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Evaluating Group Discussion Skills and Collaborative Learning among Upper Secondary Students at Hun Sen Krong Tep Nimith Pailin High School

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A B S T R A C T

This study investigates group discussion skills among upper secondary school students at Hun Sen Krong Tep Nimith Pailin High School in Cambodia, addressing a significant gap in the literature regarding the development and application of these skills in the educational context. Group discussions are essential for fostering critical thinking, effective communication, teamwork, and problem-solving abilities. Using a quantitative research design, a structured questionnaire was administered to assess dimensions of group discussion skills, including participation, engagement, communication, teamwork, critical thinking, and reflection. Preliminary findings reveal that many students struggle with active participation due to limited communication skills, lack of confidence, and insufficient training in collaboration, which hinder both individual academic performance and the effectiveness of group learning activities. By identifying key factors influencing these skills and their interrelationships, this study aims to provide valuable insights that can inform educators and policymakers in designing targeted interventions to enhance group discussion skills, ultimately improving educational outcomes for students at the school.

Keywords: Group discussion skills, Student engagement, Communication skills, Critical thinking, Problem-solving

1. Introduction

Hun Sen Krong Tep Nimith Pailin High School, situated in Pailin Province, Cambodia, is famous for its beautiful architecture and lovely gardens. The school features a modern, well-kept building that offers a great learning environment. Its vibrant, carefully designed garden adds to the campus's beauty, creating a welcoming atmosphere for both students and staff (Sous, 2020) [1]. In addition to its renowned attractiveness, Hun Sen Krong Tep Nimith High School had gained attention the previous year for its policy banning students from using smartphones during school hours. This measure was implemented to help students focus more on their studies (Mom, 2019) [2]. Earlier this year, the school was awarded for its outstanding principals, teachers, and clean environment by the ex-Prime Minister of Cambodia. The evaluation was conducted in the school year 2022-2023 (Torn, 2024)[3].

1.1 Background of the Study

The background of this study is rooted in the educational context of Hun Sen Krong Tep Nimith Pailin High School in Cambodia, with a specific focus on group discussion skills among upper secondary school students. Group discussions are essential for fostering critical thinking, effective communication, teamwork, and problem-solving abilities, all of which are crucial for academic success and personal development. However, there is a notable lack of research on how these skills are cultivated and utilized within Cambodian high schools. This gap underscores the need for a thorough investigation into the current state of group discussion skills among students.

Additionally, this study is set against the backdrop of ongoing educational reforms aimed at improving student engagement and performance in Cambodia. By examining key variables such as participation and engagement in group discussions, communication skills, teamwork, critical thinking, problem-solving, and reflection, the study aims to provide a comprehensive analysis of the factors influencing group discussion skills. Understanding these dynamics is vital for identifying gaps and areas for improvement, ultimately contributing to enhanced educational practices and better outcomes for students in the region.

1.2 Problem Statement

The problem statement of this study centers on the critical examination of group discussion skills among upper secondary school students at Hun Sen Krong Tep Nimith Pailin High School in Cambodia. Group discussion is an essential component of the modern educational framework, fostering skills

such as critical thinking, effective communication, teamwork, and problem-solving. However, there is limited research on how these skills are developed and utilized by students in Cambodian high schools. This gap in the literature underscores the need for a focused study to understand the current state of group discussion skills and their impact on students' academic and personal development.

Preliminary observations and anecdotal evidence suggest that many students struggle with active participation and engagement in group discussions, which can hinder their overall learning experience and academic performance. Issues such as limited communication skills, lack of confidence, and insufficient training in teamwork and collaboration are commonly reported. These challenges not only affect individual student outcomes but also impact the effectiveness of group learning activities, which are designed to enhance collective problem-solving and critical thinking abilities. Understanding these challenges in detail is crucial for developing targeted interventions to improve group discussion skills.

This study aims to investigate the various dimensions of group discussion skills, including participation and engagement, communication skills, teamwork and collaboration, critical thinking and problem-solving, and reflection and improvement. By examining these areas through a structured questionnaire and quantitative analysis, the study seeks to identify the key factors influencing students' group discussion abilities and their interrelationships. The findings will provide valuable insights for educators, policymakers, and stakeholders to design and implement strategies that enhance group discussion skills, thereby improving the overall educational experience and outcomes for students at Hun Sen Krong Tep Nimith Pailin High School.

2. Literature Review

2.1 Theoretical Framework

Constructivist Learning Theory: Constructivism is a learning theory emphasizing the active role of learners in building their own understanding by reflecting on experiences, creating mental representations, and incorporating new knowledge into their schemas. This approach promotes deeper learning and posits that knowledge is constructed by the learner and reality is determined by their experiences (Mcleod, 2024)[4].

Social Learning Theory: Social learning theory, introduced by Albert Bandura, asserts that learning occurs through observation, imitation, and modeling, influenced by factors such as attention, motivation, attitudes, and emotions. This theory highlights the interaction of environmental and cognitive elements in the learning process, suggesting that individuals learn by observing the consequences of others' behaviors. Bandura's approach goes beyond traditional behavioral theories, which focus on conditioning, and cognitive theories that emphasize attention and memory. People can observe behaviors directly through social interactions or indirectly via media, with actions that are rewarded being more likely to be imitated, while punished actions are typically avoided (Cherry, 2022)[5].

Collaborative Learning Theory: Collaborative learning is an educational approach that utilizes groups of two or more learners to enhance understanding by working together on problems, tasks, or new concepts. This method actively engages learners in processing and synthesizing information rather than relying on rote memorization. By collaborating on projects, learners defend their positions, reframe ideas, listen to different viewpoints, and articulate their thoughts, ultimately gaining a deeper understanding as a group than they would as individuals (Andreev, 2024)[6].

2.2 The Review of Literature

Participation and Engagement

Group learning enhances comprehension and knowledge acquisition. Research indicates that students engaged in group problem-solving are more committed to the solution and report higher satisfaction with their participation compared to those who were not involved. Such engagement helps students gain a better understanding of themselves (Technology Services, 2023)[7]. Student engagement boosts motivation and positively impacts their learning experience, stimulating further learning and fostering individual growth. When students are encouraged to engage in learning, they are more likely to show interest in the content. They recognize the value of collaboration, develop better connections with classmates, and enhance their interpersonal skills (Shahid, 2019)[8].

Participation is a highly effective strategy in the teaching and learning process. Students contribute in various ways, yet many teachers mistakenly believe that students are only active if they adhere to the teacher's learning objectives (Triyanto, 2019)[9]. Research by Alsebaie (2023) [10] reveals that through engagement, students perceive group activities as valuable for enhanced learning, better understanding, improved communication skills, and increased enjoyment in the classroom.

Communication Skills

Group work discussions are an effective method for teaching students to speak, which helps them develop their communication skills (Serena, 216)[11]. Effective communication improves understanding of individuals and situations, facilitates the resolution of differences, builds trust and respect, and fosters an environment that encourages the exchange of creative ideas and problem-solving (Jouany, V., & Martic, K., 2023)[12]. These skills include clearly expressing thoughts to ensure messages are conveyed accurately and comprehensively, minimizing misunderstandings. Nonverbal cues such as body language and tone of voice add further meaning and emotion to communication, making it more effective and impactful (Zoe Talent Solutions, 2024)[13].

Effectively using body language is crucial for conveying messages accurately (Abdullah, M. N., & Jasmi, K. A., 2016)[14]. Additionally, the ability to clarify questions is important for active participation in group discussions and reducing misunderstandings (Kim, 2016) [15]. Summarizing, which involves restating the main points or themes of what others have said concisely and accurately, is valuable for understanding and reflecting peers' needs and goals (LinkedIn Community, 2023)[16]. Respecting different viewpoints is also essential for effective communication. It is important to separate the argument from the person to avoid making it personal, thereby maintaining a respectful and constructive dialogue (Sage, 2016)[17].

Teamwork and Collaboration

Collaboration is crucial in group work discussions as it enables members to work together to achieve learning outcomes. It is particularly beneficial when applying prior knowledge to problem-solving (Borhan, 2016) [18]. However, conflicts often arise during group discussions, so the ability to manage these conflicts is an important communication skill. Consequently, group work helps students learn how to resolve conflicts within the team (Čermȧkovȧ, 2023)[19].

Teamwork and collaboration are active learning strategies where students work in small groups to achieve shared goals. These strategies are vital to the learning process, as they help students develop problem-solving, communication, and critical thinking skills, while also providing opportunities to learn from peers (Instructional Technology and Design Services, 2024)[20]. Effective collaboration involves working together towards a common objective, recognizing, and utilizing each team member's strengths, which is essential for building strong work relationships and achieving shared goals (Eduz Tuition, 2023)[21].

3. Methodology

3.1 Research Design

The study utilized a quantitative research method with a descriptive and correlational approach to investigate the group discussion skills of upper secondary school students at Hun Sen Krong Tep Nimith Pailin High School. A structured questionnaire comprising 27 variables was developed to gather detailed information on this topic. The primary objective was to understand the current state of group discussion skills among the students and to explore the relationships between various influencing factors.

The questionnaire was organized into six main areas: demographic information, Participation and Engagement in Group Discussion, Communication Skills, Teamwork and Collaboration, Critical Thinking and Problem Solving, and Reflection and Improvement. Each section was designed to collect specific data that contributes to a comprehensive understanding of the students' abilities and experiences in group discussions. This methodological approach facilitated systematic data collection and analysis, allowing for meaningful insights into the group discussion skills of the students and the interactions between different variables

3.2 Research Participants

The study conducted at target school aimed to reach students from grades 10 to 12. The total population of students in these grades was 500. However, the study collected responses from a sample of 170 students who participated voluntarily. The sampling method used for this study can be classified as convenience sampling, as the participants self-selected to take part in the survey. This method was chosen likely due to its practicality and ease of access to willing participants, facilitated by the distribution of the questionnaire via Google Form through the Telegram platform.

The demographic profile of the participants included students aged between 15 and 22 years. This age range is typical for upper secondary school students in Cambodia. The voluntary nature of the sampling means that the sample may not be fully representative of the entire student population, as it might over-represent those who are more engaged or have a greater interest in the subject matter of the survey. Despite this, the data gathered from this diverse age group provides valuable insights into the attitudes and preferences of students in this educational setting.

In terms of educational level, all participants were from the upper secondary level, covering grades 10 to 12. This includes students in the final stages of their secondary education, preparing for higher education or entering the workforce. The use of a digital platform for data collection ensured accessibility and convenience for the participants, allowing for a more efficient and streamlined data collection process. Overall, the sample provides a useful snapshot of the student body at Hun Sen Krong Tep Nimith Pailin High School, offering a foundation for understanding their group discussion skills and related educational outcomes.

3.3 Data Analysis

The SPSS tool was used for data analysis in this study. Cronbach's Alpha was employed to assess the reliability of the data. The analysis revealed a Cronbach's Alpha value of 0.950, indicating excellent internal consistency among the items. This high value suggests a strong correlation among the items, effectively measuring the same underlying construct and confirming the data's reliability. Further examination of item-total statistics and inter-item correlations supported these findings, ensuring that the dataset is robust and dependable for subsequent analyses.

Table 1– Case Processing Summary

Table 2 – Reliability Statistics

		N	%
Cases	Valid	170	100.0
	Excludeda	0	.0
	Total	170	100.0

a. Listwise deletion based on all variables in the procedure.

Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items
.950	.949	27

In this study, the mean and standard deviation were utilized as key statistical tools. The mean, a measure of central tendency, represents the typical or central value of a dataset. This measure helps to summarize the data with a single, representative value, facilitating easy comparisons between different datasets or groups within the same dataset. The standard deviation, on the other hand, quantifies the amount of variation or dispersion in the dataset. It indicates how spread out the data points are from the mean, providing insight into the consistency of the data. A higher standard deviation suggests greater variability, with data points more dispersed from the mean, while a lower standard deviation indicates that the data points are closer to the mean.

In addition to these fundamental measures, the study also applied correlation and covariance analyses to explore the relationships between variables. Correlation analysis assesses the strength and direction of the relationship between two variables, providing a correlation coefficient that indicates the degree of linear association. Covariance analysis, on the other hand, measures the extent to which two variables change together, offering a deeper understanding of their interdependence. By using these analyses, the study aimed to identify significant relationships between variables, enhancing the overall comprehension of the data and contributing to more informed conclusions.

Mean and standard deviation were also the tools adopted in this study. The mean provides a measure of central tendency, representing the typical or central value of a dataset, and helps to summarize the data with a single value that is representative of the entire dataset. It allows for easy comparison between different datasets or groups within a dataset. Standard deviation quantifies the amount of variation or dispersion in a dataset, indicating how spread out the data points are from the mean and providing insight into the consistency of the data. It allows for the comparison of variability between different datasets or groups. A higher standard deviation indicates more spread out data, while a lower standard deviation indicates data points are closer to the mean.

Beside these two basic elements, the correlation analysis and the covariance analysis between variables were also applied to understand their significant relationship.

Multiple regression analysis was conducted to examine the relationships among the relevant variables. A method was applied that involved dividing the coefficients of each variable into quartiles to determine the dependent variables for this analysis. Specifically, variables with coefficients that were either less than or equal to the first quartile or greater than or equal to the third quartile were identified. These selected variables were considered appropriate for further investigation in the study, facilitating a more targeted analysis of their effects. Ultimately, a total of 10 variables were included in this further analysis, with five falling below the first quartile and the remaining five above the third quartile.

3.4 Ethical Consideration

To conform to the ethical practice of the study, informed consent was obtained from all participants. Students were informed about the purpose of the study, the nature of their participation, and their right to withdraw at any time without any consequences. This information was clearly communicated in the introduction section of the Google Form, ensuring that participants fully understood their involvement before providing their responses.

To maintain participant confidentiality and data security, several steps were implemented. The Google Form was designed to collect responses anonymously, with no personally identifiable information being recorded. This approach ensured that individual responses could not be traced back to specific students, protecting their privacy. Data security was further ensured by using secure digital platforms for both data collection and storage. Access to the collected data was restricted to the research team, and appropriate data protection measures, such as password-protected files and encrypted storage, were used to prevent unauthorized access.

3.5 Limitations of the Study

Despite the careful design and execution of this study, several limitations should be acknowledged. Firstly, the use of convenience sampling, wherein participants voluntarily chose to participate, may have introduced selection bias. This method means that the sample may not be fully representative of the entire student population at Hun Sen Krong Tep Nimith Pailin High School. Students who are more engaged or have a particular interest in the subject matter might have been more likely to participate, potentially skewing the results.

Secondly, the reliance on self-reported data collected via questionnaires introduces the possibility of response bias. Participants may have provided socially desirable answers or may not have accurately reported their true feelings and behaviors, affecting the reliability of the data. Additionally, the digital nature of the questionnaire distributed through Google Forms and Telegram required participants to have access to the internet and a basic level of digital literacy. This requirement could have excluded some students, particularly those with limited access to digital resources or lower digital skills, further impacting the representativeness of the sample.

Another limitation is the cross-sectional design of the study, which captures data at a single point in time. This design does not allow for the examination of changes over time or the establishment of causal relationships between variables. Longitudinal studies would be needed to track changes and determine causality more effectively.

Finally, while measures were taken to ensure the anonymity and confidentiality of participants, the online nature of data collection may still raise concerns among some students about the privacy of their responses. These concerns could influence their willingness to participate or the honesty of their answers. Acknowledging these limitations is crucial for interpreting the findings of the study and for informing future research efforts to build on and address these challenges.

4. Findings

4.1 Comprehensive Description of the Variables

The data provides a comprehensive overview of item statistics based on responses from 170 participants, focusing on various aspects of group discussion skills among upper secondary school students. The average age of respondents is 16.33 years, with a standard deviation of 1.191, indicating a fairly consistent age distribution. The average grade level of participants is 10.58, with a standard deviation of 0.804, suggesting that most students are in a similar academic stage.

In terms of group discussion engagement, students reported a mean score of 7.23 for active participation, reflecting a positive level of involvement. They demonstrated a slightly higher average of 7.71 for contributing their ideas and opinions, indicating confidence in sharing thoughts. Listening attentively garnered the highest score at 7.90, showcasing students' commitment to understanding others during discussions. Additionally, the willingness to encourage peers to share their ideas received a mean score of 7.89, further emphasizing a collaborative spirit.

Staying focused on discussions was rated at 7.61, while students felt moderately confident in clearly expressing their thoughts, with a mean score of 6.97. The use of appropriate body language scored lower at 6.71, suggesting an area that may need improvement. The ability to ask clarifying questions received a strong mean of 7.89, indicating a proactive approach to engagement.

Regarding respect for differing viewpoints, participants scored 7.14, demonstrating an understanding of diverse perspectives. Collaboration was highlighted by a high score of 7.95 for working well with others, while helping to resolve conflicts within groups received a mean score of 7.43. However, supporting group decisions despite initial disagreements had a lower average of 6.64, suggesting some hesitance in this area.

The ability to identify and analyze problems scored 6.73, while suggesting solutions was rated at 7.09, indicating a willingness to contribute to problem-solving efforts. Critical evaluation of others' ideas received a mean score of 7.28, demonstrating a thoughtful approach to group discussions. Participants showed competence in integrating different ideas to reach coherent conclusions, reflected in a score of 7.58.

Self-reflection and improvement were also notable, with scores of 6.85 for reflecting on performance and 6.84 for seeking feedback on discussion skills. Participants indicated a commitment to personal development, evidenced by a mean score of 7.41 for setting goals to improve their skills and 7.30 for practicing active listening and communication outside of group contexts. Overall, respondents expressed a strong awareness of their strengths and areas for growth in group discussions, with a mean score of 7.63, underscoring their commitment to enhancing their discussion abilities.

Table 3 – Item Statistics

Variables	Definitions	Mean	Std. Deviation	N
V1	Age	16.33	1.191	170
V2	Grade	10.58	.804	170
V3	I actively participate in group discussions.	7.23	1.768	170
V4	I contribute my ideas and opinions during discussions.	7.71	1.454	170
V5	I listen attentively when others are speaking.	7.90	1.502	170
V6	I encourage others to share their ideas.	7.89	1.778	170
V7	I stay focused on the topic of discussion.	7.61	1.658	170
V8	I can clearly express my thoughts and ideas in a group setting.	6.97	1.669	170
V9	I use appropriate body language during discussions.	6.71	2.117	170
V10	I ask questions to clarify points I don't understand.	7.89	1.651	170
V11	I can summarize others' points accurately.	6.74	1.641	170
V12	I respect different viewpoints and opinions.	7.14	1.759	170

V13	I work well with others to achieve common goals.	7.95	1.625	170
V14	I help resolve conflicts within the group.	7.43	1.692	170
V15	I support group decisions even if I initially disagreed.	6.64	2.057	170
V16	I take on responsibilities and roles within the group.	7.62	1.613	170
V17	I value the contributions of all group members.	8.17	1.443	170
V18	I can identify and analyze problems during discussions.	6.73	1.660	170
V19	I suggest possible solutions to problems discussed in the group.	7.09	1.546	170
V20	I critically evaluate the ideas presented by others.	7.28	1.547	170
V21	I can integrate different ideas to form a coherent conclusion.	7.58	1.537	170
V22	I adapt my ideas based on new information and perspectives.	6.91	1.743	170
V23	I reflect on my performance in group discussions.	6.85	1.632	170
V24	I seek feedback from others on my discussion skills	6.84	1.711	170
V25	I set goals to improve my group discussion skills.	7.41	1.586	170
V26	I practice active listening and effective communication outside of group discussions.	7.30	1.624	170
V27	I am aware of my strengths and areas for improvement in group discussions.	7.63	1.638	170

4.2 Variables and Key Correlations

- Demographic Information:

Age and Grade: The correlation between age and grade is 0.552, indicating a moderate positive relationship. As students age, they tend to be in higher grades, which is expected in a typical academic progression.

- Participation and Engagement:

The variable: “I actively participate in group discussions”, and variable: “I contribute my ideas and opinions during discussions” have a correlation of 0.579. This strong positive relationship suggests that students who participate actively are also likely to contribute their ideas and opinions. While, variable: “I listen attentively when others are speaking” is strongly correlated with the variable: “I encourage others to share their ideas” at 0.563 positive relationship, indicating that attentive listeners tend to promote inclusivity by encouraging others to share.

- Communication Skills:

The variable: “I can clearly express my thoughts and ideas in a group setting” and the variable: “I use appropriate body language during discussions” have a moderate correlation of 0.361. This implies that clear verbal communication and effective body language often go hand in hand. While the variable: “I ask questions to clarify points I don’t understand” has a strong positive correlation with the variable: “I listen attentively when others are speaking” at 0.513 positively relationship, indicating that attentive listening leads to more frequent clarification through questions.

- Teamwork and Collaboration:

The variable: “I work well with others to achieve common goals” and “I help resolve conflicts within the group” have a high correlation of 0.520, suggesting that effective collaboration often involves conflict resolution skills. While, the variable: “I take on responsibilities and roles within the group” is highly correlated with both the variable: “I actively participate in group discussions” at 0.516 positive relationship; and with the variable: “I contribute my ideas and opinions during discussions” at 0.593 positive relationship. This indicates that taking on group roles is closely linked to active and vocal participation.

- Critical Thinking and Problem Solving:

The variable: “I can identify and analyze problems during discussions” and the variable: “I suggest possible solutions to problems discussed in the group” show a high correlation of 0.542. This suggests that problem identification and solution suggestion are closely related skills in group settings. While the variable: “I critically evaluate the ideas presented by others” and the variable: “I can integrate different ideas to form a coherent conclusion” have a correlation of 0.475, indicating that critical evaluation is crucial for synthesizing various ideas into a cohesive conclusion.

- Reflection and Improvement:

The variable: “I reflect on my performance in group discussions” and the variable: “I seek feedback from others on my discussion skills” are highly correlated at 0.587 positive relationship, suggesting that self-reflection is often accompanied by seeking external feedback. While the variable: “I set goals to improve my group discussion skills” and the variable: “I practice active listening and effective communication outside of group discussions” have a strong correlation of 0.598, indicating that goal-setting for improvement is linked to practicing these skills beyond the group setting.

The variable: “I am aware of my strengths and areas for improvement in group discussions” has strong correlations with several variables, including “I reflect on my performance in group discussions” at 0.421 moderately positive relationship; and with the variable: “I seek feedback from others on my discussion skills” at 0.513 positive relationship. This highlights the importance of self-awareness in personal development and improvement in group discussions.

Table 4 – Inter-Item Correlation Matrix

	V1	V2	V3	V4	V5	V6	V7	V8	V9	V10	V11	V12	V13	V14
V1	1.000	0.552	0.065	0.022	-0.008	-0.003	0.098	-0.022	0.055	-0.120	-0.022	0.017	0.137	0.112
V2	0.552	1.000	0.097	0.051	-0.049	0.076	0.077	0.079	0.098	0.018	0.037	0.021	0.019	0.020
V3	0.065	0.097	1.000	0.579	0.506	0.458	0.572	0.411	0.349	0.408	0.413	0.483	0.457	0.386
V4	0.022	0.051	0.579	1.000	0.596	0.475	0.576	0.482	0.318	0.462	0.396	0.456	0.544	0.518
V5	-0.008	-0.049	0.506	0.596	1.000	0.563	0.557	0.450	0.396	0.513	0.390	0.465	0.483	0.485
V6	-0.003	0.076	0.458	0.475	0.563	1.000	0.622	0.422	0.374	0.697	0.362	0.470	0.592	0.434
V7	0.098	0.077	0.572	0.576	0.557	0.622	1.000	0.454	0.426	0.473	0.460	0.524	0.576	0.585
V8	-0.022	0.079	0.411	0.482	0.450	0.422	0.454	1.000	0.361	0.417	0.550	0.463	0.512	0.430
V9	0.055	0.098	0.349	0.318	0.396	0.374	0.426	0.361	1.000	0.405	0.310	0.477	0.406	0.389
V10	-0.120	0.018	0.408	0.462	0.513	0.697	0.473	0.417	0.405	1.000	0.439	0.437	0.573	0.396
V11	-0.022	0.037	0.413	0.396	0.390	0.362	0.460	0.550	0.310	0.439	1.000	0.411	0.385	0.442
V12	0.017	0.021	0.483	0.456	0.465	0.470	0.524	0.463	0.477	0.437	0.411	1.000	0.446	0.562
V13	0.137	0.019	0.457	0.544	0.483	0.592	0.576	0.512	0.406	0.573	0.385	0.446	1.000	0.520
V14	0.112	0.020	0.386	0.518	0.485	0.434	0.585	0.430	0.389	0.396	0.442	0.562	0.520	1.000
V15	0.024	-0.095	0.190	0.218	0.419	0.245	0.344	0.359	0.385	0.188	0.392	0.536	0.355	0.493
V16	0.034	0.056	0.516	0.593	0.585	0.539	0.591	0.567	0.378	0.488	0.557	0.547	0.595	0.578
V17	0.050	-0.045	0.448	0.447	0.491	0.531	0.602	0.356	0.412	0.467	0.349	0.391	0.481	0.551
V18	0.066	0.101	0.435	0.455	0.397	0.413	0.499	0.454	0.417	0.358	0.532	0.435	0.438	0.568
V19	0.032	0.044	0.463	0.462	0.557	0.494	0.510	0.535	0.373	0.410	0.516	0.505	0.456	0.535
V20	0.001	0.014	0.405	0.453	0.443	0.480	0.421	0.450	0.468	0.453	0.405	0.514	0.437	0.451
V21	0.037	-0.061	0.362	0.548	0.451	0.397	0.472	0.422	0.288	0.455	0.502	0.352	0.569	0.538
V22	0.211	0.092	0.394	0.330	0.460	0.409	0.559	0.461	0.427	0.350	0.376	0.504	0.431	0.492
V23	0.099	0.068	0.347	0.372	0.467	0.357	0.446	0.513	0.340	0.347	0.573	0.428	0.497	0.427
V24	0.206	0.145	0.272	0.428	0.493	0.385	0.466	0.415	0.444	0.354	0.425	0.478	0.542	0.541
V25	0.042	0.050	0.442	0.522	0.521	0.471	0.569	0.548	0.408	0.517	0.605	0.484	0.612	0.554
V26	0.083	-0.012	0.405	0.491	0.449	0.411	0.477	0.403	0.430	0.454	0.387	0.389	0.524	0.431
V27	0.224	0.124	0.455	0.505	0.415	0.395	0.452	0.476	0.392	0.433	0.536	0.398	0.544	0.527

Table 4 – Inter-Item Correlation Matrix (Continued)

	V15	V16	V17	V18	V19	V20	V21	V22	V23	V24	V25	V26	V27
V1	0.024	0.034	0.050	0.066	0.032	0.001	0.037	0.211	0.099	0.206	0.042	0.083	0.224
V2	-0.095	0.056	-0.045	0.101	0.044	0.014	-0.061	0.092	0.068	0.145	0.050	-0.012	0.124
V3	0.190	0.516	0.448	0.435	0.463	0.405	0.362	0.394	0.347	0.272	0.442	0.405	0.455
V4	0.218	0.593	0.447	0.455	0.462	0.453	0.548	0.330	0.372	0.428	0.522	0.491	0.505
V5	0.419	0.585	0.491	0.397	0.557	0.443	0.451	0.460	0.467	0.493	0.521	0.449	0.415
V6	0.245	0.539	0.531	0.413	0.494	0.480	0.397	0.409	0.357	0.385	0.471	0.411	0.395
V7	0.344	0.591	0.602	0.499	0.510	0.421	0.472	0.559	0.446	0.466	0.569	0.477	0.452
V8	0.359	0.567	0.356	0.454	0.535	0.450	0.422	0.461	0.513	0.415	0.548	0.403	0.476
V9	0.385	0.378	0.412	0.417	0.373	0.468	0.288	0.427	0.340	0.444	0.408	0.430	0.392
V10	0.188	0.488	0.467	0.358	0.410	0.453	0.455	0.350	0.347	0.354	0.517	0.454	0.433
V11	0.392	0.557	0.349	0.532	0.516	0.405	0.502	0.376	0.573	0.425	0.605	0.387	0.536
V12	0.536	0.547	0.391	0.435	0.505	0.514	0.352	0.504	0.428	0.478	0.484	0.389	0.398
V13	0.355	0.595	0.481	0.438	0.456	0.437	0.569	0.431	0.497	0.542	0.612	0.524	0.544
V14	0.493	0.578	0.551	0.568	0.535	0.451	0.538	0.492	0.427	0.541	0.554	0.431	0.527
V15	1.000	0.417	0.320	0.382	0.345	0.341	0.278	0.392	0.497	0.481	0.415	0.326	0.268
V16	0.417	1.000	0.569	0.501	0.628	0.564	0.559	0.485	0.551	0.514	0.643	0.556	0.527
V17	0.320	0.569	1.000	0.422	0.513	0.545	0.470	0.495	0.408	0.375	0.492	0.516	0.442
V18	0.382	0.501	0.422	1.000	0.542	0.399	0.449	0.517	0.509	0.406	0.519	0.443	0.485
V19	0.345	0.628	0.513	0.542	1.000	0.534	0.591	0.594	0.536	0.547	0.509	0.423	0.504
V20	0.341	0.564	0.545	0.399	0.534	1.000	0.475	0.448	0.502	0.397	0.532	0.536	0.422
V21	0.278	0.559	0.470	0.449	0.591	0.475	1.000	0.463	0.500	0.526	0.548	0.389	0.551
V22	0.392	0.485	0.495	0.517	0.594	0.448	0.463	1.000	0.557	0.541	0.546	0.459	0.498
V23	0.497	0.551	0.408	0.509	0.536	0.502	0.500	0.557	1.000	0.587	0.626	0.460	0.421
V24	0.481	0.514	0.375	0.406	0.547	0.397	0.526	0.541	0.587	1.000	0.595	0.462	0.513
V25	0.415	0.643	0.492	0.519	0.509	0.532	0.548	0.546	0.626	0.595	1.000	0.598	0.657
V26	0.326	0.556	0.516	0.443	0.423	0.536	0.389	0.459	0.460	0.462	0.598	1.000	0.540
V27	0.268	0.527	0.442	0.485	0.504	0.422	0.551	0.498	0.421	0.513	0.657	0.540	1.000

Implication for Teachers in Hun Sen Krong Tep Nimith Pailin High School

The Inter-Item Correlation Matrix is a statistical tool used to examine the relationships between various variables in a study. Each cell in the matrix represents the Pearson correlation coefficient between two variables, which measures the strength and direction of their linear relationship. The values range from -1.000 to 1.000, where 1.000 indicates a perfect positive correlation, -1.000 indicates a perfect negative correlation, and values close to zero indicate little or no linear relationship. The diagonal of the matrix contains values of 1.000, representing the perfect correlation of each variable with itself.

The Inter-Item Correlation Matrix provides valuable insights into the dynamics of group discussion behaviors. Educators and facilitators can use this information to design targeted interventions that enhance specific skills. For instance, promoting attentive listening might also encourage more students to share their ideas, leading to more dynamic and inclusive discussions. Similarly, fostering a culture of active participation and role-taking can improve overall group engagement and performance.

Understanding these correlations allows for the development of comprehensive strategies to improve communication, collaboration, and critical thinking skills among students. This, in turn, can lead to more effective and productive group discussions, ultimately enhancing the learning experience.

4.2 Covariance and Key Information of the Variation

- Demographic Variables:

The covariance between the variables – Age and Grade – is 0.529, suggesting a moderate positive relationship. Both variables also have covariances with other variables, such as "I actively participate in group discussions." (0.137 and 0.138 respectively), indicating that older students and those in higher grades might participate more actively.

- Participation and Engagement:

The variable: “I actively participate in group discussions” has high covariances with variables like "I contribute my ideas and opinions during discussions" at 1.488 and with "I encourage others to share their ideas" at 1.439, suggesting these aspects are closely related to active participation.

- Communication Skills:

The variable: “I listen attentively when others are speaking” has a variance of 2.256 and shows significant covariances with variables like "I can summarize others’ points accurately" at 1.273 and "I respect different viewpoints and opinions" at 1.227, emphasizing the importance of attentive listening in effective communication.

- Teamwork and Collaboration:

The variable: “I work well with others to achieve common goals” has a variance of 2.642 and covariances with variables such as "I help resolve conflicts within the group." (1.431) and "I support group decisions even if I initially disagreed." (1.188), highlighting the interconnectedness of teamwork and conflict resolution.

- Critical Thinking and Problem Solving:

The variable: “I critically evaluate the ideas presented by others” has a variance of 2.393, and has notable covariances with the variable: "I suggest possible solutions to problems discussed in the group" at 1.277, and with the variable: "I can integrate different ideas to form a coherent conclusion" at 1.130, indicating these skills are often used together.

- Reflection and Improvement:

The variable: “I reflect on my performance in group discussions” has a variance of 2.663 and covariances with the variables: "I seek feedback from others on my discussion skills" at 1.638, and with the variable: "I set goals to improve my group discussion skills" at 1.615, showing that reflection and seeking feedback are key to improvement.

Important Insights into Covariance Analysis of Each Skills in Group Discussion

Interconnectedness: Many variables have high covariances with multiple other variables, indicating a strong interconnectedness between different aspects of participation, communication, teamwork, critical thinking, and reflection.

High Variances: Items like "I support group decisions even if I initially disagreed." (4.231) and "I use appropriate body language during discussions." (4.481) have high variances, suggesting greater variability in responses for these items.

Key Relationships: Items related to active participation, such as contributing ideas and encouraging others, tend to have higher covariances, underscoring their importance in group discussions.

Table 5 – Inter-Item Covariance Matrix

	V1	V2	V3	V4	V5	V6	V7	V8	V9	V10	V11	V12	V13	V14
V1	1.417	0.529	0.137	0.038	-0.014	-0.006	0.194	-0.044	0.139	-0.235	-0.042	0.036	0.266	0.225
V2	0.529	0.647	0.138	0.060	-0.060	0.109	0.103	0.106	0.166	0.024	0.049	0.030	0.025	0.027
V3	0.137	0.138	3.125	1.488	1.343	1.439	1.675	1.214	1.305	1.191	1.197	1.500	1.314	1.155
V4	0.038	0.060	1.488	2.114	1.302	1.229	1.388	1.169	0.978	1.109	0.945	1.166	1.286	1.275
V5	-0.014	-0.060	1.343	1.302	2.256	1.504	1.387	1.127	1.260	1.273	0.962	1.227	1.178	1.233
V6	-0.006	0.109	1.439	1.229	1.504	3.160	1.834	1.251	1.407	2.047	1.055	1.471	1.710	1.306
V7	0.194	0.103	1.675	1.388	1.387	1.834	2.748	1.255	1.495	1.294	1.252	1.529	1.553	1.641
V8	-0.044	0.106	1.214	1.169	1.127	1.251	1.255	2.786	1.275	1.151	1.507	1.359	1.389	1.214
V9	0.139	0.166	1.305	0.978	1.260	1.407	1.495	1.275	4.481	1.417	1.076	1.775	1.399	1.393

V10	-0.235	0.024	1.191	1.109	1.273	2.047	1.294	1.151	1.417	2.727	1.189	1.270	1.538	1.107
V11	-0.042	0.049	1.197	0.945	0.962	1.055	1.252	1.507	1.076	1.189	2.693	1.186	1.027	1.227
V12	0.036	0.030	1.500	1.166	1.227	1.471	1.529	1.359	1.775	1.270	1.186	3.092	1.274	1.673
V13	0.266	0.025	1.314	1.286	1.178	1.710	1.553	1.389	1.399	1.538	1.027	1.274	2.642	1.431
V14	0.225	0.027	1.155	1.275	1.233	1.306	1.641	1.214	1.393	1.107	1.227	1.673	1.431	2.862
V15	0.060	-0.157	0.692	0.651	1.295	0.897	1.173	1.232	1.675	0.640	1.325	1.939	1.188	1.717
V16	0.066	0.073	1.471	1.392	1.418	1.546	1.581	1.527	1.291	1.301	1.474	1.551	1.560	1.577
V17	0.085	-0.053	1.144	0.938	1.064	1.361	1.439	0.857	1.258	1.114	0.826	0.994	1.127	1.346
V18	0.131	0.135	1.275	1.097	0.991	1.220	1.374	1.258	1.464	0.981	1.449	1.269	1.181	1.596
V19	0.060	0.055	1.264	1.038	1.293	1.359	1.307	1.381	1.221	1.045	1.308	1.372	1.147	1.400
V20	0.001	0.018	1.106	1.018	1.028	1.320	1.081	1.162	1.533	1.156	1.028	1.398	1.098	1.180
V21	0.067	-0.075	0.984	1.226	1.041	1.086	1.204	1.082	0.936	1.154	1.267	0.953	1.422	1.399
V22	0.438	0.129	1.216	0.838	1.204	1.269	1.616	1.341	1.577	1.008	1.077	1.545	1.220	1.452
V23	0.193	0.090	1.000	0.884	1.144	1.037	1.207	1.398	1.174	0.935	1.533	1.229	1.317	1.178
V24	0.419	0.200	0.824	1.065	1.268	1.172	1.323	1.185	1.610	1.000	1.194	1.437	1.506	1.566
V25	0.079	0.064	1.238	1.203	1.242	1.327	1.496	1.450	1.369	1.353	1.576	1.351	1.578	1.487
V26	0.161	-0.016	1.162	1.160	1.095	1.186	1.283	1.092	1.479	1.217	1.033	1.111	1.383	1.184
V27	0.436	0.164	1.316	1.204	1.022	1.150	1.228	1.303	1.358	1.171	1.440	1.147	1.448	1.462

Table 5 – Inter-Item Covariance Matrix (Continued)

	V15	V16	V17	V18	V19	V20	V21	V22	V23	V24	V25	V26	V27
V1	0.060	0.066	0.085	0.131	0.060	0.001	0.067	0.438	0.193	0.419	0.079	0.161	0.436
V2	-0.157	0.073	-0.053	0.135	0.055	0.018	-0.075	0.129	0.090	0.200	0.064	-0.016	0.164
V3	0.692	1.471	1.144	1.275	1.264	1.106	0.984	1.216	1.000	0.824	1.238	1.162	1.316
V4	0.651	1.392	0.938	1.097	1.038	1.018	1.226	0.838	0.884	1.065	1.203	1.160	1.204
V5	1.295	1.418	1.064	0.991	1.293	1.028	1.041	1.204	1.144	1.268	1.242	1.095	1.022
V6	0.897	1.546	1.361	1.220	1.359	1.320	1.086	1.269	1.037	1.172	1.327	1.186	1.150
V7	1.173	1.581	1.439	1.374	1.307	1.081	1.204	1.616	1.207	1.323	1.496	1.283	1.228
V8	1.232	1.527	0.857	1.258	1.381	1.162	1.082	1.341	1.398	1.185	1.450	1.092	1.303
V9	1.675	1.291	1.258	1.464	1.221	1.533	0.936	1.577	1.174	1.610	1.369	1.479	1.358
V10	0.640	1.301	1.114	0.981	1.045	1.156	1.154	1.008	0.935	1.000	1.353	1.217	1.171
V11	1.325	1.474	0.826	1.449	1.308	1.028	1.267	1.077	1.533	1.194	1.576	1.033	1.440
V12	1.939	1.551	0.994	1.269	1.372	1.398	0.953	1.545	1.229	1.437	1.351	1.111	1.147
V13	1.188	1.560	1.127	1.181	1.147	1.098	1.422	1.220	1.317	1.506	1.578	1.383	1.448
V14	1.717	1.577	1.346	1.596	1.400	1.180	1.399	1.452	1.178	1.566	1.487	1.184	1.462
V15	4.231	1.385	0.949	1.305	1.097	1.084	0.879	1.406	1.667	1.694	1.354	1.091	0.902
V16	1.385	2.603	1.325	1.341	1.566	1.409	1.386	1.363	1.451	1.419	1.645	1.457	1.392

V17	0.949	1.325	2.083	1.011	1.145	1.218	1.042	1.246	0.961	0.927	1.126	1.209	1.046
V18	1.305	1.341	1.011	2.755	1.391	1.024	1.147	1.497	1.378	1.152	1.365	1.194	1.319
V19	1.097	1.566	1.145	1.391	2.389	1.277	1.404	1.600	1.351	1.446	1.248	1.062	1.275
V20	1.084	1.409	1.218	1.024	1.277	2.393	1.130	1.208	1.268	1.051	1.305	1.347	1.070
V21	0.879	1.386	1.042	1.147	1.404	1.130	2.363	1.241	1.255	1.383	1.336	0.972	1.389
V22	1.406	1.363	1.246	1.497	1.600	1.208	1.241	3.040	1.584	1.613	1.509	1.299	1.423
V23	1.667	1.451	0.961	1.378	1.351	1.268	1.255	1.584	2.663	1.638	1.619	1.218	1.126
V24	1.694	1.419	0.927	1.152	1.446	1.051	1.383	1.613	1.638	2.927	1.615	1.285	1.438
V25	1.354	1.645	1.126	1.365	1.248	1.305	1.336	1.509	1.619	1.615	2.515	1.540	1.708
V26	1.091	1.457	1.209	1.194	1.062	1.347	0.972	1.299	1.218	1.285	1.540	2.637	1.437
V27	0.902	1.392	1.046	1.319	1.275	1.070	1.389	1.423	1.126	1.438	1.708	1.437	2.684

4.3 The Most Consistent Variables

The five most consistent variables identified in the analysis are as follows: V17, "I value the contributions of all group members," shows the highest consistency with a coefficient of variation (CV) of 0.177, reflecting 17.7% variability. Following this is V4, "I contribute my ideas and opinions during discussions," with a CV of 0.189, translating to 18.9% variability. The third most consistent variable is V5, "I listen attentively when others are speaking," with a CV of 0.190, or 19% variability. Next is V21, "I can integrate different ideas to form a coherent conclusion," with a CV of 0.203, representing 20.3% variability. Finally, V10, "I ask questions to clarify points I don't understand," has a CV of 0.209, indicating 20.9% variability.

- ***I value the contributions of all group members (V17)***

The model's constant term is statistically significant ($p = 0.033$), indicating that when all predictors are held constant, the baseline level of valuing contributions is approximately 3.096. Among the independent variables, "I stay focused on the topic of discussion" has a positive and significant effect on the dependent variable ($B = 0.210$, $p = 0.010$), suggesting that participants who maintain focus are more likely to value the contributions of others. Additionally, "I respect different viewpoints and opinions" shows a negative and significant impact ($B = -0.154$, $p = 0.029$), indicating that a lack of respect for differing opinions correlates with lower valuation of group contributions. Similarly, "I help resolve conflicts within the group" exhibits a positive effect ($B = 0.181$, $p = 0.016$), highlighting the importance of conflict resolution in enhancing the appreciation of group members' contributions.

Other variables, such as "I critically evaluate the ideas presented by others," also show significance ($B = 0.171$, $p = 0.025$), further indicating that critical engagement with ideas is linked to valuing contributions. However, many predictors, including participation, listening skills, and contribution of ideas, did not yield statistically significant results, suggesting they may not directly influence how much participants value contributions from their peers.

- ***I contribute my ideas and opinions during discussion (V4)***

The analysis reveals several significant relationships between the independent variables and the dependent variable, "I contribute my ideas and opinions during discussions." The variable "I listen attentively when others are speaking" ($B = 0.276$, $p < 0.001$) demonstrates a strong positive and statistically significant relationship, indicating that attentive listening is crucial for actively contributing ideas and opinions in group discussions. Additionally, "I actively participate in group discussions" ($B = 0.157$, $p = 0.009$) also shows a positive and significant relationship, suggesting that active participation itself enhances the likelihood of contributing ideas and opinions.

Another key finding is that "I can integrate different ideas to form a coherent conclusion" ($B = 0.220$, $p = 0.004$) has a positive and significant effect, highlighting the importance of synthesizing diverse perspectives in contributing effectively. Conversely, "I support group decisions even if I initially disagreed" ($B = -0.105$, $p = 0.043$) shows a negative and significant relationship, suggesting that those who are reluctant to fully support group decisions may contribute less actively. Similarly, "I adapt my ideas based on new information and perspectives" ($B = -0.178$, $p = 0.007$) demonstrates a negative and significant relationship, indicating that flexibility in adapting ideas might be inversely related to actively contributing one's own ideas and opinions.

Other variables, such as age, grade, and several behavioral and interactional aspects like "I respect different viewpoints and opinions" and "I critically evaluate the ideas presented by others," did not show statistically significant relationships with the dependent variable, implying they may not directly influence the contribution of ideas and opinions in group discussions. This suggests that while active engagement, attentive listening, and critical thinking are vital for contributing ideas, other factors like demographic characteristics and some behavioral traits may not play a significant role.

- ***I listen attentively when others are speaking (V5)***

The regression analysis identifies several important variables that significantly influence the dependent variable, "I listen attentively when others are speaking." The constant term (B = 2.687, p = 0.065) is not statistically significant, suggesting that without the influence of the independent variables, the baseline level of attentive listening cannot be reliably determined. However, several independent variables show noteworthy relationships with the dependent variable.

Firstly, "I contribute my ideas and opinions during discussions" (B = 0.319, p < 0.001) shows a strong positive and statistically significant effect, indicating that individuals who actively contribute their ideas and opinions are more likely to listen attentively to others. Similarly, "I support group decisions even if I initially disagreed" (B = 0.153, p = 0.006) and "I ask questions to clarify points I don't understand" (B = 0.162, p = 0.041) both have positive and significant impacts, highlighting the importance of supportive behavior and seeking clarification in fostering attentive listening.

In addition, "I suggest possible solutions to problems discussed in the group" (B = 0.182, p = 0.032) and "I encourage others to share their ideas" (B = 0.151, p = 0.048) also show positive and significant effects. This suggests that those who are proactive in problem-solving and encourage participation are more likely to listen attentively. On the other hand, variables such as age (B = 0.066, p = 0.472), grade (B = -0.254, p = 0.053), and several other behavioral factors did not exhibit statistically significant relationships, indicating that these factors may not directly influence attentive listening in group discussions.

- ***I can integrate different ideas to form a coherence conclusion (V21)***

The coefficients table identifies several significant relationships between the independent variables and the dependent variable, "I can integrate different ideas to form a coherent conclusion." The constant term (B = 2.990, p = 0.042) is statistically significant, indicating a baseline level of integrating ideas when other factors are held constant.

"I contribute my ideas and opinions during discussions" (B = 0.260, p = 0.004) shows a strong positive and statistically significant effect, suggesting that individuals who actively contribute their ideas are more likely to effectively integrate different ideas into a coherent conclusion. Additionally, "I work well with others to achieve common goals" (B = 0.206, p = 0.014) and "I suggest possible solutions to problems discussed in the group" (B = 0.218, p = 0.011) both demonstrate positive and significant relationships, indicating that teamwork and problem-solving skills are crucial for integrating diverse ideas.

"I practice active listening and effective communication outside of group discussions" (B = -0.167, p = 0.021) shows a negative and significant relationship, which might suggest that those who focus on communication skills outside of discussions may find it challenging to integrate different ideas within group settings. Other variables, such as age (B = 0.012, p = 0.897), grade (B = -0.250, p = 0.060), and several other behavioral factors did not exhibit statistically significant relationships, indicating that these factors may not directly influence the ability to integrate different ideas during discussions.

- ***I ask questions to clarify points I don't understand (V10)***

The analysis reveals several significant relationships between independent variables and the dependent variable, "I ask questions to clarify points I don't understand." The constant term (B = 2.445, p = 0.109) indicates a baseline level when all predictors are held constant, although it is not statistically significant.

Notably, age has a significant negative effect (B = -0.265, p = 0.005), suggesting that as age increases, the likelihood of asking clarifying questions decreases. This finding may imply that younger individuals are more inclined to seek clarification during discussions. Additionally, the variable "I listen attentively when others are speaking" shows a positive and significant relationship (B = 0.178, p = 0.041), indicating that attentive listening is associated with a greater propensity to ask questions for clarification.

"I encourage others to share their ideas" stands out with a strong positive effect (B = 0.417, p = 0.000), highlighting the importance of fostering an open environment for discussion. Similarly, "I can summarize others' points accurately" (B = 0.207, p = 0.010) and "I work well with others to achieve common goals" (B = 0.221, p = 0.011) also demonstrate significant positive relationships, suggesting that collaboration and summarization skills contribute to the willingness to seek clarification.

On the other hand, "I support group decisions even if I initially disagreed" exhibits a negative effect (B = -0.129, p = 0.027), indicating that those who find it challenging to support group decisions may be less likely to ask questions for clarification. Overall, the findings underscore the importance of active listening, encouragement of participation, and collaborative skills in promoting clarification-seeking behaviors during discussions.

4.4 The Most Inconsistent Variables

The five most inconsistent variables identified in the analysis are as follows: V12, "I respect different viewpoints and opinions," is the least inconsistent CV = 0.246, reflecting 24.6% variability. The more inconsistency than this is V18, "I can identify and analyze problems during discussions," with a CV of 0.247, translating to 24.7% variability. The third most inconsistent variable is V24, "I seek feedback from others on my discussion skills," with a CV of 0.250, or 25% variability. Next is V22, "I adapt my ideas based on new information and perspectives," with a CV of 0.252, representing 25.2% variability. Finally, V15, "I support group decisions even if I initially disagreed," has a CV of 0.310, indicating 31% variability.

- ***I respect different viewpoints and opinions (V12)***

The analysis provides insight into the factors influencing the ability to "respect different viewpoints and opinions." The constant term (B = 1.780, p = 0.302) suggests a baseline level, although it is not statistically significant, indicating that other factors are more impactful.

Age and grade do not appear to significantly affect this ability, with age showing no meaningful relationship (B = -0.008, p = 0.945) and grade slightly negative but also not significant (B = -0.113, p = 0.471). However, several variables demonstrate noteworthy effects. The ability to actively participate in group discussions has a positive and significant relationship (B = 0.193, p = 0.011), indicating that active engagement correlates with a higher capacity to respect differing opinions.

Further, "I help resolve conflicts within the group" significantly contributes to respecting diverse viewpoints (B = 0.197, p = 0.027), emphasizing that conflict resolution skills enhance this respect. Similarly, supporting group decisions despite initial disagreements shows a strong positive effect (B = 0.252, p = 0.000), highlighting the importance of flexibility and collaboration in fostering respect.

Additionally, "I critically evaluate the ideas presented by others" also emerges as a significant factor (B = 0.198, p = 0.029), suggesting that critical evaluation is essential for appreciating different perspectives. Conversely, the variable "I value the contributions of all group members" has a negative and significant effect (B = -0.215, p = 0.029), indicating that a lack of value placed on contributions may hinder respect for diverse opinions. Overall, these findings suggest that active participation, conflict resolution, critical evaluation, and a supportive mindset are key drivers in respecting different viewpoints.

- ***I can identify and analyze problems during discussions (V18)***

The analysis focuses on the factors influencing the ability to "identify and analyze problems during discussions." The constant term is not significant (B = -0.144, p = 0.934), indicating that the baseline level does not provide meaningful insights.

Age and grade show no significant relationships with the dependent variable, as age has a negative coefficient (B = -0.092, p = 0.403) and grade demonstrates a slight positive effect (B = 0.183, p = 0.245), but neither is statistically significant. Among the various factors assessed, several stand out. Notably, the ability to "help resolve conflicts within the group" is positively significant (B = 0.281, p = 0.002), suggesting that conflict resolution skills enhance problem identification and analysis.

Additionally, the ability to "summarize others' points accurately" shows a significant positive correlation (B = 0.200, p = 0.029), indicating that summarization skills facilitate better problem analysis. Another important factor is "I use appropriate body language during discussions," which is marginally significant (B = 0.115, p = 0.050), highlighting the role of non-verbal communication in effective discussions.

On the other hand, "seeking feedback from others on my discussion skills" presents a significant negative relationship (B = -0.175, p = 0.049), suggesting that a lack of feedback may hinder the ability to identify and analyze problems. Overall, these findings underscore the importance of conflict resolution, summarization skills, and appropriate body language in enhancing problem identification during discussions.

- ***I seek feedback from others on my discussion skills (V24)***

The evaluation examines various factors influencing the ability to seek feedback on discussion skills. The constant term is -3.536 with a significance level of 0.029, indicating a significant baseline effect on the dependent variable.

Among the predictors, age does not show a significant effect (B = 0.059, p = 0.569), suggesting that age does not contribute meaningfully to seeking feedback. However, grade shows a marginally significant positive effect (B = 0.248, p = 0.092), indicating that higher grade levels may be associated with a greater likelihood of seeking feedback.

Participation in group discussions reveals a negative impact (B = -0.171, p = 0.018), suggesting that those who actively participate may be less inclined to seek feedback. In contrast, using appropriate body language during discussions is positively correlated (B = 0.119, p = 0.030), indicating that effective non-verbal communication may encourage seeking feedback.

The ability to identify and analyze problems during discussions is also significant (B = -0.153, p = 0.049), implying that difficulties in this area may hinder the pursuit of feedback. Conversely, suggesting solutions to group problems has a positive influence (B = 0.212, p = 0.026), indicating that those who propose solutions are more likely to seek feedback.

Further, reflecting on performance in discussions is significant (B = 0.208, p = 0.017), emphasizing the importance of self-reflection in the feedback-seeking process. Finally, setting goals for improvement shows a positive trend (B = 0.170, p = 0.092), which may suggest that goal-oriented individuals are more proactive in seeking feedback.

- I adapt my ideas based on new information and perspectives (V22)

The coefficients table evaluates factors influencing the ability to adapt ideas based on new information and perspectives. The constant term is -2.392 with a significance level of 0.156, indicating that the baseline does not significantly predict adaptability. Among the independent variables, age demonstrates a positive and significant effect (B = 0.234, p = 0.027), suggesting older participants are more likely to adjust their ideas. In contrast, grade level shows no significant relationship (B = -0.131, p = 0.390), indicating that academic standing does not impact this ability.

Participation in group discussions does not significantly affect adaptability (B = 0.022, p = 0.775), while contributing ideas has a negative influence (B = -0.276, p = 0.007), suggesting those who share opinions may struggle with adaptability. Staying focused during discussions positively correlates with

adaptability (B = 0.259, p = 0.006), highlighting the importance of maintaining attention. Additionally, accurately summarizing others' points negatively impacts adaptability (B = -0.236, p = 0.008), indicating challenges in summarizing may hinder this skill.

Key factors such as the ability to identify and analyze problems (B = 0.157, p = 0.051) and suggesting solutions (B = 0.221, p = 0.025) significantly enhance adaptability. Reflecting on performance also shows a positive effect (B = 0.186, p = 0.040), emphasizing the role of self-reflection. However, seeking feedback and setting goals for improvement do not significantly impact adaptability, with p-values of 0.281 and 0.231, respectively. Overall, the findings underscore the significance of age, focus, problem-solving, and self-reflection in adapting ideas, while some collaborative behaviors may not foster this adaptability as expected.

- I support group decisions even if I initially disagreed (V15)

The coefficients table assesses factors influencing the ability to support group decisions, even in the face of initial disagreement. The constant term is 3.388, but it is not significant (p = 0.117), suggesting that baseline levels do not provide valuable insights. Among the independent variables, age has a negligible effect (B = 0.017, p = 0.903), indicating it does not significantly influence decision support. Conversely, grade level has a negative impact (B = -0.280, p = 0.152), although it is not statistically significant.

Participation in group discussions shows a negative but non-significant association (B = -0.144, p = 0.136). Notably, contributing ideas negatively correlates with supporting decisions (B = -0.268, p = 0.043), suggesting that those who share their opinions may struggle to back group consensus. In contrast, attentive listening positively influences decision support (B = 0.337, p = 0.006), indicating that those who listen well are more likely to support group outcomes. Respecting different viewpoints is highly significant (B = 0.398, p = 0.000), emphasizing the importance of valuing diverse opinions.

Additional findings reveal that helping to resolve conflicts (B = 0.257, p = 0.021) positively impacts decision support, suggesting that effective conflict resolution skills enhance group cohesion. Reflecting on performance also shows a significant effect (B = 0.230, p = 0.048), highlighting self-reflection's role in fostering supportive attitudes. Other factors, such as suggesting solutions and seeking feedback, were not statistically significant, indicating that while certain collaborative behaviors enhance decision support, not all interactions have the same effect. Overall, key behaviors include attentive listening, respect for differing opinions, and effective conflict resolution as vital for supporting group decisions.

5. Conclusion and Recommendation

5.1 Conclusion

The findings from the study on group discussion skills among students at Hun Sen Krong Tep Nimith Pailin High School provide valuable insights into their abilities and areas for improvement. The analysis, based on responses from 170 participants, highlights several key trends in their skills.

Strengths:

High Engagement: Students demonstrated a strong level of engagement, with mean scores of 7.23 for active participation and 7.71 for contributing ideas. Their commitment to listening attentively (7.90) and encouraging others (7.89) suggests a collaborative and supportive atmosphere that fosters effective communication.

Effective Communication: While students showed moderate confidence in expressing their thoughts (6.97), they excelled in asking clarifying questions (7.89), indicating a proactive approach to understanding and interacting with their peers. This is crucial for productive discussions.

Teamwork and Collaboration: With a mean score of 7.95 for collaboration, students effectively work together, displaying good conflict resolution skills (7.43). However, the lower score for supporting group decisions despite disagreements (6.64) suggests that while they collaborate well, there is room for improvement in consensus-building.

Critical Thinking and Problem Solving: Students displayed competence in critical thinking, with scores indicating their ability to analyze problems (6.73) and integrate ideas (7.58). This capability enhances the depth and quality of group discussions, allowing for more comprehensive solutions.

Commitment to Self-Reflection: The students' scores in self-reflection (6.85) and seeking feedback (6.84) reveal their awareness of personal growth and a willingness to improve. Their high score for goal-setting (7.41) shows a proactive approach to developing their skills.

Areas for Improvement:

Communication Skills: The lower score for appropriate body language (6.71) indicates a potential area for development. Enhancing non-verbal communication skills could further improve their effectiveness in discussions.

Consensus Building: The reluctance to support group decisions despite initial disagreements (6.64) suggests that students may struggle with compromise. Encouraging practices that promote flexibility and open-mindedness could help address this.

Reflection and Improvement: While students showed a strong inclination for self-awareness (7.63), the scores for reflection and feedback indicate that more structured opportunities for self-evaluation could enhance their learning experiences.

Key Correlations:

- Active participation and contribution of ideas (correlation of 0.579) suggest that students who engage actively are also likely to share their thoughts.
- Attentive listening and encouragement of others (correlation of 0.563) indicate that students who listen well tend to promote inclusivity.
- Clear expression of thoughts and appropriate body language (correlation of 0.361) show that verbal and non-verbal communication skills are linked.
- Collaboration and conflict resolution (correlation of 0.520) highlight the importance of resolving conflicts for effective teamwork.
- Problem identification and solution suggestion (correlation of 0.542) suggest that these skills are closely related.
- Self-reflection and seeking feedback (correlation of 0.587) indicate that self-reflection is often accompanied by seeking external feedback.
- Goal-setting for improvement and practicing skills outside of group settings (correlation of 0.598) show the importance of continuous practice for skill enhancement.

Overall, the study concludes that students at Hun Sen Krong Tep Nimith Pailin High School exhibit strong group discussion skills, particularly in engagement and collaboration. However, there are areas for improvement, such as body language and supporting group decisions. The correlations suggest that fostering an environment that promotes active participation, attentive listening, and continuous self-improvement can further enhance these skills.

5.2 Recommendation

Based on the findings from the data on group discussion skills among students at Hun Sen Krong Tep Nimith Pailin High School, several recommendations can be made to enhance their group discussion capabilities and overall collaborative learning experience:

Recommendations for Students:

1. **Enhance Body Language and Non-Verbal Communication:**
    - *Practice Appropriate Body Language:* Since students scored relatively lower in using appropriate body language during discussions, workshops or role-playing exercises could help them understand and improve their non-verbal communication skills.
    - *Monitor and Reflect on Non-Verbal Cues:* Encourage students to be conscious of their body language during discussions and to seek feedback from peers on their non-verbal communication.
2. **Boost Confidence in Expressing Thoughts:**
    - *Structured Public Speaking Opportunities:* Regular opportunities for students to present ideas in front of the class can build their confidence in clearly expressing their thoughts and ideas in group settings.
    - *Peer Feedback Sessions:* Implement peer review sessions where students can practice articulating their thoughts and receive constructive feedback on their communication skills.
3. **Encourage Active Participation and Engagement:**
    - *Assign Roles in Group Discussions:* To ensure active participation, assign specific roles such as moderator, note-taker, or summarizer, which can help students engage more deeply in discussions.
    - *Foster a Safe Environment for Sharing:* Create a classroom environment that encourages all students to share their ideas without fear of criticism. This can be done through positive reinforcement and creating ground rules for respectful communication.
4. **Improve Problem-Solving and Critical Thinking:**
    - *Problem-Based Learning:* Incorporate problem-based learning activities that require students to identify problems and brainstorm solutions collaboratively.
    - *Critical Evaluation Exercises:* Use case studies or hypothetical scenarios to help students practice critically evaluating ideas and integrating different perspectives to form coherent conclusions.
5. **Enhance Reflection and Self-Improvement:**
    - *Regular Reflection Activities:* Encourage students to reflect on their group discussion performance regularly and set personal goals for improvement.
    - *Feedback Mechanisms:* Establish a system where students can seek and give feedback on discussion skills to and from their peers and teachers.

Recommendations for Teachers:

1. **Facilitate Skill Development Workshops:**
    - *Workshops on Non-Verbal Communication:* Conduct workshops focused on the importance of body language and non-verbal cues in communication.
    - *Public Speaking and Communication Skills:* Organize sessions to enhance students' public speaking abilities and clarity of expression.
2. **Encourage a Collaborative Learning Environment:**
    - *Structured Group Activities:* Design classroom activities that require students to work in groups, promoting teamwork and collaboration.
    - *Diverse Group Composition:* Frequently change group compositions to allow students to work with different peers, thereby enhancing their ability to respect and integrate diverse viewpoints.
3. **Provide Continuous Support and Feedback:**
    - *Regular Check-Ins:* Schedule regular check-ins with students to discuss their progress in group discussions and provide personalized feedback.
    - *Use Rubrics and Clear Criteria:* Provide clear criteria and rubrics for group discussions, so students know what is expected and can self-assess their performance.
4. **Incorporate Technology and Tools:**
    - *Use of Collaborative Tools:* Integrate digital tools such as discussion boards, shared documents, and online forums to facilitate group discussions outside the classroom.
    - *Recording and Review:* Allow students to record their group discussions and review them later to identify areas for improvement.
5. **Promote a Culture of Continuous Improvement:**
    - *Celebrate Progress:* Acknowledge and celebrate improvements in students' discussion skills to motivate them further.
    - *Goal Setting:* Help students set specific, measurable goals for their group discussion skills and track their progress over time.

By implementing these recommendations, both students and teachers can work together to enhance the effectiveness of group discussions, leading to improved communication, collaboration, and critical thinking skills among students.

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