Exploring the Role of Peer Collaboration in Enhancing Adolescent Motivation to Learn

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Article Info

Article type:
Original Research

ABSTRACT

Objective: The objective of this study was to explore how peer collaboration contributes to enhancing motivation to learn among adolescents in Malaysian secondary schools.

Methods and Materials: This research employed a qualitative design with an exploratory approach to capture adolescents' lived experiences of peer collaboration. A total of 29 participants (15 females and 14 males) aged 13–17 years were recruited using purposive sampling to ensure diversity in academic performance and background. Data were collected through semi-structured interviews guided by open-ended questions on peer interactions, motivational influences, challenges, and facilitators of collaboration. Interviews were conducted face-to-face and online, lasting between 45 and 60 minutes each, until theoretical saturation was reached. All interviews were transcribed verbatim and analyzed thematically using NVivo 14 software, following iterative cycles of coding, categorization, and theme development.

Findings: Analysis revealed four major themes with multiple subthemes. First, peer collaboration practices included group study sessions, peer tutoring, collaborative projects, informal peer discussions, online collaboration, and peer feedback exchange. Second, motivational outcomes of collaboration involved increased engagement, sense of responsibility, confidence building, academic persistence, and emotional support. Third, challenges to peer collaboration were identified as unequal participation, conflicting personalities, time management difficulties, distractive interactions, misinformation, language barriers, and motivational gaps. Finally, facilitators of effective peer learning included teacher support, structured grouping, collaboration skill training, technological tools, positive peer norms, and institutional support. Participants' narratives highlighted both the empowering and constraining aspects of peer collaboration in shaping motivation.

Conclusion: The study concludes that peer collaboration is a powerful driver of adolescent motivation to learn, operating through academic, emotional, and

social pathways. However, its effectiveness is contingent on the quality of peer relationships, structural support from teachers and institutions, and the ability to manage challenges within collaborative contexts. Practical implications include the need for structured facilitation, training in collaboration skills, and leveraging digital tools to optimize motivational benefits.

Keywords: Peer collaboration; Adolescent motivation; Qualitative research; Peer-assisted learning

1. Introduction

Peer collaboration is rooted in social interaction theories that highlight learning as a co-constructed process. Research demonstrates that adolescents' motivation to engage in learning tasks is strongly associated with peer relationships, academic support from friends, and the quality of collaborative experiences (Pipitcahyani, 2025). Supportive peer environments can enhance self-regulated learning, reduce academic burnout, and create a positive atmosphere for sustained academic engagement (Nuryana & Wahyuni, 2025). From a motivational psychology perspective, the role of peers becomes especially significant during adolescence, when students often rely more on peer affirmation and collaboration than on parental guidance. Peer interactions provide both emotional support and cognitive stimulation, contributing to motivation through mechanisms of social reinforcement, observational learning, and shared responsibility.

Recent evidence suggests that peer interactions in educational settings go beyond emotional support to influence cognitive and behavioral dimensions of motivation. Using the experience sampling method, Knickenberg (Knickenberg, 2025) showed that adolescents' real-time motivation levels fluctuate depending on the nature and quality of peer interactions in classrooms. Such findings reinforce the idea that peer influence is situationally dynamic and context-dependent. Likewise, peer-assisted learning frameworks emphasize knowledge spillover, shared effort, and error exposure as critical mechanisms in collaborative learning, which can directly influence motivation (Juvina et al., 2025). The relational trust that develops in these contexts enhances both engagement and willingness to take academic risks.

Motivation is not only strengthened by the presence of peers but also through the contextual embedding of learning practices. Ali (Ali et al., 2025) highlighted the importance of contextual learning, showing that when learning is embedded in real-life or socially relevant contexts, students' intrinsic motivation rises substantially. In this framework, peer collaboration often acts as the mediator through which contextual learning translates into heightened motivation. This aligns with cultural perspectives that recognize adolescents as social learners whose academic drive is amplified when tasks are meaningful and shared with others.

At the same time, research across educational levels underscores that peers play a variety of roles in shaping motivation. In higher education, Siska (Siska & Hanif, 2024) found that peer collaboration in completing academic tasks not only improved productivity but also increased student responsibility and persistence. Similarly, Shao (Shao et al., 2024) demonstrated that peer relationships contribute to academic achievement by enhancing motivation and learning engagement, mediated through resilience and self-efficacy. Rachmawati (Rachmawati et al., 2024) further confirmed that academic motivation is both a direct outcome of peer relationships and a mediator between self-efficacy and student achievement. Collectively, these studies establish a consistent link between peer collaboration and motivational gains.

Parental support, while significant, is often complemented by peer environments in driving student motivation. Ratumbuisang (Ratumbuisang et al., 2024) emphasized that parental and peer influences interact to enhance academic achievement through the mediation of motivation, underscoring the synergistic nature of family and peer support. Similarly, stress levels and environmental contexts interact with peer dynamics to influence motivation. Nisak (Nisak et al., 2024) found that online learning stress negatively affected student motivation, but peer collaboration and support mitigated this effect, highlighting the resilience-building role of peer groups in challenging educational contexts such as the COVID-19 pandemic.

Individual factors such as self-efficacy also intersect with peer influences. Kong (Kong & Kong, 2024) demonstrated that self-efficacy plays a central role in motivating middle school students, and when reinforced by peer collaboration, it creates a multiplier effect on learning engagement. Knox (Knox, 2024) extended this finding by showing that peer relationships significantly shape motivation and readiness for post-secondary education, particularly in rural contexts

where peer networks compensate for resource limitations. Fitri (Fitri & Astuti, 2024) also illustrated that peers are powerful motivators across diverse global contexts, suggesting a universal role of collaborative learning in education.

Other recent studies have focused on cognitive and socio-emotional mechanisms underlying peer influence on motivation. Sheffler (Sheffler & Cheung, 2023) reported that growth mindset interacts with social comparison processes in peer learning environments, sometimes producing motivational boosts when students perceive themselves as capable of improvement. Moradi (Moradi & Mardani, 2023) found that peer attachment strongly predicts academic motivation, showing the centrality of relational bonds in sustaining engagement. Similarly, Fahriza (Fahriza et al., 2023) explored trends in academic flow among adolescents, concluding that positive peer contexts enhance students' ability to reach optimal engagement states.

The interplay of motivation and peer support is further reflected in studies of adolescent development. Shao (Shao & Kang, 2022) highlighted the dual mediating roles of self-efficacy and resilience in linking peer relationships to learning engagement, while Lee (Lee, 2022) identified structural relationships between achievement and peer-influenced motivational factors among South Korean adolescents. Juvina (Juvina et al., 2022) added that trust and error-sharing in peer-assisted learning frameworks boost motivation by reducing fear of failure. Febriyani (Febriyani et al., 2022) similarly confirmed that conformity in peer groups directly correlates with higher motivation, particularly in collectivist learning contexts.

These patterns align with earlier findings that socio-motivational dependency develops significantly from early to middle adolescence, with peers becoming increasingly central in shaping students' learning behaviors (Jagenow et al., 2015). Peer contexts thus act as developmental scaffolds, encouraging adolescents to adopt positive academic habits. At the same time, historical perspectives also highlight the role of educational institutions in shaping peer-assisted learning. Mitola (Mitola, 2017) documented how academic libraries used peer-assisted learning to enhance student motivation, underscoring institutional facilitation of collaboration. Such institutional roles have continued to evolve, as seen in studies of health education through peer communication (Fanaqi et al., 2020), which illustrate how peer-led models can influence both cognitive and behavioral outcomes.

The significance of peers is not limited to specific cultural contexts. Engels (Engels et al., 2021) showed that peer teachers themselves experience increased intrinsic motivation when rewarded through teaching others, demonstrating reciprocal benefits of collaboration. Cummings (Cummings & Sheeran, 2019) also argued that personality traits and prior levels of motivation shape the extent to which students benefit from peer-assisted learning sessions, pointing to the moderating effects of individual differences. Similarly, Ayhan (Ayhan et al., 2019) emphasized that peer bullying negatively undermines motivation, showing the potential risks of negative peer dynamics.

Research in non-Western contexts has provided further insights into how peers shape motivation. Макарова (Макарова, 2018) showed that peer tutoring is particularly effective in foreign language acquisition, while Yulianda (Yulianda & Syofyan, 2018) demonstrated the negative relationship between weak peer motivation and academic procrastination in Indonesian universities. Amemiya (Amemiya & Wang, 2016) highlighted how motivational beliefs and help-seeking behaviors are transactional across adolescence, with peers increasingly replacing teachers as primary sources of academic support. Together, these studies suggest that while cultural and contextual variations exist, the underlying influence of peers on motivation remains consistent across societies.

In sum, a substantial body of research demonstrates that peer collaboration is a crucial factor in enhancing adolescent motivation to learn. It operates through multiple pathways: boosting engagement, supporting persistence, building confidence, and fostering resilience, while also being mediated by contextual factors such as parental support, stress, and institutional structures. However, despite extensive scholarship, gaps remain regarding the nuanced mechanisms through which peer collaboration enhances motivation in diverse cultural contexts such as Malaysia. Much of the existing literature has focused either on Western or East Asian contexts, leaving room for further exploration in Southeast Asia. Moreover, while quantitative studies have established correlations between peer collaboration and motivation, there is limited qualitative research that captures adolescents' lived experiences of these processes.

Against this backdrop, the present study seeks to explore the role of peer collaboration in enhancing adolescent motivation to learn within the Malaysian context.

2. Methods and Materials

2.1. Study Design and Participants

This study employed a qualitative research design with an exploratory approach to gain an in-depth understanding of the role of peer collaboration in enhancing adolescent motivation to learn. Qualitative inquiry was chosen because it allows researchers to explore the lived experiences and perspectives of participants in their natural contexts. The participants of this study consisted of 29 adolescents enrolled in secondary schools across Malaysia. Purposive sampling was used to recruit participants who had diverse academic backgrounds, gender representation, and varying levels of engagement in peer learning activities. This strategy ensured the inclusion of adolescents with rich and varied experiences related to peer collaboration. Recruitment continued until theoretical saturation was reached, meaning no new themes or insights emerged from additional interviews.

2.2. Measures

Data were collected through semi-structured interviews, which provided flexibility to explore participants' perspectives while maintaining a consistent focus on the research objectives. Each interview lasted between 45 and 60 minutes and was conducted either face-to-face or via online platforms, depending on participant accessibility and convenience. An interview guide was developed to direct the discussions, covering key areas such as adolescents' experiences with peer collaboration, perceived benefits, challenges, and the influence of such collaboration on their motivation to learn. Probing questions were used to elicit deeper insights and encourage participants to elaborate on their experiences. All interviews were audio-recorded with the consent of participants and subsequently transcribed verbatim for analysis.

2.3. Data Analysis

Data analysis was conducted using thematic analysis, following the procedures of coding, categorizing, and theme development. NVivo 14 software was employed to manage, organize, and code the qualitative data systematically. The analysis began with multiple readings of the transcripts to achieve familiarity with the data. Initial open coding was performed to capture meaningful units of text, which were then grouped into subcategories based on conceptual similarities. Axial coding was subsequently conducted to identify relationships among categories, leading to the emergence of broader themes. Throughout the process, constant comparison was applied to ensure consistency and rigor in coding. Reflexivity and peer debriefing were also incorporated to enhance the credibility and trustworthiness of the analysis. The final themes were reviewed and refined to provide a comprehensive understanding of the role of peer collaboration in motivating adolescents to learn.

3. Findings and Results

The study sample consisted of 29 adolescents recruited from secondary schools across Malaysia. Among them, 15 were female (51.7%) and 14 were male (48.3%), ensuring a balanced gender representation. The participants' ages ranged from 13 to 17 years, with the largest proportion aged 15 years (n = 10; 34.5%), followed by 14 years (n = 8; 27.6%), 16 years (n = 6; 20.7%), 17 years (n = 3; 10.3%), and 13 years (n = 2; 6.9%). In terms of academic performance, participants represented a range of achievement levels: high-performing students (n = 9; 31.0%), moderate-performing students (n = 12; 41.4%), and lower-performing students (n = 8; 27.6%). Ethnically, the group included Malay (n = 17; 58.6%), Chinese (n = 7; 24.1%), and Indian (n = 5; 17.3%) adolescents, reflecting Malaysia's multicultural context. This diversity in gender, age, academic achievement, and ethnicity provided a comprehensive range of perspectives on peer collaboration in learning.

Table 1

Main Themes, Subthemes, and Concepts

Category (Main Theme)	Subcategory	Concepts (Open Codes)
1. Peer Collaboration Practices	Group Study Sessions	Sharing notes; Collective problem-solving; Explaining concepts to peers; Dividing tasks; Reviewing before exams
	Peer Tutoring	One-to-one support; Older students guiding juniors; Clarifying difficult topics; Encouragement through guidance
	Collaborative Projects	Joint presentations; Co-writing reports; Brainstorming ideas; Task distribution; Learning through peer critique
	Informal Peer Discussions	Casual learning talks; Asking quick questions; Sharing learning strategies; Spontaneous problem-solving
	Online Collaboration	WhatsApp/Telegram study groups; Sharing digital resources; Virtual discussions; Peer reminders
	Peer Feedback Exchange	Reviewing each other's assignments; Constructive criticism; Motivation through peer approval
2. Motivational Outcomes of Peer Learning	Increased Engagement	Willingness to attend study sessions; Enjoying group activities; Reduced boredom; Active participation
	Sense of Responsibility	Accountability to peers; Completing assigned tasks; Fear of letting others down
	Confidence Building	Speaking up in groups; Presenting ideas; Reduced anxiety; Validation from peers
	Academic Persistence	Overcoming difficulties; Trying harder after peer encouragement; Consistency in study habits
3. Challenges in Peer Collaboration	Emotional Support	Feeling understood; Reduced stress; Encouragement during setbacks
	Unequal Participation	Free-riders in group work; Lack of fairness; Frustration among active members
	Conflicting Personalities	Differences in attitudes; Leadership struggles; Peer pressure; Negative competition
	Time Management Issues	Scheduling difficulties; Procrastination; Overlapping commitments
	Distractive Interactions	Off-topic discussions; Gossiping; Overuse of phones/social media during study
	Quality of Peer Knowledge	Misinformation; Limited subject expertise; Relying on inaccurate notes
	Language Barriers	Difficulty expressing ideas; Misunderstanding explanations
	Motivation Gaps	Some students uninterested; Lack of intrinsic drive; Resistance to collaboration
4. Facilitators of Effective Peer Learning	Teacher Support	Teacher encouragement; Guidance on collaboration skills; Monitoring group work
	Structured Grouping	Balanced ability groups; Clear task division; Rotation of roles
	Training in Collaboration Skills	Communication workshops; Conflict resolution training; Peer mentoring programs
	Technological Tools	Online collaboration platforms; Digital resource sharing; Interactive apps
	Positive Peer Norms	Culture of helping each other; Encouragement; Celebrating group success
	Institutional Support	School policies promoting group activities; Dedicated spaces for group study; Curriculum integration

Category 1: Peer Collaboration Practices

Group Study Sessions. Participants consistently described group study sessions as a common and effective form of peer collaboration. They explained that sharing notes, solving problems collectively, and reviewing lessons before exams strengthened their understanding of concepts. Task division within these sessions allowed members to manage the workload more efficiently. One participant stated, *"When we study together, I don't feel lost because someone always explains the part I don't understand."* Another noted, *"We divide chapters, and then each of us teaches the group. It makes revision much faster."*

Peer Tutoring. Peer tutoring emerged as another critical practice where older or academically stronger students supported their peers. This was particularly helpful in clarifying difficult topics and building confidence. Participants highlighted that encouragement from peers during tutoring reduced anxiety. For example, one student remarked, *"My senior explained algebra in a way the teacher never did. Suddenly, I could solve problems on my own."* Another shared, *"I wasn't scared to ask questions because it felt easier with a friend than with a teacher."*

Collaborative Projects. Adolescents reported that collaborative projects provided opportunities to brainstorm, co-write reports, and present ideas together. They stressed that peer critique and feedback improved their work quality and creativity. One participant recalled, *"During group projects, we argued but also came up with better ideas. Alone, I would never have thought of them."* Another commented, *"We learned to share tasks fairly; otherwise, the project wouldn't succeed."*

Informal Peer Discussions. Spontaneous discussions outside formal study sessions also played a significant role. Students described quick learning conversations during breaks or casual chats that enhanced their understanding. These discussions often included sharing learning strategies

and clarifying small doubts. A participant explained, *"Even in the cafeteria, if I'm stuck with a math question, I'll just ask my friend and he gives me a shortcut."* Another noted, *"Sometimes the best learning happens when you don't plan it."*

Online Collaboration. The use of WhatsApp and Telegram groups for peer learning was reported widely. Students shared digital resources, exchanged reminders, and engaged in virtual discussions. Many saw this as an extension of in-person learning. One student reflected, *"Our WhatsApp group is like a 24/7 classroom; if I ask at midnight, someone replies."* Another added, *"We post YouTube links or PDFs, so everyone benefits."*

Peer Feedback Exchange. Finally, feedback exchange among peers emerged as an important collaborative practice. Students reviewed each other's assignments, gave constructive criticism, and gained motivation from peer approval. One participant commented, *"When my friend told me my essay was good, I felt encouraged to write even better."* Another added, *"Sometimes friends' comments are more useful than the teacher's because they explain in our own words."*

Category 2: Motivational Outcomes of Peer Learning

Increased Engagement. Many participants noted that peer collaboration increased their interest in learning and reduced boredom. They expressed that attending group activities motivated them to study actively. As one adolescent shared, *"I wouldn't sit for two hours alone, but with friends, I don't even notice the time."* Another said, *"Group discussions keep me awake and involved."*

Sense of Responsibility. Adolescents described feeling accountable to peers, which encouraged them to complete assigned tasks and avoid disappointing others. One student explained, *"I can skip homework alone, but in a group, I feel I must contribute."* Another emphasized, *"I don't want my friends to think I'm lazy, so I always prepare my part."*

Confidence Building. Working in groups helped students overcome shyness and develop self-confidence in academic settings. They highlighted that presenting ideas to peers was less intimidating than doing so in class. A participant expressed, *"I never spoke in class before, but after explaining to my group, I felt more confident."* Another added, *"When my friends say I explained well, I believe in myself more."*

Academic Persistence. Collaboration encouraged persistence in the face of challenges. Students were more likely to keep trying when supported by peers. One adolescent remarked, *"When I feel like giving up, my group cheers me on."* Another noted, *"I tried solving hard questions because my friends didn't let me stop."*

Emotional Support. Participants also emphasized the emotional benefits of peer learning, including reduced stress and encouragement during difficult times. A student shared, *"When I fail, my friends tell me it's okay, and I try again."* Another reflected, *"Studying together makes me feel I'm not alone in my struggles."*

Category 3: Challenges in Peer Collaboration

Unequal Participation. A common frustration was unequal effort in group work. Active students often felt burdened by free-riders. One adolescent explained, *"Some people just sit there, waiting for us to finish the project."* Another added, *"It's unfair when two people do everything and others take credit."*

Conflicting Personalities. Differences in attitudes, leadership struggles, and competition sometimes created tension. One participant remarked, *"We argue because everyone wants to be the leader."* Another shared, *"Some friends pressure you to do things their way, and it feels stressful."*

Time Management Issues. Scheduling group sessions was another challenge, as students struggled with overlapping commitments. One participant said, *"We can never agree on a time; someone is always busy."* Another reflected, *"Sometimes we procrastinate, and in the end, we rush everything."*

Distractive Interactions. Students acknowledged that peer groups could become distracted with off-topic conversations, gossip, or phone use. A participant admitted, *"Honestly, half the time we talk about movies instead of studying."* Another added, *"We keep checking our phones, and then time flies without learning much."*

Quality of Peer Knowledge. Concerns about the reliability of peer-provided information also surfaced. Some students reported confusion when peers gave inaccurate notes or explanations. One adolescent explained, *"I studied wrong because my friend's notes were not correct."* Another said, *"Sometimes we all get confused because no one knows the right answer."*

Language Barriers. For some participants, expressing ideas clearly in English or Malay created challenges in collaborative learning. One student reflected, *"I know the answer in my head but can't say it in English."* Another noted, *"We misunderstand each other sometimes because of language."*

Motivation Gaps. Not all members were equally motivated, leading to uneven group dynamics. One

adolescent shared, *"Some friends just don't care, and it lowers the group's energy."* Another added, *"If one person is not serious, it affects everyone."*

Category 4: Facilitators of Effective Peer Learning

Teacher Support. Participants emphasized the importance of teacher guidance in making peer collaboration more effective. Teachers who encouraged and monitored group activities enhanced student motivation. One participant noted, *"When the teacher checks our group, we take it seriously."* Another said, *"Our teacher gave us tips on how to work together, and it really helped."*

Structured Grouping. Students reported that balanced groups with clear roles supported better collaboration. Rotating responsibilities prevented domination by certain members. As one student explained, *"When roles are divided, no one feels left out."* Another added, *"Changing leaders gives everyone a chance to grow."*

Training in Collaboration Skills. Workshops or guidance in communication and conflict resolution were identified as helpful. One participant stated, *"We had a session on teamwork, and now we handle disagreements better."* Another reflected, *"Learning to listen was the most useful skill for me."*

Technological Tools. Adolescents also mentioned that digital tools enhanced peer collaboration. Online platforms made it easier to share resources and track progress. A student explained, *"We use Google Docs for projects, so everyone can contribute anytime."* Another said, *"Apps make group work more organized."*

Positive Peer Norms. Encouraging each other and celebrating small group successes created a motivating environment. One participant noted, *"When my friends clap for me, I feel proud."* Another added, *"Our group always cheers when someone does well."*

Institutional Support. Finally, institutional support in the form of dedicated spaces or policies promoting collaboration was valued by students. One participant remarked, *"Our school gave us a study corner, and it makes group work easier."* Another explained, *"The curriculum itself asks for teamwork, so we practice it more often."*

4. Discussion and Conclusion

The present study explored the role of peer collaboration in enhancing adolescent motivation to learn, focusing on how Malaysian secondary school students experience and interpret peer-based academic interactions. Thematic analysis of the interviews revealed four overarching themes:

(1) peer collaboration practices, (2) motivational outcomes of peer learning, (3) challenges in peer collaboration, and (4) facilitators of effective peer learning. These findings provide a nuanced understanding of how adolescents perceive collaboration with peers as both a catalyst for academic engagement and a source of obstacles that require supportive structures.

Peer collaboration practices formed a central theme in this study, encompassing structured group study sessions, peer tutoring, collaborative projects, informal discussions, online collaboration, and peer feedback exchanges. These practices highlight the diverse modalities through which adolescents engage with one another in learning contexts. The findings suggest that peer interactions not only serve to clarify academic content but also provide an alternative platform for explanation, dialogue, and shared accountability. Prior research has demonstrated that peer interactions significantly shape motivational processes across adolescence, often substituting for teacher-centered instruction when students feel more comfortable asking questions among peers (Amemiya & Wang, 2016). Similar to the present study, Mitola (Mitola, 2017) observed that peer-assisted learning environments, even in contexts such as academic libraries, foster motivation by creating informal yet structured spaces for collaborative engagement. Additionally, Pipitcahyani (Pipitcahyani, 2025) confirmed that peer relationships are closely linked with academic achievement events, reinforcing the idea that collaboration functions as a bridge between social interactions and academic outcomes.

The role of peer tutoring was particularly salient, as participants noted that stronger or more experienced peers played a guiding role in explaining difficult concepts. Similarly, Engels (Engels et al., 2021) highlighted that even peer teachers themselves experience heightened intrinsic motivation when engaging in tutoring roles, underscoring the reciprocal benefits of these interactions. The notion of peer critique and feedback also emerged strongly in this study, with students appreciating constructive comments from peers. This reflects Sheffler (Sheffler & Cheung, 2023), who emphasized how growth mindset and social comparison processes within peer contexts can create positive motivational effects, provided that the peer environment is supportive and oriented toward improvement.

Another important finding was the use of informal and online peer collaboration, such as WhatsApp or Telegram groups, where adolescents shared resources and answered

each other's questions at any time of day. This resonates with Cummings (Cummings & Sheeran, 2019), who noted that peer-assisted sessions vary in effectiveness depending on students' personalities and motivation but often provide unique advantages that formal instruction cannot replicate. The increasing role of digital spaces in peer learning was also noted in Sheffler (Sheffler & Cheung, 2023), who studied virtual learning environments and confirmed that online peer contexts can sustain motivation by leveraging social comparison effects. Together, these findings confirm that adolescents' collaborative practices are fluid, spanning both formal academic spaces and informal digital networks.

The second theme, motivational outcomes of peer learning, showed that collaboration enhanced engagement, responsibility, confidence, persistence, and emotional support among participants. These results reinforce earlier studies that positioned peer support as a protective factor against disengagement. For instance, Nuryana (Nuryana & Wahyuni, 2025) demonstrated that peer social support reduces academic burnout by enhancing motivation and self-regulated learning, which mirrors the present participants' reports of accountability and persistence in group work. Similarly, Ratumbuisang (Ratumbuisang et al., 2024) found that parental and peer influences combine to promote achievement through motivational mediation, a finding consistent with adolescents in this study who felt responsible not only for themselves but also for contributing to group success.

Confidence building emerged as a significant motivational outcome, with participants reporting reduced anxiety and greater willingness to present ideas in group contexts. This corroborates Knox (Knox, 2024), who argued that peer relationships foster motivation and readiness for higher education by building students' academic confidence, particularly in under-resourced settings. Shao (Shao et al., 2024) also confirmed that peer relationships positively impact achievement by strengthening both learning motivation and engagement, mediated through academic resilience. Moreover, the sense of belonging and attachment to peers observed in this study reflects Moradi (Moradi & Mardani, 2023), who found that peer attachment is a strong predictor of academic motivation. Together, these findings underscore that peers not only assist in task completion but also play a crucial affective role in sustaining adolescents' motivation.

The theme of academic persistence observed here reflects Fahriza (Fahriza et al., 2023), who demonstrated that peer contexts shape the emergence of academic flow among adolescents. Students in this study reported that group encouragement helped them overcome obstacles and remain engaged with difficult tasks. This motivational persistence mirrors findings from Kong (Kong & Kong, 2024), who highlighted the central role of self-efficacy in motivating middle school learners; in peer contexts, this self-efficacy is strengthened when students receive affirmation and encouragement from their peers. The emotional support dimension identified in this study similarly aligns with Febriyani (Febriyani et al., 2022), who demonstrated that conformity within peer groups fosters motivation by creating collective momentum and reducing feelings of isolation.

Despite these benefits, the study also revealed challenges in peer collaboration, including unequal participation, conflicting personalities, time management issues, distractions, misinformation, language barriers, and motivational gaps. These findings highlight the dual nature of peer collaboration: while it offers motivational benefits, it also carries risks of demotivation if group dynamics are not well-managed. Ayhan (Ayhan et al., 2019) demonstrated that negative peer interactions, such as bullying, significantly undermine academic motivation, which reflects the frustrations of participants who reported unequal effort or conflict in groups. Similarly, Juvina (Juvina et al., 2022) highlighted that peer-assisted learning only succeeds when trust and error exposure are managed effectively, suggesting that without relational trust, collaboration can backfire.

The challenge of misinformation reported by participants resonates with Lee (Lee, 2022), who identified the structural links between cognitive achievement and learning-related peer factors, emphasizing the importance of reliable knowledge-sharing within groups. Nisak (Nisak et al., 2024) also provided evidence that stress and poor learning environments can reduce motivation if peer collaboration is not structured or supportive, echoing concerns about ineffective group dynamics. Furthermore, the time management and distraction issues align with Fitri (Fitri & Astuti, 2024), who showed that while peers are powerful motivators globally, unstructured peer environments can sometimes foster procrastination rather than productivity.

The fourth theme, facilitators of effective peer learning, revealed that teacher guidance, structured grouping, collaboration training, technological tools, positive peer norms, and institutional support are essential in ensuring that peer collaboration translates into enhanced motivation. These findings reflect Ali (Ali et al., 2025), who argued that contextual learning embedded in real-life and teacher-supported structures heightens intrinsic motivation. They

also align with Juvina (Juvina et al., 2025), who emphasized the importance of trust and effort regulation in peer-assisted learning frameworks, and with Engels (Engels et al., 2021), who found that structured peer teaching enhances intrinsic motivation.

Institutional support emerged as a significant facilitator in this study, reflecting the conclusions of Fanaqi (Fanaqi et al., 2020), who showed that peer-led education in health contexts relies heavily on institutional design and resources. Similarly, Rachmawati (Rachmawati et al., 2024) highlighted that motivation functions as both mediator and outcome in peer relationships, but only when schools provide supportive structures for peer engagement. Yulianda (Yulianda & Syofyan, 2018) further confirmed that lack of structured peer support can lead to procrastination and reduced achievement, underscoring the importance of school-level facilitation.

Overall, the findings of this study confirm the well-documented role of peers in shaping adolescents' motivation to learn but add important contextual depth by showing how these processes manifest in Malaysia. They suggest that while peer collaboration can serve as a powerful motivator, its effectiveness depends on the quality of relationships, the presence of institutional support, and the ability to manage challenges. These findings reinforce the view of motivation as a socially embedded construct that cannot be fully understood without considering the peer context.

5. Limitations & Suggestions

Despite its contributions, this study has several limitations. First, it relied on a qualitative design with 29 participants, which, while appropriate for exploring experiences in depth, limits generalizability to the wider adolescent population in Malaysia or beyond. Second, the reliance on self-reported data through semi-structured interviews may have introduced social desirability bias, as participants may have emphasized positive aspects of peer collaboration. Third, while efforts were made to capture diversity in gender, ethnicity, and academic performance, the sample was not large enough to systematically compare across demographic groups. Additionally, the cross-sectional design did not allow for examination of how peer collaboration and motivation evolve over time.

Future research should expand on these findings by employing mixed-method designs that combine qualitative insights with quantitative analysis of larger samples. Longitudinal studies would also be valuable to examine how peer collaboration and motivation interact across different stages of adolescence. Comparative studies across cultural contexts could provide insights into how cultural norms mediate peer influence on motivation. Moreover, future research could explore the role of digital peer collaboration in greater depth, given the increasing reliance on online platforms for academic support among adolescents. Experimental designs could also be employed to test interventions such as structured peer tutoring or institutional facilitation programs, providing causal evidence of their impact on motivation.

In practice, educators should actively design and facilitate peer collaboration activities rather than leaving them entirely unstructured. Teachers can enhance motivation by assigning roles within groups, providing training in communication and collaboration skills, and monitoring peer interactions to ensure fairness and accuracy. Schools should consider institutional supports such as dedicated collaborative learning spaces, integration of peer learning into curricula, and policies that reward positive peer norms. Furthermore, leveraging digital tools for peer collaboration should be encouraged while addressing potential distractions. By embedding peer collaboration into structured learning environments, schools can maximize its motivational benefits while minimizing its challenges.

Declaration of Interest

The authors of this article declared no conflict of interest.

Ethical Considerations

The study protocol adhered to the principles outlined in the Helsinki Declaration, which provides guidelines for ethical research involving human participants.

Transparency of Data

In accordance with the principles of transparency and open research, we declare that all data and materials used in this study are available upon request.

This research was carried out independently with personal funding and without the financial support of any governmental or private institution or organization.

Authors' Contributions

All authors equally contributed in this article.

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