necessary to find factors that hinder communication. Possible communication barriers, according to Bakar et al. [2], include filtering, selective perception, information overload, emotions, language, silence, communication apprehension or anxiety, sex differences and others. Such barriers can interrupt communication at various points in the process, leading to messages being delayed, misunderstood, distorted or ignored. These barriers can directly influence students' learning in an educational setting, as academic learning depends heavily on the accurate exchange of information between teachers and learners [4]. Physical barriers such as distance may prevent students from receiving an oral message accurately. In contrast, language barriers may prevent students from understanding the message's meaning even if they can hear the teacher clearly. Social barriers may affect students' willingness to ask questions or engage in discussions, while psychological barriers may cause students to feel anxious, embarrassed or afraid of making mistakes. These categories can overlap as well. For instance, a student in a noisy classroom might struggle to hear the teacher, get confused about the lesson, and then become anxious about asking for help [5].

Likewise, a student with limited comprehension might avoid participating in classroom discussions because they fear saying the wrong thing. Therefore, communication barriers should not be seen as isolated problems but as interrelated factors. Results: The results of the t-test showed a significant difference in communication barriers based on sex in physical and psychological aspects. However, the language aspect and the other aspects identified in the study did not differ significantly [6]. The results indicate that male and female students may experience or perceive some classroom communication barriers differently, especially those related to the physical classroom environment and psychological conditions. Psychological barriers to communication include anxiety, hesitation, fear of being judged, lack of confidence or discomfort in the presence of teachers and classmates [7]. These barriers can influence students' readiness to ask questions, express opinions, engage in conversations, or tell their teacher that they did not understand a lesson. The lack of a large sex difference in language-related barriers suggests that students across sex categories may experience language difficulties in similar ways. The ANOVA results by academic strand showed significant differences in the physical and psychological aspects of communication barriers. However, the ANOVA found no significant differences in the language aspect or the other reported aspects. This finding indicates that students in different strands may face varied environmental and psychological communication conditions. These variations may stem from differences in strand-related learning activities, classroom arrangements, instructional requirements, academic expectations and interaction patterns [8].

However, the lack of large differences in language-related barriers suggests that language challenges may occur across strands and are not restricted to a particular academic group. The results suggest that improving classroom communication must account for environmental and human factors [9]. Asking teachers to speak more clearly does not solve communication barriers. Communication happens in a physical setting where teachers must consider the language used to explain concepts, students' social relationships, and their psychological readiness to participate. Similarly, schools need to create a climate where students can communicate freely, and teachers can teach without undue interruptions [10]. Hence, the quality of classroom communication is affected by the interaction of teacher practices, student characteristics and school conditions. In this respect,

the researchers' recommendations are timely. Schools should implement strategies to overcome the communication barriers students face in the classroom [11]. Teachers should not follow general recommendations; instead, they should prepare specific action plans based on the identified communication problems and proposed strategies. Such plans might include establishing classroom communication protocols, removing sources of extraneous noise, checking for students' understanding of directions, encouraging students to ask for clarification, using appropriate verbal and nonverbal communication strategies, and creating opportunities for students to express challenges that interfere with their learning.

Teachers can also provide instruction through multiple channels, such as oral and written instructions, visual examples, demonstrations and gestures, so students have more than one way to access important information [12]. The recommendation that school heads create a conducive learning environment is equally important. Schools should provide good ventilation, enough classroom space, and the right physical conditions for concentration and communication [13]. Improving the environment can reduce distractions and help students hear and understand teachers better. Proper classroom organization can also enhance the teacher's movement, eye contact, group interaction, and use of nonverbal communication. Because physical barriers have become one of the most visible concerns in the study, school administrators should consider classroom environmental conditions as part of educational quality, not just infrastructure. Another important recommendation from the findings is teacher training. Professional development programs should focus on effective classroom communication and be designed to meet the needs of learners with low comprehension, receptive difficulties, or limited knowledge [14]. Teachers need practical strategies to simplify complex information without losing academic content, check comprehension, encourage participation, and identify signs that students have misunderstood instructions. Training should also cover nonverbal communication, as gestures, facial expressions, eye contact, posture and other cues can reinforce or clarify spoken messages.

Pal et al. [6] noted that teachers communicate through spoken and written media, as well as gestures and other body language, all of which can help create a positive classroom environment. There is also a significant difference in psychological barriers based on sex and academic strand that needs attention [15]. Students may not wish to communicate for fear of criticism, embarrassment, saying the wrong thing or the negative reaction of the teacher or other students. Teachers can help break down these barriers by creating classroom environments where mistakes are seen as opportunities for learning rather than as reasons for humiliation [1]. Encouraging respectful dialogue, providing constructive criticism, acknowledging student contributions and allowing sufficient time for students to formulate responses can create a psychologically supportive environment. Students may be more willing to participate actively in classroom communication when they believe their questions and opinions are valued. Ultimately, effective communication between teachers and students is essential to successful classroom learning [2]. Senior High School students experience communication barriers due to physical, language, social, and psychological conditions that may affect their ability to receive, interpret, and respond to information. The results suggest that physical barriers, especially noise from various sources, are a major concern for respondents.

Differences in physical and psychological communication barriers were also identified by sex and academic strand. Language-related barriers, however, did not show significant differences in the corresponding statistical tests. These results suggest that communication problems are multi-dimensional and require coordinated responses from teachers, students and school administrators [3]. Thus, the study provides a basis for improving teacher-student communication in the classroom of Senior High School learners in the vocational school setting in Antique Province, Philippines [4]. Teachers communicate information, students receive and interpret it, and school administrators provide the conditions for communication. Communication is a shared responsibility. Successful classroom communication gives students and teachers opportunities to exchange information and feedback, since communication is a process of expression, interaction, and influence [5]. Similarly, because communication barriers can distort messages at different stages of the communication process, identifying and reducing them is important for improving students' classroom experiences. Schools can use practical classroom strategies, teacher-specific action plans, improved physical learning conditions, appropriate resources and targeted teacher training to reduce communication barriers and create more effective, accessible and supportive learning environments. The findings can thus contribute to better teacher-student interaction as well as to improved student engagement, comprehension, participation and overall learning outcomes [10].

1.1. Statement of the Problem

This study aimed to determine the student-teacher communication barriers in the classroom of Senior High School learners at Antique Vocational School for SY 2023-2024. Specifically, it sought to answer the following questions:

- How may the profile of the students be described in terms of sex and strand?
- What teacher-student communication barriers are experienced by students in terms of technical aspects, language aspects, social aspects, and psychological aspects when taken as an entire group and when categorized according to sex and strand?
- Is there a significant difference in the teacher-student communication barriers experienced by students in terms of

technical aspects, language aspects, social aspects, and psychological aspects when categorized according to sex and strand?

- How may the findings of this study help enhance teacher-student communication in the classroom?

1.2. Hypothesis

There is no significant difference between the student profile and the student-teacher communication barriers they experienced in the classroom.

2. Literature Review

2.1. Effective Communication

In a two-way conversation, people use appropriate channels or media to convey their ideas, emotions, thoughts, facts, and views to one another. The receiver's feedback verifies its success. The interaction between instructors and students, as well as amongst themselves, is crucial to the success of any educational setting. They work together to accomplish the learning goals in a timely and efficient manner. Classroom discourse is strongly correlated with student achievement and teacher effectiveness. Classroom relationships are fostered through the use of language as a tool and medium of communication [4]. Related elements determine the efficacy of classroom communication. In a classroom setting, these elements can either break down or open up communication. The quality of communication is determined by these factors. If any one of these things is wrong, the message will be ineffective. Effective classroom communication is crucial for students' learning and the teacher's own professional development, thus it's important for educators to be aware of these challenges and how to overcome them.

2.2. Barriers to Classroom Communication

Teachers in each given classroom play the role of senders, conveying ideas, information, and instruction through a wide range of verbal and nonverbal cues. Maintaining an upbeat atmosphere in the classroom is facilitated by effective communication. To be effective, communication must accomplish its goals, which include facilitating faster and simpler learning, opening doors to new opportunities, and encouraging favorable attitudes. Clarity, honesty, focus, consistency, sufficiency, punctuality, feedback, and the right network are the tenets of effective communication. Classroom discourse improves when teachers adhere to these guidelines [5]. When messages are not twisted and remain true to their original intent, communication is effective. It is the responsibility of educators to determine what circumstances serve as or contribute to impediments when the intended result is not attained. Any time these obstacles are present, they distort the message. Once they've been identified, teachers should act accordingly to overcome obstacles. The following is a list of the many obstacles to classroom discussion organized into more generalized types.

Physical Barriers: Teachers are more likely to accomplish their goals in the classroom when they are able to interact with pupils in a setting that is both physically and mentally comfortable for them. Classrooms can be physically challenging places to communicate due to factors such as background noise, difficulty seeing or hearing, discomfort from the surroundings or one's own body, interruptions, and poor lighting, seating, or acoustics. Another obstacle that could arise is the use of media that does not work adequately for communication. Media transform into a means of disseminating information [6]. If it is not selected according to the context and condition of students and the purposes of communication, it will affect the clarity and understanding of the message.

Language Barriers: In a classroom setting, language is the medium of exchange. Communication sometimes falls flat in classrooms even when the physical setting is ideal, if teachers fail to effectively convey their messages through their language use [7]. Language barriers to classroom communication involving senders, receivers, and media quality can arise from teachers' overly verbal and flamboyant style of speech, as well as from students' inadequate command of the English language, impaired listening skills, inadequate comprehension, large linguistic gap between them and their teachers, etc.

Psycho-Social Barriers: The sender's mental state and the receiver's mental state are both potential sources of the psychological barriers. Psychology plays a significant role in classroom discourse by way of bias, apathy, inattention, emotions, repetition, daydreaming, bewilderment, anxiety, bad health, lack of drive, discontent, impaired cognitive capacities, and unsatisfied curiosity. Another obstacle to good communication is selective or mistaken perception [8]. It is believed to be the bedrock upon which all other forms of knowledge, including thinking and attitude formation, rest. Perception, facilitated by our sensory mechanism, is a learning tool. Imprecise communication is the result of impaired perceptual ability. Background factors, such as students' and teachers' prior knowledge and understanding, cultural background, socioeconomic status, etc., contribute to social obstacles. Prejudices and biases based on culture impede effective communication. Teachers and students are unable to effectively communicate when they do not share any common ground. As receivers, students are tasked with deciphering

encoded information sent by teachers. Assuming there is some degree of shared ground between the two parties involved, the process should go off without a hitch.

2.3. Studies on Communication Barriers

Collins [4] examined emotional, psychological, practical and social factors that form communication barriers. Johnson [8] considered the different forms of verbal and non-verbal communication, cultural communication and communication enhancers. He contended that the classroom should provide a variety of stimuli, a secure, comfortable feeling and be adapted to fit various activities while allowing privacy and individuality. Andres et al. [1] in an article concluded that evidence on the effectiveness of a particular teaching method may be neither sufficient nor necessary and, ultimately, each instructor will individually weigh the perceived costs and benefits to decide whether to use a new method of teaching or not, and even then, trial-and-error learning is likely.

Bakopoulou et al. [5] concluded that scores for the language learning environment dimension were significantly higher than language learning interaction, which in turn was higher than scores for language learning opportunity. Okon [13] studied the role of non-verbal communication in education and concluded that educators need to develop skills to recognize conflict and respond in a non-confrontational, non-aggressive way. Johnson [8] examined the possible occurrence of the “Pygmalion effect,” a type of self-fulfilling prophecy in the classroom. Pathan [14] explored the problems that prevent students from mastering the needed oral communication skills and found that the main barriers are the inability to discriminate between long and short vowels, failure to pronounce sounds unavailable in the first language, and misapplication of stress.

3. Methodology

This study aims to determine the student-teacher communication barriers in the classroom of Senior High School learners at Antique Vocational School for SY 2023-2024. This study will be conducted with 50 randomly selected Senior High School learners in Antique Vocational School in the District of Bugasong. The researchers will use convenience sampling to gather the respondents for this study. To determine the communication barriers encountered by SHS students in the classroom, the researchers constructed a questionnaire–checklist as the research instrument (Table 1).

Table 1: Scale in describing the level of teacher-learner communication barriers inside the classroom

Scale	Meaning	Interpretation
4.21 – 5.00	Often	Very High
3.41 – 4.20	Always	High
2.61 – 3.40	Sometimes	Average
1.81 – 2.60	Rarely	Low
1.00 – 1.80	Never	Very Low

They submitted it for a series of corrections and validation. The researchers also submitted validation letters and letters to the school principals. The research instrument has two parts: Part I is the personal data sheet where respondents provide their age, sex, and strand; Part 2 is the checklist to be rated by the respondents. The study used statistical tools such as frequency, percentage, and Pearson's r to analyze the data.

4. Results and Discussions

4.1. Profile of Students

Table 2 presents the profile of students in terms of sex and strand. The results show that most student-respondents are female (26 out of 50; 52%), and that STEM is the most chosen strand (16 out of 50; 32%).

Table 2: Profile of students in terms of age, sex, and strand

Variables	F (N=50)	%
Sex		
Male	24	48
Female	26	52
Strand		
HUMS	13	26

STEM	16	32
ABM	8	16
TVL	13	26

This means respondents are spread across HUMS, STEM, ABM, and TVL, with STEM being the most preferred SHS strand. Students choose these strands because of their interests, enjoyment, prior achievements, and career aspirations.

4.2. Communication Barriers inside the Classroom as an Entire Group

Table 3 shows the communication barriers students experience in the classroom in terms of physical, language, social, and psychological aspects. The results show that students' communication barriers in the classroom are highest in physical aspects, with a total mean score of 2.76 (SD = 0.56). Among the physical factors contributing to communication barriers in the classroom, noise (from different sources) has “High” communication barriers, with a mean score of 3.42 (SD = 0.76).

Table 3: Communication barriers inside the classroom as an entire group

Communication Barriers	Mean	Sd.	Description
A. Physical Aspects			
1. Noise (from different sources)	3.42	0.76	High
2. The teacher or the visual aids were not perceivable by the eye	2.74	0.75	Average
3. The information from the teacher was not being heard	2.34	1.04	Low
4. Environmental discomfort such as too much heat	3.28	1.55	Average
5. Lack of arrangement for lighting	2.24	0.77	Low
6. Too crowded setting arrangement	2.74	0.92	Average
7. Improper functioning of the media or audio devices	2.56	0.97	Low
Overall Mean	2.76	0.56	Average
B. Language Aspects			
1. Teachers' use of excessive verbal expression	2.46	1.05	Low
2. Verbosity and unclear symbols or graphics	2.30	0.74	Low
3. Poor receptive abilities or the inability to accept and process new ideas and concepts	2.70	0.79	Average
4. Poor listening skills	2.34	1.10	Low
5. Lack of comprehension	2.62	1.01	Average
6. Wide gap between the teacher's and student's language, etc.	2.42	1.07	Low
Overall Mean	2.47	0.58	Low
C. Social Aspects			
1. Insufficient prior knowledge and understanding	2.70	0.81	Average
2. Different cultural background, socio-economic background, tradition, etc.	2.30	1.07	Low
3. Cultural biases and prejudices	2.20	0.90	Low
4. Lack of common ground between teachers and students leads to ineffective communication	2.22	0.89	Low
Overall Mean	2.36	0.54	Low
D. Psychological Aspects			
1. Feeling of anxiety	2.08	1.08	Low
2. Disinterest in the message	2.10	0.89	Low
3. Inattention	2.14	0.95	Low
4. Daydreaming	2.36	0.98	Low
5. Confusion	2.60	1.05	Low
6. Unrewarding experience	2.06	0.84	Low
7. Poor physical health or illness	2.00	1.01	Low
8. Lack of motivation	2.32	1.20	Low
9. Poor mental or cognitive abilities	2.12	0.85	Low
Overall Mean	2.20	0.66	Low

This means that the classroom and school environment are not conducive to effective communication. This aligns with previous studies concluding that noise causes environmental stress. Comparing the statistics for Burdwan and Kolkata shows that (i) more than 30% of teachers in Kolkata are unaffected by external noise, while in Burdwan less than 10% are unaffected by noise.

4.3. Communication Barriers Experienced by Students as to Sex

Table 4 shows that, by sex, female students encountered ‘average’ communication barriers in physical aspects compared to males and to other aspects of communication barriers, such as language, social, and psychological aspects.

Table 4: Communication barriers experienced by students by sex

Communication Barriers	Male			Female		
	M	Sd.	Description	M	Sd.	Description
Physical Aspects	2.58	0.58	Low	2.93	0.49	Average
Language Aspects	2.38	0.61	Low	2.56	0.55	Low
Social Aspects	2.32	0.51	Low	2.38	0.58	Low
Psychological Aspects	1.98	0.76	Low	2.40	0.46	Low

This finding is consistent with Lunerberg [12], who found that female students are distracted by overcrowding that causes stress.

4.4. Communication Barriers Experienced by Students in Terms of Strand

Table 5 shows that, by strand, students in HUMMS, STEM, and ABM encountered “average” communication barriers in physical aspects. This means that physical aspects matter for effective communication. Students in the STEM strand have also encountered “average” communication barriers in language aspects.

Table 5: Communication barriers experienced by students in terms of physical aspects, language aspects, social aspects, and psychological aspects

Communication Barriers	HUMMS			STEM			ABM			TVL		
	M	Sd.	Des.	M	Sd.	Des.	M	Sd.	Des.	M	Sd.	Des.
Physical Aspects	2.64	0.50	Ave	3.14	0.42	Ave	2.84	0.49	Ave	2.36	0.52	Low
Language Aspects	2.44	0.70	Low	2.72	0.40	Ave	2.50	0.43	Low	2.19	0.65	Low
Social Aspects	2.38	0.81	Low	2.36	0.45	Low	2.47	0.53	Low	2.25	0.35	Low
Psychological Aspects	2.35	0.44	Low	2.56	0.42	Low	2.31	0.56	Low	1.54	0.70	Very Low

This means that STEM students have difficulty with language communication. This result is consistent with Pathan [14], whose study found that an inadequate range of vocabulary, passive sentences and reported speech prevent learners from understanding and conveying a message.

4.5. Significant Difference in the Communication Barriers

Table 6 shows the t-test results for significant differences in communication barrier aspects by sex. The results show a significant difference in psychological aspects, but no significant difference in language and physical aspects.

Table 6: T-test results on the communication barriers by sex

Communication Barriers	Mean		t-value	Df.	Sig.
	Male	Female			
Physical Aspects	2.58	2.93	-2.322	48	.025
Language Aspects	2.38	2.56	-1.065	48	.292
Social Aspects	2.32	2.38	-.397	48	.693
Psychological Aspects	1.98	2.40	-2.399	48	.020

This means that, regardless of sex, communication barriers in terms of physical and psychological aspects vary significantly. In contrast, their experiences do not differ significantly in social and physical aspects.

4.6. Significant Difference in Communication Barriers by Strand

Table 7 shows the ANOVA results for significant differences in communication barriers by strand. The results show significant differences in physical and psychological aspects, but no significant differences in language and social aspects.

Table 7: ANOVA results on the significant differences in communication barriers by strand

		Sum of Squares	Df.	Mean Square	F-value	Sig.
Physical Aspects	Between Groups	4.643	3	1.548	6.717	.001
	Within Groups	10.599	46	.230		
	Total	15.242	49			
Language Aspects	Between Groups	2.014	3	.671	2.105	.113
	Within Groups	14.674	46	.319		
	Total	16.688	49			
Social Aspects	Between Groups	.259	3	.086	.278	.841
	Within Groups	14.253	46	.310		
	Total	14.511	49			
Psychological Aspects	Between Groups	8.096	3	2.699	9.586	.000
	Within Groups	12.950	46	.282		
	Total	21.047	49			

This means that, regardless of strand, communication barriers in terms of physical and psychological aspects vary significantly in the classroom. In contrast, their experiences in terms of social and physical aspects do not vary significantly.

4.7. Enhancing Student-Teacher Communication inside the Classroom

Based on the study results, the researchers presented a recommended action plan to help teachers enhance student-teacher communication in the classroom. Table 8 shows the data.

Table 8: Recommended plans for enhancing student-teacher communication inside the classroom based on the results of the study

Areas for Improvement (Based on the Results of the Study)	Recommended Actions to be done by the teacher
A. Physical Aspects	a. Identify the sources of noise
1. Noise (from different sources)	b. Plan strategies together with the school head, teachers, and student organization on how to minimize noises
2. Environmental discomfort, such as too much heat	a. Request the school to provide adequate ventilation in every classroom
3. Too crowded a setting arrangement	a. Review the class size and classroom size b. Suggest to the school head to have two shifts in classes to avoid congestion
4. The teacher or the visual aids were not visible	a. Enlarge the visual aids to make them visible to the students sitting in the back
B. Language Aspects	a. Repeat the instructions for clarity
1. Poor receptive abilities or the inability to accept and process new ideas and concepts	b. Always check for the students' understanding
2. Lack of comprehension	c. Unlock difficult words
C. Social Aspects	d. Relate instructions to students' experiences
1. Insufficient prior knowledge and understanding	

5. Conclusion and Recommendation

Based on the results, senior high school students fall within the K-12 age range of 16-18 years old, and their strand choice depends on their interests, enjoyment, prior achievements, and career aspirations. Moreover, regarding the communication barriers they encountered in the classroom, the results showed that physical aspects or environmental factors are the most common barriers experienced by learners. Therefore, the classroom and school environment are not conducive to effective communication. Female students encountered 'average' communication barriers in physical aspects compared to males and to other aspects, such as language, social, and psychological barriers. Thus, physical aspects matter for effective communication. Students in the STEM strand have difficulty with language communication; moreover, whether male or female, communication barriers in physical and psychological terms vary significantly in the classroom. In contrast, their social and physical experiences do not vary significantly. Furthermore, regardless of the students' strand, communication barriers in physical and psychological terms vary significantly in the classroom. In contrast, their social and physical experiences do not vary

significantly. The researchers recommend applying actionable strategies to address the communication barriers students experience in the classroom. Teachers should also develop specific action plans based on the researchers' suggested strategies. The school head shall ensure a conducive school learning environment by providing resources for proper ventilation and adequate space. Trainings for teachers should be conducted on delivering effective communication in the classroom, focusing on addressing the needs of learners with low comprehension, receptive skills and knowledge.

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