Journal of Emerging Perspectives in Arts and Humanities

ISSN: 3121-6439

Volume 2, Issue 3, June, 2026

(An Academians Publishers of Research & Academic Resources)

Research Article

Navigating Difficulties in Physics Education: College Students' Insights—A Narrative Research Study

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Abstract: This qualitative narrative study explored the lived experiences of six undergraduate students enrolled in physics courses within the Bachelor of Secondary Education program at Davao de Oro State College. The research examined students' personal experiences with difficulties in learning physics, how these difficulties influenced their engagement and learning approaches, and the strategies they used to address their challenges. Data were collected through semi-structured interviews and analyzed using narrative reconstruction and cross-narrative thematic analysis. Findings revealed that students struggled primarily with formulas, computations, problem-solving, and abstract topics such as Thermodynamics and Modern Physics. Teacher-centered instruction and limited prior exposure intensified these difficulties, while emotional struggles including frustration, anxiety, and low confidence accompanied cognitive challenges. Students responded by developing self-directed learning strategies, utilizing technology-supported resources, and managing stress through rest, prayer, and social support. The study concludes that learning difficulties in physics are cognitive, emotional, and social, affected by prior knowledge, instructional pedagogy, and institutional context. Recommendations include contextualized and hands-on teaching approaches, strengthened peer collaboration, and institutional support systems to address both cognitive and emotional dimensions of physics learning.

Keywords: *physics education, narrative inquiry, learning difficulties, student engagement, coping strategies, higher education, Philippines*

1. Introduction

1.1 Background of the Study

Physics is commonly accepted as a discipline that provides the laws governing nature and the interactions of matter and energy. It supports significant advances in engineering, medicine, the environmental sciences, and modern technology. Despite its central role, physics is often viewed by students as one of the most difficult academic subjects. This perception is commonly connected with its abstract ideas, complicated mathematical models, and theory (Leak et al., 2020). These concepts are described by learners as contributing to confusion and disinterest in their experiences. Consequently, students reported that physics led to feelings of fear rather than curiosity. Such difficulties continue to challenge physics learning in institutions of higher learning (Bagnoli & Gronchi, 2025; Mallow & Kastrup, 2023).

In institutions where learning takes place at a higher level, learning problems in physics are not only knowledge-based but also experience-based (Espinoza Suarez, 2017; Revina, 2022). Students tend to give accounts of frustration, self-doubt, and helplessness in the face of rigorous physics coursework. Students perceived such emotional reactions as influencing their engagement and interaction with lessons and assessments. When failure was continuously experienced by students, they tended to lose interest in continuing to study fields associated with physics. Students described these experiences as shaping their attitudes and affecting their motivation in the classroom and beyond. These stories eventually developed the identities of students as learners who saw physics as something difficult to access (Lock et al., 2019; Hazari et al., 2022). These experiences can only be understood by listening to stories told by students.

Most of the students taking physics courses at Davao de Oro State College had been facing conceptual problems. These struggles were manifested in their performance in tests and classroom activities. Students narrated challenges in understanding the basic concepts on which advanced learning was based. This conceptual lack made them less confident and less academically self-efficacious. Students narrated physics as a source of stress rather than as a contributor to intellectual growth (Suh, 2022; Indratno et al., 2023). These experiences revealed an inadequate correspondence between teaching methods and the learning requirements of students. An investigation into such accounts showed how students resolved their challenges.

This problem was compounded by the fact that, in Davao de Oro State College, there were no qualitative studies based on the life stories of students in physics courses. In general, the majority of existing studies gave priority to quantitative outcomes such as test scores and achievement levels. These measures, though important, did not fully

Received 03 May 2026; Accepted: 05 June 2026; Available online 16 June 2026

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reflect students' day-to-day academic experiences in physics. The voices, feelings, and thoughts of students were not sufficiently recorded. Without these narratives, institutions were at risk of adopting reforms that were not concerned with the real needs of learners. The narratives of the students enabled instructors to see how problems developed over time. Narrative inquiry is one way of ensuring that these voices are preserved in a significant manner (Azzahrawi, 2021).

The problem of physics education may be seen in terms of large-scale testing throughout the world and locally. The trends in International Mathematics and Science Study (TIMSS) have placed Filipino learners significantly behind their peers across the globe in Mathematics and Science, consistently ranking among the bottom tier of countries during the assessment cycles (Martin & Mullis, 2019). Moreover, Philippine learners' performance in Science subjects has been dismal in the Programme for International Student Assessment (PISA) examinations (Cabural, 2024; Olesco et al., 2024). These outcomes highlight the widespread and interrelated problems affecting the teaching of physics in the Philippines, particularly with regard to pedagogical approaches and classroom teaching materials, laboratory and workshop facilities, and student-teacher practicum opportunities. Such results are reflected in students' emotional experiences of hardship and alienation. The issues Philippine students faced with physics were also experienced elsewhere in the world, for example, in the United States, where studies show that students consider physics out of reach because of its heavy focus on solving mathematical problems and theories (Leak et al., 2020; Süzük, 2023; Sands, 2021). Most learners do not respond well to the purely physics lectures that dominate the subject, so they withdraw from participating in the lesson, resulting in higher anxiety levels and less motivation to pursue physics and other related fields (Salaoru, 2020). These similarities signal both contextual and universal learning issues in physics. However, local narratives were still needed for solutions that were contextual. The study placed student stories at the center of the discussion on physics learning issues.

1.2 Statement of the Problem

This study aimed to explore the lived experiences of six undergraduate students enrolled in physics courses within the Bachelor of Secondary Education program, majoring in Science, at Davao de Oro State College. It focused on capturing rich narrative accounts that reflected how these students navigated challenges within their learning environment. More specifically, the research sought to answer the following questions:

1. What are the personal experiences of college students regarding difficulties in learning physics?
2. How do these difficulties influence students' engagement and approaches to learning physics?
3. What strategies or interventions do students share through their narratives as ways to address their own challenges in learning physics?

Conducting this research was imperative because it clarified the complexities surrounding physics education and provided evidence-informed strategies to improve student learning. By examining qualitative aspects, the results offered a comprehensive view of the educational environment and the unique perspectives of the students. This study aimed to catalyze meaningful transformation in the physics curriculum at Davao de Oro State College.

1.3 Objectives of the Study

This research intended to investigate and analyze diverse difficulties that college learners faced in learning physics in the context of Davao de Oro State College. More specifically, it intended to do the following:

1. To explore the personal experiences of college students regarding difficulties in learning physics.
2. To determine the influence of these difficulties on students' engagement and learning processes in physics.
3. To document students' narratives on strategies or interventions they perceived as helpful in overcoming challenges in learning physics.

1.4 Significance of the Study

The study was meaningful because it used the experiences of students studying physics. Through foregrounding narratives, it made learning difficulties more human and relatable, rather than reducing them to abstract numbers or data points. The narratives of the students added meaning and background to academic challenges. Such stories created understanding among educators and administrators. Learning more about students' perceptions helped make teaching more responsive (Damiani et al., 2017). The study went beyond technical descriptions of failure. It paid attention to the emotional and experiential aspects of learning.

The investigation provided information to instructors about how learners felt about current teaching practices. The student stories revealed what kinds of teaching methods helped learning and which ones became barriers to learning. Such narratives can be used to make more inclusive pedagogies (Shane-Simpson et al., 2024). The narratives explained the importance of socio-emotional support in teaching physics. The students' observations could assist instructors in reflecting on what they do in the classroom. The study encouraged student-based and reflective teaching. Such insights are valuable, especially in resource-limited settings.

To administrators and policymakers, the study was evidence-based and grounded in the realities of students. The narratives of students showed structural problems, including the lack of resources and infrastructure. Such stories could inform contextually appropriate policymaking. The research advocated specific resource distribution in accordance with students' needs. Narrative data served as a supplement to institutional measures and assessments. It enhanced evidence-based decision-making (Hamshire et al., 2017). This input was fundamental to enhancing physics education environments.

Student support services were another beneficiary of the study, as the findings shed more light on socio-emotional issues. The identity, self-efficacy, and anxiety struggles of students were characterized through their narratives. This information can be applied in shaping counseling and academic support programs (Kaur, 2016). Other students may be aided by strategies that were shown in the narratives of participants. The study amplified voices that are normally marginalized in the education discourse. It advocated fairness and equity in science education. These contributions supplemented holistic student development.

In theory, the research fit into a constructivist and motivational model of education. It presented empirical narrative data on how theories worked in real-world learning experiences. The results can be used to improve current physics learning models. The local experiences were also related to the global educational issues discussed in the study. It enhanced qualitative research in the Philippine setting. The research expanded the field of methodology by focusing on narrative inquiry. These contributions are beneficial to future studies in physics education.

1.5 Scope and Limitation of the Study

This study focused on students in the physics courses of Davao de Oro State College. It particularly looked at narrated instances of learning physics by students. The scope was restricted to student voices and opinions. The opinions of instructors and administrators were not taken into account. The performance data of institutions were not examined in the study. It was more experience-oriented than evaluative. This scope was in line with the narrative qualitative approach.

The study focused on difficulties in learning physics. It examined how these challenges interacted in the narratives of students. The environmental and socioeconomic settings were also taken into account. The research interpreted experiences within a given institutional context. It was not geared toward the comparison of institutions. It was more about depth as opposed to breadth. This emphasis supported rich narrative analysis (Sevilla-Liu, 2023).

Interviews were used as the main source of data collection. Such an approach enabled students to provide elaborate accounts of their experiences (Heilmann, 2018). Narrative and cross-narrative thematic analyses of the accounts were conducted. The study followed a qualitative narrative design. This methodology emphasized meaning-making rather than measurement. It placed greater emphasis on how participants made sense of events. The objectives of the study were supported by the methodology.

Several limitations were inherent in the research study design. The results were not statistically generalizable because they were context-specific. Self-reports and narrated stories can bring response bias (Tight, 2022). Students could emphasize or deemphasize some experiences. The research did not prove causal relationships. It was concerned with interpretation and not prediction. These constraints were recognized as part of qualitative inquiry.

In spite of these limitations, the research intended to offer valuable information on physics learning. The stories helped in knowing the realities of students (Edwards, 2016). The results were directed toward informing instructional practice and not toward generalization. Transferability can be established by readers in similar contexts. The research was socially and educationally relevant. It aimed at promoting positive transformation in physics learning. Ultimately, the study valued the stories of students as agents of transformation.

1.6 Definition of Terms

The following terms were operationally defined according to their unique use in this study:

Academic Identity - Students' self-perception as learners of physics developed on the basis of repeated experiences of struggle, encouragement, and progress.

Anxiety - Students' experience of fear, stress, or nervousness in learning physics, taking examinations, or participating in the classroom.

Cognitive Problems - Problems reported by students in understanding physics concepts, solving problems, using abstract thinking, and applying mathematical processes.

College Students - Learners who were enrolled in at least one tertiary-level physics course and whose academic experiences showed consistent problems in the subject.

Constructivist Learning Theory - The theory on which the study was anchored, viewing learning as an active process constructed by students through experience, interaction, and reflection.

Contextual Embeddedness - The condition in which students' learning experiences and stories were shaped by cultural, institutional, and classroom contexts rather than by isolated issues.

Coping Strategies - Emotional, cognitive, and social behaviors described by students as ways of coping with stress, confusion, and doubt in learning physics.

Difficulties in Learning Physics - The cognitive, emotional, social, and contextual problems described by students as barriers to learning physics, interest, and self-esteem.

Engagement - The narrated level of students' participation, interest, effort, and involvement in physics learning activities as these developed over time.

Instructional Practices - Teaching practices and classroom strategies that students reported as having influenced their learning, interest, and affective responses toward physics.

Learning Environment - The classroom, institutional, and social context of learning physics as perceived and reported by students.

Learning Experiences - The lived and remembered experiences of students in learning physics, including classroom experiences, tests, feelings, and teaching encounters.

Learning Process - The varying patterns through which learners attempted to learn physics, including strategies, reflections, adaptations, and sense-making experiences.

Learning Strategies - The methods and means students used to learn physics content, including study approaches, peer conversations, and self-reflection activities.

Meaning-Making - The way students constructed meaning from their experiences of learning physics, reflected on their learning, and attributed significance to their experiences over time.

Motivation - The readiness or desire of students to study physics as expressed in their narratives of perceived difficulty, instructional support, and emotional experiences.

Narrative Inquiry - The research methodology assumed in this study, in which learning issues were explained through narration, introspection, and experience.

Narrative Research Study - A qualitative research design that articulates students' experiences through narratives and emphasizes temporal, social, and place elements rather than cause-and-effect relationships.

Participation - The extent to which students participated in classroom activities, discussions, and questioning, as reflected in their learning stories.

Physics Education - The perception and experience of teaching and learning physics courses at the college level, as narrated and perceived by students in Davao de Oro State College.

Place - The physical and institutional settings, such as classrooms and the college setting, where physics learning was practiced.

Prior Learning Experiences - Students' past experiences in physics or science education and how these experiences shaped their attitudes and learning behaviors.

Researcher as Co-Narrator - The researcher's reflexive role in designing, reconstructing, and interpreting students' stories through interviews and analysis.

Self-Efficacy - Students' perceived ability or lack of ability to master physics tasks, as shown in how they described their beliefs about learning physics.

Sociality - The personal and social features of student stories, including emotions, interactions with other students, and interactions with instructors.

Socio-Emotional Challenges - Emotional and social problems, such as anxiety, fear, lack of confidence, and self-doubt, that students faced when studying physics.

Student Insights - Reflective meanings, conceptualizations, and interpretations of studying physics as constructed by students through their lived experiences and stories.

Student Narratives - Accounts provided by students narrating their experiences of struggle, turning points, coping, and changing identities as physics students.

Suggested Interventions - Instructional, emotional, or institutional modifications recommended by students because they believed these would contribute positively to their physics learning experiences.

Temporality - The time-related aspects of students' stories, including past experiences, current challenges, and expectations in learning physics.

2. Review of Literature and Theoretical Framework

2.1 College Students' Physics Learning Experiences

2.1.1 Cognitive and Socio-Emotional Challenges

Exploring students' personal experiences in physics has highlighted how learners continuously narrate their struggles with conceptual and contextual challenges in the discipline. Students frequently describe physics as abstract, complicated, and full of technical jargon that makes initial understanding difficult, especially if they have little prior knowledge of science and math, leading to hesitation and avoidance behaviors when they learn contexts (Obafemi & Iruloh, 2022). Narrative inquiries into students' lived experiences reveal that these difficulties are not only cognitive but also emotional, impacting learners' confidence, motivation, and willingness to participate actively in classes when they feel overwhelmed with terminology and concepts (Slisko, 2017). Many students report how early exposure—or lack thereof—to hands-on physics activities affected how they feel about the subject, demonstrating the long-term influence of prior experiences on their meaning-making processes (Lock et al., 2019; Elliniadou & Sofianopoulou, 2024). Learners often draw comparisons between their prior experiences in physics and their current college experiences, reflecting on how their early educational settings either empowered curiosity or instilled anxiety.

Social interactions within physics classes, such as peer collaboration or isolation, also emerge in narratives as important contexts that influence students' emotional responses to challenges. Qualitative explorations of physics learning challenges emphasize that students' accounts of dissatisfaction reflect not only personal hardship but also socially situated experiences which students described as connected with their experiences in instructional and classroom contexts (Shrestha et al., 2023). In many students' accounts, poorly scaffolded activities left them feeling disengaged, which increased the emotional burden of cognitive challenge. These experiences were narrated by students as being connected to their prior experiences and learning environments, shaping how they described their struggles and processes of meaning-making. Additionally, what contributes to variations in engagement and self-identity as physics learners are the students' individual perceptions of their experiences (Nurjannah et al., 2025).

Further research highlights that when learners express their difficulties in physics, they frequently use narratives of perceived irrelevance and a lack of contextual connection to real life. Learners perceived abstract calculations that seemed detached from their real-world experiences, thus reducing their own level of motivation and emotional investment in their learning process (Bagnoli & Gronchi, 2025). These narratives illustrate that when students cannot connect new information to familiar contexts in real life, their level of cognitive difficulty becomes intensified. The prior learning environments, which are characterized by little interaction, frequently appear in student narratives as the origin of their disengagement. On the other hand, very supportive and engaging learning settings are recalled as moments of their meaningful encouragement and renewed confidence.

Emotional responses such as fear and anxiety frequently relate to practices in assessment and classroom expectations described in students' narratives. These stories underscore how learning settings gradually mold and shape the learners' emotional meaning. Additionally, students describe significant instances where a single instructional experience changed their perception of physics. Such turning points illustrate the temporal nature of learning experiences. These narratives support the idea that physics learning difficulties are best seen as dynamic, context-rich experiences (Bagnoli & Gronchi, 2025).

Students integrate cognitive struggle with socio-emotional interpretation when recounting their experiences with physics (Shrestha et al., 2023). They described repeated confusion as contributing to feelings of self-doubt and influencing their sense of belonging. Students' stories frequently include reflections on teacher-student relationships as influential factors in students' learning experiences. Dismissive interactions are recounted as discouraging, whereas supportive instruction is recalled as validating effort. Peer comparison also appears in narratives, which influences perseverance and self-assurance. Students talk about feeling more inadequate after seeing peers who seemed accomplished. These social comparisons become embedded in students' self-narratives. As a result, learning physics is perceived as an intellectual and emotional endeavor. Narrative accounts emphasize that students connect experiences across time to create meaning (Irving & Sayre, 2016). This reinforces the need to understand how students learn physics through their own narratives.

2.1.2 Learning Environment and Prior Experiences

The learning environment plays a crucial role in shaping students' physics learning experiences. When learners express their difficulties in physics, they frequently use narratives of perceived irrelevance and a lack of contextual connection to real life. Learners perceived abstract calculations that seemed detached from their real-world experiences, thus reducing their own level of motivation and emotional investment in their learning process (Bagnoli & Gronchi, 2025). These narratives illustrate that when students cannot connect new information to familiar contexts in real life, their level of cognitive difficulty becomes intensified.

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2.2 Influence on Engagement and Learning Process

Physics learners' narratives reveal that motivation is correlated or closely tied with how learners interpret their level of difficulty and success (Kurniawan et al., 2017). When they experience repeated challenges without support, their narratives reflect a decline in their motivation and an occurrence of their withdrawal. Conversely, when they eventually grasp and understand a physics concept—often through a helpful and supportive interaction—students do remember these instances as important shifts in their learning process (Zollman, 2021). These experiences are described by the students as enhancing their self-esteem, curiosity, and perseverance. Students often describe these experiences as the starting point of their belief that they could really learn physics.

Engagement is described as dynamic, which shifts between semesters and educational settings. Learners frequently narrate how classroom climate impacts their motivation to engage and participate. Safe and inclusive learning settings are remembered as encouraging and promoting inquiry and dialogue. Silence and disengagement are results of negative experiences. Learning strategies emerge in narratives as adaptable solutions to challenges. Students describe trying out various study strategies. These narratives illustrate engagement as an evolving process (Legarde et al., 2025).

Participation in physics classes is sometimes described as a social experience that is influenced by the interactions with their peers and their teachers. Students do talk about being reluctant to speak because they are afraid of being judged. Promoting feedback is described as empowering participation and involvement. What are often remembered as moments of shared meaning-making are the collaborative learning activities. These experiences do reinforce the students' sense of belonging. When they are recognized and are appreciated, their motivation is strengthened (Yehya, 2023). Conversely, competitive settings are described as discouraging. Learning strategies such as group study and peer explanation emerge and develop naturally. These strategies are referred to as both cognitive and emotional supports. Narrative evidence shows engagement changes and develops over time. Students' learning processes are inseparable from their own social context (Petričević et al., 2022).

Students' engagement is closely linked to their developing academic identities. Learners describe seeing themselves as having changed from being passive recipients to active participants. These changes in identity are often linked to instructional methods. Students' narratives of their learning processes reflect experimentation and reflection. Students describe giving up on inefficient strategies. Successful strategies are described as personally meaningful and significant. Their level of engagement increases when the implemented strategies align with students' learning preferences. Through perceived relevance, motivation is sustained (Saaid et al., 2024). Narrative accounts emphasize meaning-making. It is believed that students' engagement is a lived experience.

2.3 Students' Personal Insights and Suggested Interventions

Reflections on teaching and learning approaches that enabled them to overcome learning obstacles are often included in the narratives of the learners (Sumardani & Dujali, 2021). Peer collaboration is often described as providing emotional support. Students describe how discussing or talking about ideas clarified understanding and improved their comprehension. What is being remembered as the one that reduces anxiety is the instructor's empathy. It is said that contextualized examples increase relevance. Students suggest more engaging methods of instruction. Reflective practices are described as the ones that do foster self-awareness. Personal narratives incorporate these strategies. Students emphasize emotional affirmation. Narrative insights highlight the learner agency. This means that their narratives show that students are actively making choices, taking their own actions, and reflecting on what helps them learn. Strategies are really part of identity development. This emphasizes that when learners are repeatedly utilizing certain strategies (such as collaborating with peers, reflecting on their learning, or seeking supportive instruction), these strategies will stop being just techniques. Instead, these become part of how students see themselves as learners (Irving & Sayre, 2016).

Students describe interventions that they believe could improve their understanding of physics concepts. Many suggest scaffolding complex concepts in physics. A culture of support in the classroom is being emphasized. Those that involve hands-on activity are meaningful activities. Learners recount how formative feedback helped them. Mentoring activity is described as a transformative learning experience. These students' insights reflect lived experience. The students emphasize the importance of feeling listened to. Their narratives highlight the role of relationships and connection in their learning processes. The effective and efficient interventions are influenced by social contexts, and these personal narratives of the learners do provide valuable guidance for the development of instructional practices (Singh, 2021).

Narratives also include reflections on ineffective instructional strategies. What is being described as disengaging is the practice of rote memorization. Students do advocate for meaningful learning. The metacognitive strategies are described as helpful. Goal-setting appears in the narratives of students' success in learning. Emotional coping strategies are being emphasized. Learners do recount their growth over time. Narrative turning points are evident. In students' stories, certain key moments—like a supportive interaction, a breakthrough in understanding, or successfully solving a difficult physics problem—stand out as their personal turning points that significantly shaped their learning journey. These insights do emphasize personal reflection. Students' voices guide improvement. Learning is seen as a journey (Grosser, 2018).

2.4 Gaps in the Literature

2.4.1 College Students' Physics Learning Experiences

Despite the fact that the cognitive and socio-emotional challenges in physics learning have been extensively discussed, existing literature frequently considers students' experiences as broad patterns rather than as very personal and evolving narratives. Many studies highlight common difficulties such as anxiety, abstract content, and prior learning gaps, yet they seldom explore how individual students personally perceive and provide meaning to these struggles over time. Students' voices are frequently summarized through thematic categories, which restricts comprehension of how difficulties are embedded in learners' lived experiences and self-perceptions. Furthermore, previous studies have tended to focus on outcomes of difficulty rather than the subjective processes through which students encounter and describe these difficulties. The interaction and relationship between past experiences, learning environments, and emotional responses remains underexplored when analyzed through students' own stories. Because of this, the depth of students' processes in the meaning-making is frequently lost in the general analyses (Nyström et al., 2024). This gap emphasizes the necessity for narrative research that focuses on students' personal accounts of difficulty in learning physics.

2.4.2 Influence on Engagement and Learning Process

Although prior studies reported that students perceived physics learning difficulties as connected with changes in their motivation, engagement, and perseverance, there is limited qualitative analysis that describes and details how students themselves view and interact with these influences over the course of time. Engagement is frequently assessed or characterized as a static outcome instead of being a dynamic process that is being shaped by the students' continuous experiences of success, struggle, and support. The currently available research tends to dwell on external influences affecting engagement, including instructional strategies or the classroom environment, without thoroughly examining learners' internal interpretations of these experiences (Susanti et al., 2024). Learners' narratives of withdrawal, their renewed motivation, and their changing involvement patterns remain insufficiently represented. Additionally, less emphasis has been placed on how learning involvement does fluctuate across different instructional situations and levels of learning. As a result, from the student's viewpoint, the interaction between learners' emotional reactions, their experienced difficulty, and their level of engagement is not sufficiently examined. This research gap points out the necessity to conduct a narrative research study that examines and reflects how students' learning difficulties shape their engagement and process of learning throughout time.

2.4.3 Students' Personal Insights and Suggested Interventions

Although research has offered a variety of instructional strategies to address physics learning problems, students' own perspectives on which instructional interventions they find helpful and meaningful have not been thoroughly documented. Much of the existing literature focuses on educator-designed solutions, frequently overlooking how learners themselves reflect on and evaluate instructional practices (Psillos, 2024). What are rarely analyzed as primary sources of insight are the students' narratives about peer collaboration, reflective practices, instructor empathy, and emotional coping techniques. Consequently, there is limited understanding of how students exercise agency in selecting and adapting instructional strategies that help them overcome learning challenges. The effect of these strategies which students reported as influencing their academic identities is also insufficiently explored and understood. Without students' voices, which serve as the research input, the prescribed interventions risk being detached from the lived classroom realities. With this, this research gap highlights the significance of documenting the students' narrative insights from their lived experiences to inform more responsive and contextually grounded physics instructional approaches.

2.4.4 Local Educational Setting

Importantly, at the local level, there is currently a noticeable absence of qualitative research examining the challenges and experiences of students in the physics discipline at Davao de Oro State College. This lack of local evidence limits the institution's comprehension of students' distinct viewpoints and voices, which are crucial for enhancing instructional techniques, engagement, and learning outcomes. Without such learners' insights, what may remain unaddressed are the relevant issues affecting their learning motivation, their confidence, and their academic success, and opportunities for crafting the targeted support mechanisms that are tailored to the unique needs of local students are missed. Conducting research within this context would not only fill a local knowledge gap but also offer practical recommendations for the creation and development of instructional interventions, classroom practices, and student-centered support strategies that reflect the actual experiences of learners. By integrating both the broader and local gaps, it reveals a pressing need for qualitative, narrative-based studies that capture students' lived experiences, coping strategies, and engagement processes in physics learning, both as a contribution to the wider body of research and as a critical step toward improving education within the local institutional context (Williams et al., 2018).

2.5 Theoretical Framework

The present study is based on the constructivist theory of learning where learning is seen as an active process where individuals create knowledge based on experience, interaction and reflection (Nugroho, 2017). Constructivist learning theory presupposes that meaning cannot be conveyed but is created when the learners make sense of their experiences in the social and educational contexts. This view relates to the narrative inquiry that considers human experience as something constructed and perceived by the stories shared in the past. Narrative inquiry builds its epistemological premise that people build meaning of their realities through narrative, reflective, and reinterpretation of lived experiences (Pham, 2024). In this perspective, knowledge is not objective and fixed but is created by creating meaning through stories. The theory base focuses on the fact that the experiences of students in learning physics are formed in terms of interaction, language, and reflection (Pressler et al., 2022). In turn, the combination of the constructivist theory of learning and narrative inquiry offers a solid basis for studying ways in which students can make sense of their experiences at the physics laboratory (Kutsyuruba & Stasel, 2023).

At the heart of this integrated theory foundation is that learning and identity are built through experience and narrative articulation. The constructivist learning theory is based on the idea that learners construct meaning by relating the new experiences with the previous knowledge. Narrative inquiry is a complement to this perspective because it focuses on stories as the most important way to structure and communicate these constructions by learners. Students are perceived as the creators of their own learning stories, and they constantly construct themselves as physics learners. Such stories disclose the way students perceive challenges, failures, and successes in the course of time. The experiences of learning are thus seen as dynamic constructions as opposed to isolated events (Karwasz & Wyborska, 2023). In this theoretical view, the study will capture the physics learning identities among students as they go through the learning experiences.

The theoretical foundation is also organized in terms of narrative aspects of temporality, sociality, and place. The constructivist approach to learning experiences justifies the role of temporality because the learning is based on past experiences, and it develops with time (Straub, 2022). Narrative inquiry helps to showcase this process by way of stories that tie together the past experiences, current challenges and hopes of the future. Sociality demonstrates that constructivist approach to learning is socially mediated and affected by interaction with other learners and instructors (Karwasz & Wyborska, 2023). These interactions are placed in personal and interpersonal narratives of students through narrative inquiry. Place is where learning is carried out, both physically and institutionally. These dimensions can collectively be used to create a holistic context of how students make meaning within the physics learning experiences (Temple, 2018).

The other important aspect of the theory base is the understanding of learning as being a dynamic and non-linear process. The constructivist theory of learning refutes the notion of linear cause and effect patterns of learning in favor of continuous meaning construction (David, 2022). Narrative inquiry also focuses on continuity, disruption, and change in the narration of learners. The engagement and motivation of students, as well as their learning strategies, are conceptualized as the product of the interpretations and reinterpretations of the experiences during the course of time (Wang et al., 2024). The analysis of these learning experiences is guided by narrative elements: plot, turning points, and agency. The reflection of students and proposed interventions is considered to be re-storying and active knowledge building. This theoretical position enables the research to maintain the cohesion and depth of the learning stories of students.

The contextual and co-constructed form of learning and meaning-making is also anticipated by the theory base. Constructivist learning theory has a focus on the fact that learning is influenced by cultural, institutional, and environmental contexts (Zajda, 2021). Narrative inquiry also places stories in definite social, timely, and spatial contexts. The learning of physics takes place in organized learning settings through curriculum, assessment, and instructional practices (Voutsinos, 2023). These settings are never considered as background conditions but rather as a part of the narratives of the students. The theory base also recognizes the role of the researcher as a co-narrator in the creation and meaning construction and interpretation (Lyndon & Edwards, 2021). This combined conceptual foundation underpins an ethical, reflexive, and situation-sensitive interpretation of physics learning experiences among students.

2.6 Conceptual Framework

The conceptual framework that guided this study is grounded in narrative inquiry, which viewed human experience as constructed, interpreted, and understood through stories. From this perspective, individuals made sense of their experiences by reflecting on events, relationships, and contexts across time (Wang et al., 2017). In the present study, narrative inquiry provides the lens for understanding how undergraduate physics students describe, interpret, and give meaning to their difficulties in learning physics. Rather than examining learning difficulties as isolated events, the framework recognizes these experiences as part of evolving personal stories shaped by past experiences, present challenges, and future aspirations.

As illustrated in Figure 1, the framework follows a sequential narrative flow beginning with students' prior learning experiences, moving through their present physics learning difficulties, engagement and learning responses, coping strategies and meaning-making processes, turning points and disruptions, and finally toward changed perspectives and future outlooks. This sequence reflected how participants narrated their experiences and how these experiences were reconstructed during the narrative inquiry process.

Figure 1. Conceptual Framework of Students' Narratives of Difficulties in Learning Physics

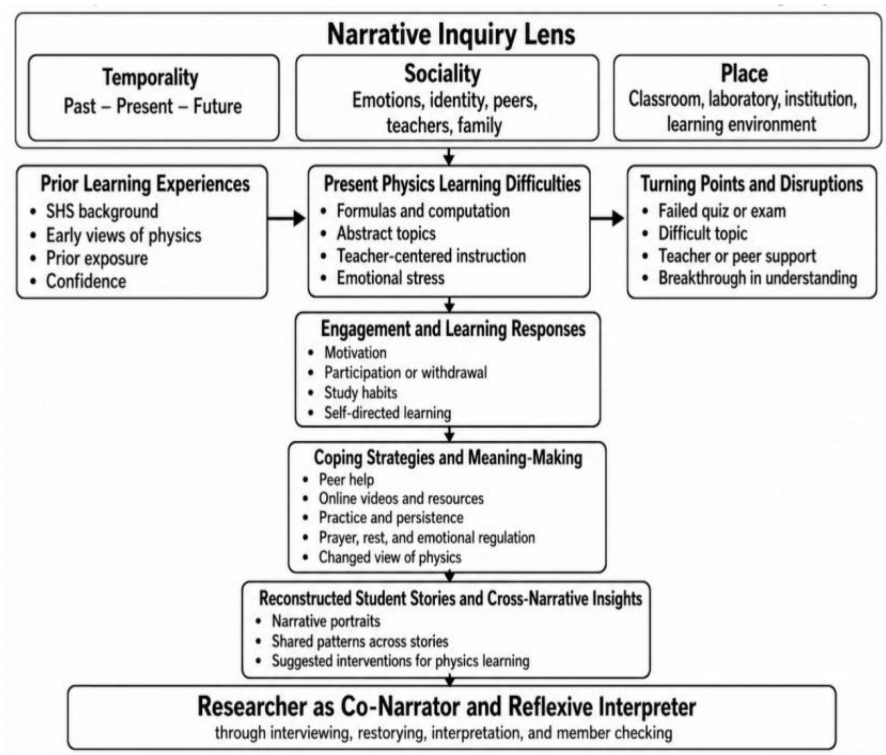

Figure 1: Sequential narrative flow diagram: Past → Present → Coping → Turning Points → Future Outlook, within the narrative inquiry lenses of temporality, sociality, and place.

The framework is further anchored on the three narrative inquiry dimensions of temporality, sociality, and place (Jha, 2018). Temporality highlights the continuity of experience by examining how students connect their past learning experiences, present struggles, and future expectations in physics (Gjessing et al., 2023). Sociality focuses on the personal and interpersonal dimensions of experience, including emotions, identity, peer relationships, teacher interactions, and family influences that participants associated with their learning journeys (Pino Gavidia & Adu, 2022). Place refers to the physical and institutional settings in which learning occurs, such as classrooms, laboratories, and other educational environments that participants identified as significant in shaping their experiences (Acton, 2017).

Within this framework, participants' narratives often began with descriptions of their prior learning experiences, including their secondary school background, early perceptions of physics, previous exposure to scientific concepts, and confidence in learning the subject. Participants frequently connected these experiences to the challenges they later encountered in college physics, such as difficulties with formulas and computations, abstract concepts, teacher-centered instructional approaches, and emotional stress associated with learning complex topics (Bagnoli & Gronchi, 2025). Rather than presenting these experiences as direct causes of learning difficulties, the framework acknowledges them as interconnected aspects of the participants' stories and interpretations of their learning journeys.

Participants also described various responses to these challenges, including changes in motivation, classroom participation, study habits, and self-directed learning behaviors. As they reflected on their experiences, they recounted different coping strategies and meaning-making processes, such as seeking assistance from peers, utilizing online learning resources, engaging in deliberate practice, relying on prayer or emotional regulation, and developing new ways of understanding physics concepts (Nasheeda et al., 2019; Barbashina, 2023). Through these experiences, participants narrated moments of disruption and transformation, including failed examinations, encounters with difficult topics, support from teachers or classmates, and breakthroughs in understanding that influenced how they viewed physics and their ability to learn it.

The framework also recognizes that individual experiences do not exist in isolation. Through the process of narrative reconstruction, participants' stories are organized into narrative portraits that preserve the uniqueness of each learner's experience while allowing the identification of shared patterns across narratives. These cross-narrative insights provide a deeper understanding of how students collectively describe difficulties, coping processes, and changes in perspective related to physics learning (Mihas, 2019).

The framework acknowledges the role of the researcher as a co-narrator and reflexive interpreter. Through interviewing, restorying, interpretation, and member checking, the researcher works collaboratively with participants to reconstruct meaningful accounts of their experiences while striving to preserve the authenticity of their voices (Johnson & Darrow, 2023; Schmid, 2018). In this way, the framework reflects both the individual and shared dimensions of students' narratives, situating their stories within broader temporal, social, and contextual influences.

3. Methodology

3.1 Research Design

In this study, the research design used was qualitative narrative research in the quest to understand the lived experience of college students who face challenges in studying physics. The choice of narrative research is based on the fact that it focuses on human experience as lived, told, and retold through the narration over time (Johnson & Darrow, 2023). The design is consistent with the assumption according to which students make sense of learning physics by reflecting on the learning of past, present, and future experiences. Instead of separating variables, the research design was aimed at taking into consideration experiences as a unit, storytelling within a context. This method enabled the research to elicit the interpretation of the struggles and learning patterns of the students in physics education. Narrative inquiry was suitable as the research aimed at exploration of rich knowledge and not generalization (Johnson & Darrow, 2023). This design gave credence to the voices of students as a primary source of knowledge through this study.

Narrative inquiry is justified since it is the most appropriate method considering that the study is to understand how various challenges in learning physics change over time and context (Robertson & Lappeman, 2025). The experiences of students are considered to be time-based, dependent on the previous schooling system, the present requirements of the academic process, and the future aspirations. The design is sensitive to the fact that learning challenges are not events but experiences in the process and are rooted in social and personal contexts. Narrative research made it possible to consider turning points, disruptions, and moments of realization in the learning stories of students. This design foregrounded the meaning-making process, as opposed to measurement (Pietrobon et al., 2025). The study relied on narrative inquiry in order to focus more on interpretation than explanation. The design thus assisted in having a holistic view of the physics learning experiences of students.

The study which anchored on narrative research type primarily focused on the students' unique, individual experiences and the context of each story. All participants were characterized as individual tales that were founded on individual experience and learning. Meanwhile, the research gained varied and deep insights through the thematic resonance of stories (Framp et al., 2019). The design enabled the voices not to be merged in one comprehensive report but to keep the integrity of the narration, and enabled interpretation comparison as far as possible. The narrative inquiry therefore operated both at the individual level and also at the society level. The method was also used to fulfill the purpose of the study, and it was to record various experiences of the students. The conceptual framework that guided the narrative research design contained the concepts known as temporality, sociality, and place (Pino Gavidia & Adu, 2022).

Temporality is used to arrange the stories of past learning experiences, current problems, and anticipations of the future (Pino Gavidia & Adu, 2022). The aspect of sociality influences the focus on emotions, relations, and individual faiths in relation to the study of physics (Pino Gavidia & Adu, 2022). Place emphasizes the importance of classes and other institutional environments to influence the stories of students (Pino Gavidia & Adu, 2022). These dimensions made stories to be interpreted as contextual and interpersonal. There was no linear cause-and-effect assumption in the research design. Rather, it revolved around continuity, discontinuity, and reinterpretation in narratives.

The role of a co-narrator was taken by the researcher in the narrative design. This stand acknowledges that narration is co-created in a dialogue between the researcher and the participant. The design thus stressed reflexivity, attentiveness, and interpretive responsibility. Interviews were construed as storytelling areas and not as data mining. The researcher was an active listener, which caused thought and encouraged storytelling. This cooperative approach supported the credibility of the created stories as perceived by participants. On the whole, the research design promoted an ethical and relational method of learning physics among students.

3.2 Research Locale

The study was conducted at Davao de Oro State College, a state higher education institution located in Davao de Oro, Philippines. The institution served as an appropriate research locale because it offered undergraduate programs in science and other allied fields where students were exposed to physics-related learning experiences. Within the teacher education program, science students encountered physics through classroom instruction, problem-solving activities, and laboratory-based learning. These academic conditions provided a meaningful setting for examining how college students experienced and narrated their difficulties in learning physics. Since the study focused on the lived experiences of students, the college environment became an important context where their struggles, coping strategies, classroom participation, and reflections could be understood.

Davao de Oro State College also provided a relevant setting because its students came from different municipalities within the province and nearby areas. This allowed the study to consider learners with varied academic backgrounds, prior science learning experiences, and levels of preparedness in physics. These differences were important because the participants' narratives showed that past educational experiences influenced how they understood physics concepts, responded to classroom demands, and dealt with emotional challenges such as confusion, anxiety, and self-doubt. The institutional setting also reflected the realities of regional higher education, where students may experience challenges related to abstract concepts, mathematical reasoning, laboratory activities, and problem-solving tasks. Because of this, the locale supported the purpose of the study by offering real classroom and institutional circumstances in which students' physics learning difficulties could be explored.

The selection of Davao de Oro State College as the research locale was also significant because the study identified a lack of qualitative studies focusing on students' lived experiences in physics within the institution. Previous discussions in the study emphasized that many educational investigations tend to focus on test scores, achievement levels, and other quantitative measures, while students' voices, feelings, and personal meanings are often less documented. Conducting the study in this locale helped address this gap by placing student narratives at the center of the inquiry. Through the participants' stories, the study was able to gather insights into how students experienced physics learning, how they responded to difficulties, and how their learning environment shaped their engagement and meaning-making. Therefore, the locale was not only the physical setting of the study but also an essential part of understanding the participants' narrated experiences.

3.3 Participants and Sampling

In this narrative research study, six (6) college students who had difficulties in studying physics were employed. The number of respondents sampled was also within the recommended sample size of the narrative inquiry research studies. The narrative research was directed to the abundance of experience and does not focus on subjects. The limited number of samples gave the researcher an opportunity to make sense of the story of each of the subjects. The proposed methodology guaranteed the in-depth and meaningful research of student experiences. The choice of six participants is spearheaded by the fact that methodological recommendations to integrate six participants in the narrative research. Qualitative research scholars believe that the number of participants to be employed in the narrative research is three to ten bearing in mind depth and richness of the data. Under this scale, researcher was at a position to carry out the in-depth interviews, and a detailed narrative analysis. Narrative inquiry was obsessed with a mixture of individual stories as opposed to generalization. Thus, it is correct that a small number of respondents were involved in this research design.

The second motive behind the number of six participants is that there was the necessity to gain saturation of information in narrative subjects. The situation is known as data saturation, wherein the supplementary interviews could not bring any new information or trends to the narratives of the interviewees. The close narrative analysis assisted the researcher in analyzing the stories that were narrated by the participants so as to identify the common themes of the learning problems. The number of respondents offered sufficient diversity of the stories and, at the same time, enabled one to treat each story descriptively. This equilibrium made the study credible and three-dimensional.

The participants were sampled using the purposive sampling technique with the realization that the sampled participants would qualify in the study. Purposive sampling also enabled the researcher to make a purposeful selection of the participants with an objective of sampling individuals who had an issue with learning physics. This helped the participants make significant accounts in relation to the research questions. The students who received priority were those who were in a position to elaborate their experiences and opinions of the learning. Topicality of the received data was enhanced by such a method of selection.

The researcher was given the necessary time to conduct an in-depth interview and narrative analysis because there were only be six respondents. The interviews of the interviewees were documented, transcribed and discussed to make sure that the narrative coherence was available. This was attributed to the reduced number of the participants, which enabled individual access to the experience and perceptions of the participants. This approach was congruent with the concepts of narrative inquiry that presupposed the detailed narration and a sense-making. The number of participants was chosen to assist in the rigor and richness of the methodology of the story.

Inclusion Criteria

The inclusion criteria of this study targeted students of the college who have been faced with difficulties in learning physics as part of their academic work. The respondents should be presently studying in Davao de Oro State College and they should have at least one course in physics at the tertiary level. This was necessary so that the participants directly related to the learning of physics at college. Their accounts thus have real academic settings. Such requirements assisted in making sure that the participants were able to contribute significantly towards the study.

The next significant requirement was that the participants should have undertaken a physics course during the First or Second Semester of the Academic Year 2025-2026. The identification of the academic term made sure that the experiences of the participants were new and applicable to the present instructional situation. The recent events enabled participants to recollect their difficulties, feelings and the process of learning more precisely. This also made sure that the stories portrayed the current learning climate of the institution. Consequently, more authoritative and contextually-based data were obtained.

The participants were also required to prove that they have faced endured challenges in the course of learning physics. Such challenges could be conceptual misconceptions, problems with solving problems, emotional issues, or lack of motivation in physics classes. Students suffering anxiety, confusion, lack of confidence in relation to learning physics were also taken into consideration. These experiences offered deep narrative content of appreciating the wrinkles of physics education. These participants were included to make the study in line with the study objectives.

The students who were chosen in the study should also be open to expressing their experiences in narrative interviews in a more detailed manner. It involved participation that entailed the capability of looking back on the learning experiences of the past and explaining them in narrative style. This thought-provoking skill was critical with the development of purposeful narratives of learning challenges and coping mechanisms. The participants were required to thus feel at ease when talking about their experiences with academics in a research context. The requirement helped the quality and depth of the narrative data.

Finally, the participants were required to take part in the study voluntarily by means of informed consent. They should reveal that they have a clear concept of the aim, methodology, and moral implications of the research. The involvement should be complete and voluntary and the students were allowed to drop out of the study at will. This made the process of research considerate of the autonomy and rights of the participants. All these inclusion criteria were meant to make sure that the participants were suitable and applicable, in the study.

Exclusion Criteria

Some people were not included in this study in order to ensure that the research data was relevant and intact. The participants in the study did not include students who never studied physics at tertiary level. Such exclusion was required due to the fact that the research was specifically interested in experiences associated with the learning of physics on college level. Participants could not provide meaningful narratives without having personal experience in a physics course. Ensuring this criterion helped maintain the study's focus and guaranteed that the collected data accurately reflected the students' authentic learning experiences.

The students who were not currently pursuing their studies in Davao de Oro State College in the Academic Year 2025-2026 were not allowed to participate. The study focused on capturing the experiences in the particular institutional setting of the college. The use of other institutions could cause contextual variation amongst the participants and this aspect could influence the narratives. Thus, the research was restricted to the students of the outlined research area. This promotes contextual constancy of the data.

Students whose perception of learning physics had not been perceived as hard or challenging was locked out. The main aim of the study was to examine stories of challenge, struggle, and strategies of coping with physics education. Respondents who have not faced such difficulties were not in a position to offer pertinent narration accounts. The presence of them would make the research questions lack in-depth understanding. This exclusion criterion had been done to align with objectives of the study.

Respondents that were not willing to take part in the audio-taped interviews were also locked out of the research. Narrative inquiry involved the use of audio-taped interviews to help come up with precise narratives of the participants as well as their thoughts. The narratives could lose valuable details during the process of writing without recording because these details are likely to be lost during the transcription and analytical process. The subjects needed to be thus familiar with the recording process. This need enhanced the consistency and exhaustiveness of the narrative information.

Lastly, any student who pulled out at any point in the research would automatically be disqualified in the study. Research is voluntary, and any participant might leave the research at any point in time. This decision would be honored without further ado or admonition by the researcher. Data presented before withdrawal would also be deleted in case requested by the participant. This practice guaranteed ethical respect and compliance of the rights of the participants.

Table 1. Profile of Participants

Participant Code	Age	Year Level	Program/Strand	Prior Physics Experience	Major Difficulties	Relevant Notes
P05	21	3rd Year	BSEd Science	Basic secondary background	Problem-solving, Modern Physics, Thermodynamics	Used self-study and YouTube
P06	22	3rd Year	BSEd Science	Early exposure through teachers/videos	Electromagnetism, Thermodynamics, Modern Physics	Peer collaboration, video-first learning
P07	21	4th Year	BSEd Science	Special science high school	Thermodynamics (traumatic)	Strong background but struggled with computation
P08	22	3rd Year	BSEd Science	Limited high school exposure	Calculations, derivations, formula application	Used AI tools, YouTube, self-study
P09	21	3rd Year	BSEd Science	Caregiving strand (minimal)	Thermodynamics, Modern Physics	Group discussions, peer assistance
P10	22	3rd Year	BSEd Science	GAS strand (basic)	Thermodynamics, teacher-centered instruction	Hands-on learning, peer support

3.4 Research Instruments

The main research instrument was the semi-structured Interview Guide Questionnaire (IGQ) in matrix form, which was in line with the three research questions. The guide had open-ended questions on previous learning experiences, personal difficulty in physics, impact on engagement and learning approaches, coping strategies, turning points and suggested instructional intervention. The IGQ was designed to elicit stories, not short factual answers. Follow-up probes clarified meaning, sequence, emotions, context and support systems not limiting participants' own storytelling.

The interview guide was important to this narrative study as it provided a common structure for the six interviews, but also allowed each participant to tell their own story. The questions allowed the participants to connect their past experiences, present challenges and future expectations which correspond to the narrative inquiry dimensions of temporality, sociality and place.

3.4.1 Pilot Testing of the Interview Guide

The IGQ was pilot tested to students similar to the target participants, but not included in the final study, prior to the actual interviews. The pilot testing assessed the clarity, ordering, relevance, sensitivity and narrative flow of the questions. Pilot testing provided feedback that allowed the researcher to clarify vague wording, probe questions, and validate that the questions would elicit narratives of students' experiences learning physics.

Pilot testing also allowed us a check on the ethics and methodology. It was used to check if the questions were easily answered, if any wording was leading or judgemental and if the interview could be completed within a reasonable time. The final IGQ was semi-structured so that all the research questions were covered and allowed for unique participant stories to emerge.

3.5 Data Collection Procedure

The gathering of data was based mainly on the in-depth life-history interviews. These interviews helped the participants to describe how they learned physics using their own words. The use of open-ended questions was to bring out stories as opposed to short answers (Chand, 2024). The interview form enabled the participants to reflect on the difficulties, turning points, and coping mechanisms. The focus of data collection was made on storytelling as a process of meaning-making. The interviews were done in a conversational way. This made the strategy inclusive to narrative flow and coherence (Schrauf & López de Victoria Rodríguez, 2025).

Storytelling sessions were based on the past, present, and expected future experiences. The participants were asked to share their learning experiences with physics, and their expectations. This structure corresponded to the principles of narrative inquiry. The interviews were recorded with the permission of the participants. Field notes were also taken to get some context and emotional indicators. During the member checking process, the researcher actively co-constructed narratives with participants, adding depth and interpretive insights while preserving the authenticity of their experiences. These texts enhanced the meaning of narrative. The collecting of data was hence multifaceted (Nasheeda et al., 2019).

Where possible, supporting documents and materials could be taken into account in order to contextualize stories. These would be assessments of participants at will (Pham, 2024). These contextual materials are not considered as objective evidence but as extensions of the narratives. These could assist in putting stories in institutional and learning contexts. Narrative richness would be enhanced through the application of contextual materials. These materials would be relevant, as they would be explained by participants during interviews. This is what would make it meaningfully participant-based (Nasheeda et al., 2019).

As the researcher actively participated in the co-construction of narratives, particular inquisitions encouraged growth and reflection. Cautions were taken so as not to force interpretation of data collection. The researcher also encouraged storytelling, rather than restricting it (Johnson & Darrow, 2023). Reflexive notes were documents of impressions and responses of the researcher. This openness contributed to the interpretive accountability. Overall, the principle of narrative inquiry is observed in data collection.

3.6 Ethical Considerations

The study strictly observed ethical standards before, during, and after the conduct of the research to protect the rights, dignity, safety, privacy, and welfare of all participants. Prior to data gathering, the researcher secured the necessary institutional permissions and complied with the required research approval processes. The study titled "Navigating Difficulties in Physics Education: College Students' Insights—A Narrative Research Study" underwent completed ethical review under DOrSU-UREB, where the review result stated that no ethical issues were found and that the results of the study may be presented for final defense and publication. In addition, the conduct of research was approved by Davao de Oro State College through its Research and Development Division, which regulated the involvement of students in research activities. The approval form identified the study's goal, participants, sampling procedure, time requirement, possible risks, benefits, and mitigation measures. These approvals ensured that the study was conducted within institutional protocols and that the researcher did not proceed with data collection without proper authorization.

Participation in the study was completely voluntary and based on informed consent. Before the interview, each participant was properly informed about the purpose of the study, the nature of their participation, the expected interview duration, the type of questions to be asked, the use of audio recording when applicable, and their rights as participants. The participants were not forced, pressured, or influenced to join the study, and they were clearly informed that they could refuse to answer any question, discontinue the interview, or withdraw from the study at any point without penalty or negative consequence. Since the study dealt with personal experiences of difficulty in learning physics, the researcher made sure that the interview process remained respectful, non-threatening, and sensitive to the emotional comfort of the participants. The interview was treated not as an examination of their weaknesses, but as an opportunity for them to share their learning experiences, struggles, coping strategies, and insights in a safe and dignified manner.

Confidentiality, anonymity, and data privacy were given serious consideration throughout the research process. The participants' names and identifying information were protected and were not disclosed in the manuscript, presentation, or any future publication of the study. Instead of using real names, the researcher used participant codes (P05, P06, P07, P08, P09, P10) when presenting narratives, interview excerpts, and findings. The participants' answers, recordings, transcripts, demographic information, and related documents were treated as confidential research data and were used only for the purpose of the study. Access to raw data was limited to the researcher and, when necessary, the adviser or authorized research reviewers. Digital files were stored in secure, password-protected folders, while printed documents, if any, were kept in a safe location. The researcher also had the responsibility to avoid including details in the narratives that could indirectly reveal the identity of the participants, such as overly specific personal circumstances, classroom incidents, or descriptions that may make them recognizable to others.

The study also observed the principles of beneficence, non-maleficence, justice, respect for persons, transparency, and research integrity. The possible risk to participants was identified as minimal, with only possible mild discomfort, and this was addressed by allowing participants to withdraw anytime and by ensuring confidentiality. The expected benefit of the study was that it could help improve teaching strategies in physics education and provide students with an opportunity to share their lived experiences. To minimize discomfort, the researcher conducted the interviews in a professional and considerate manner, avoided judgmental language, respected silence or hesitation, and did not force participants to disclose experiences they were not comfortable sharing. The researcher also maintained objectivity by using a validated interview guide and by avoiding questions that would lead, pressure, embarrass, or blame the participants.

In reporting the findings, the researcher had the ethical duty to present the participants' experiences truthfully and responsibly, without fabricating data, exaggerating claims, or manipulating responses to fit a preferred conclusion. The results were to be used only for academic and scholarly purposes, and any presentation or publication of the study must continue to protect participant identity and uphold the confidentiality promised during consent. Through these ethical safeguards, the study ensured that the students' narratives were gathered, analyzed, and presented with care, honesty, respect, and accountability.

3.7 Data Analysis

The analysis of the data was conducted using a narrative analytic method grounded in restorying, which allows participants' narratives to be rearranged into coherent stories without losing their original meanings (Auzenne-Curl, 2021). Transcripts were read repeatedly to gain holistic knowledge of each participant's experiences (Bright & Du Preez, 2024), with emphasis on plot, sequence, and turning points. This methodology aligns with narrative inquiry principles and prioritizes meaning-making rather than measurement, reflecting the social, temporal, and contextual dimensions of participants' experiences. Stories were organized chronologically and thematically, capturing how past learning, contemporary struggles, and future aspirations shape learners' identity, engagement, and involvement in physics (Wieslander & Löfgren, 2023).

To ensure analytic rigor, the study employed a two-level narrative analytic approach. At the first level, within-participant narrative analysis, each participant's transcript was reconstructed into a narrative portrait emphasizing seven elements: prior learning background, major difficulty, emotional response, engagement and participation, coping strategies, turning points, and present meaning or advice to others. These narratives preserved temporality, sociality, and place, highlighting the influence of prior experiences, social interactions, and institutional contexts on the learning process. Extended quotations were included to maintain participant voice and authenticity.

At the second level, the study employed an inductive cross-narrative thematic analysis, guided by Braun and Clarke's six-phase thematic analysis process. The researcher first became familiar with the transcribed responses by repeatedly reading the participants' narratives and writing initial notes about their experiences, difficulties, coping strategies, and sources of support. Meaningful statements were then coded inductively. Similar codes were clustered into subthemes, and related subthemes were organized into broader themes. The emerging themes were reviewed against the coded responses and the overall narratives to ensure that they accurately represented the participants' experiences. After refinement, the final themes and subthemes were defined, named, and presented as thematic narratives aligned with the research questions. Participant codes were used to preserve confidentiality. These cross-narrative themes supplement, rather than replace, individual stories, providing insight into collective trends and shared experiences in learning physics.

Figure 2. Two-Level Analysis in This Narrative Inquiry

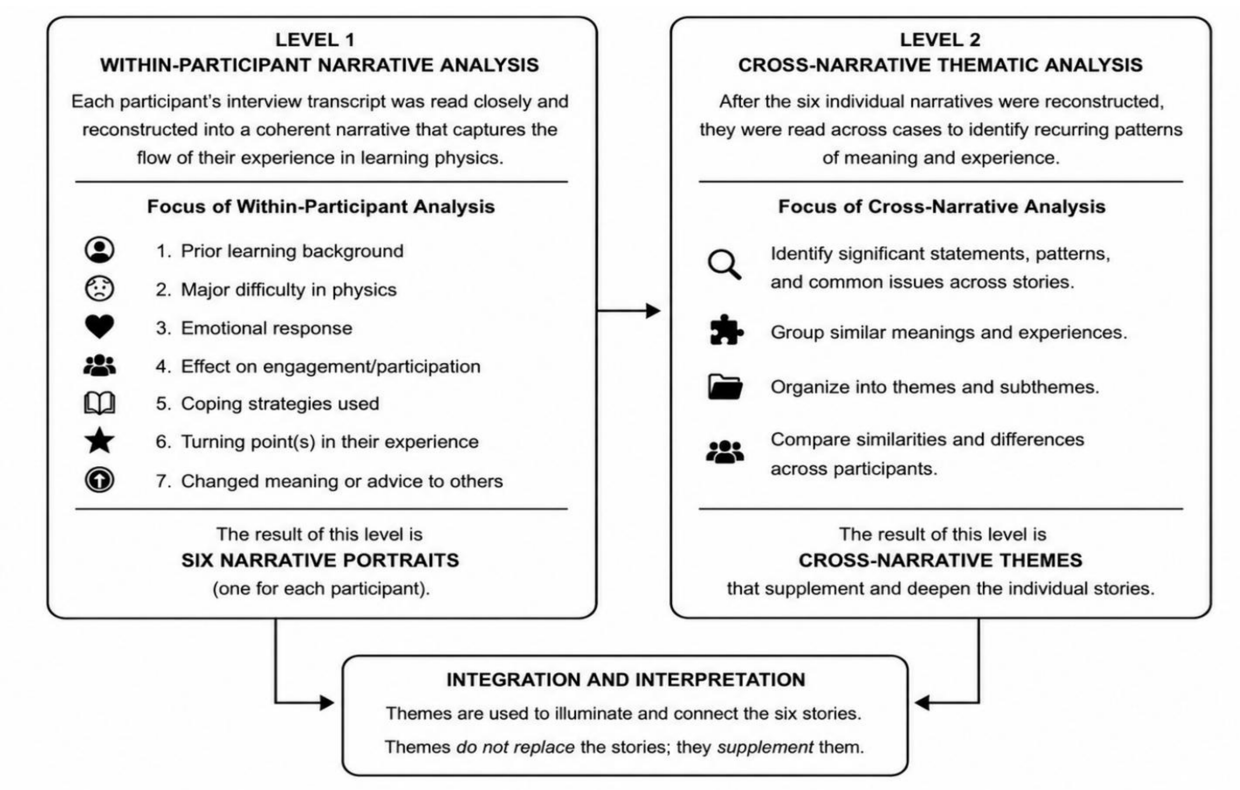

Diagram showing Level 1: Within-participant narrative analysis → Narrative Portraits; Level 2: Cross-narrative thematic analysis → Themes and Subthemes; Integration and Interpretation.

Throughout the analytic process, narrative coherence was maintained. Long narrative passages preserved the voices of participants, and interpretations were cross-checked against original transcripts. Reflexive notes documented analytic decisions, and contextual aspects such as classroom practices and social relationships were incorporated into interpretations. To enhance credibility, participants engaged in member checking, reviewing their reconstructed narratives to confirm accurate representation; any discrepancies or clarifications were addressed prior to finalization.

This integrated approach ensures the authentic presentation of individual experiences, capturing the rich, nuanced, and context-specific stories of each participant while also systematically identifying shared patterns, recurring themes, and collective trends across all participants. By combining within-participant narrative portraits with cross-narrative thematic analysis, the study preserves the participants' voices, emphasizes temporal and social dimensions, and highlights both unique and common aspects of learning physics. This approach not only demonstrates fidelity to narrative inquiry methodology but also provides readers with a holistic understanding of the complexities, strategies, and meaning-making processes that shape students' engagement, motivation, and identity in physics learning.

3.8 Trustworthiness and Credibility Measures

Trustworthiness was accomplished by using thick narrative description. Detailed descriptions are emotional, situational, and time-oriented. The descriptions were sufficient to allow the reader to get into the world of the participants (Ahmed, 2023). Inherent meaning consists of descriptive elaboration. This was a valid approach that supported plausibility instead of statistical legitimacy. This thick description ensured the complexity of narratives. It increased the authenticity of the research.

Credibility was improved through participant validation. The participants were revisiting reconstructed narratives in terms of accuracy and resonance (Rahal, 2024). Reviews were made part of revisions. This procedure honored the authority of the participants over their narrations. Coherence of narrative was enhanced by validation. It further minimized misunderstanding. The voice of the participants was still in focus.

Trustworthiness was backed up by reflexive documentation. The researcher has both analytic and reflexive journals. These are the documented assumptions, interpretations, and emotional responses. Reflexivity recognizes the impact of the researcher in the building of narratives. Credibility was boosted by transparency. Moral intuition was aided by self-consciousness. This practice enhanced the methodological integrity (Ahmed, 2023).

The focus of the narrative reconstruction was on authenticity and coherence. Narratives were offered as significant totalities. Fragmentation was avoided in order to maintain narration. Answers were based on the words of the participants. Coherence of the narration helped the reader to trust. Authentic representation was considered more important than abstraction. This was in line with the standards of narrative inquiry (Pham, 2024).

Alternative interpretations were also considered. The researcher interpreted various stories. Various interpretations were not denied but acknowledged. This critical research had been further complemented by this openness. Trustworthiness was managed as a procedure. Narrative inquiry valued the interpretive plurality (Zimmerman & Kim, 2017). On the whole, these procedures ensured the validity and the quality of the research.

4. Results and Discussion

4.1 Narrative Portraits of Participants

4.1.1 Narrative Portrait of Participant P05

P05 entered the study with a basic secondary physics background. In the reconstructed narrative, the participant first described physics as a subject that was both difficult and interesting. As stated in the interview, *"Physics is very difficult for me because of the problem-solving involved, and I often forget how to use the formulas and which formulas to apply. However, it is interesting at the same time because it helps me understand the natural world and the laws of nature."* This account showed that the participant's difficulty was not simply a rejection of physics but a struggle to connect formulas, concepts, and applications in a manageable way.

The major difficulties in the story centered on problem-solving, modern physics, and thermodynamics. These areas created anxiety and pressure because the participant had difficulty remembering which formulas to use and how to apply them properly. As a result, classroom engagement was reduced, especially when the lessons required immediate computation or conceptual application. The participant's experience reflected a movement from early struggle and uncertainty toward a search for strategies that could make physics more understandable.

The participant coped through self-study and the use of YouTube videos, which became an important turning point in the learning experience. Discovering online tutorials helped clarify difficult concepts and allowed the participant to solve problems more independently. At present, P05 perceived physics as more manageable when supported by self-directed learning and advised peers to *"study more or try self-study, because some instructors sometimes do not teach the topic accurately."* In terms of temporality, the narrative moved from early difficulty to gradual independence; in terms of sociality, it showed reliance on online support rather than classroom explanation alone; and in terms of place, it situated learning across the classroom and home study environment.

4.1.2 Narrative Portrait of Participant P06

P06's narrative began with early exposure to physics through teachers and educational videos. The participant connected the first understanding of physics to familiar examples introduced during earlier schooling. As shared in the interview, *"My early experiences in physics involved examples given by my science teachers in elementary school, such as how force moves objects and how a bike stays balanced."* This prior experience helped the participant view physics as something connected to real-life phenomena, even before encountering more complex college-level topics.

Despite this early exposure, the participant encountered major difficulties in electromagnetism, thermodynamics, and modern physics. These topics created frustration because they involved ideas that were hard to imagine and terms that were difficult to visualize. The participant explained, *"My motivation was affected when I struggled to understand electron behavior, as the concepts and terms were hard to visualize."* This difficulty affected motivation, but it did not completely stop engagement. Instead, the participant gradually learned to rely on peer collaboration and supplementary resources to continue learning.

A significant coping strategy in the narrative was watching videos before reading texts, which made the lessons easier to approach. Peer collaboration also helped the participant clarify concepts and participate more actively in learning activities. The turning point occurred after successfully applying learned concepts in group exercises, which increased confidence and changed the participant's view of physics as a detailed explanation of natural phenomena. P06 advised peers to *"find methods that suit your learning style and to ask for clarification when needed."* Temporality was evident in the movement from early exposure to frustration and then to improved confidence; sociality appeared through teacher influence and peer collaboration; and place included classroom learning and online learning environments.

4.1.3 Narrative Portrait of Participant P07

P07 entered college with strong high school preparation in science. The participant's prior background shaped a more investigative view of physics compared with learners who had limited exposure to the subject. As narrated, *"As a special science student back in high school, I had a proficient background in physics, which helped me view physics differently. Physics is not just a body of facts to be remembered, but a process of investigation to be discovered."* This statement showed that the participant initially understood physics as a meaningful discipline connected to inquiry rather than simple memorization.

However, even with strong preparation, thermodynamics remained a major difficulty. The challenge was connected with teacher-centered instruction and the demands of computations and problem-solving. The participant described the experience strongly: *"I think Thermodynamics was the most traumatic physics topic for me. I do not know if the problem was the topic, the teacher, or myself. I can still recall its laws, but the computations and problem-solving were beyond my capacity at that time."* This part of the narrative showed how a difficult topic could disturb confidence even for a student with a stronger science background.

To cope, P07 turned to self-study, watching videos, and reading materials. Independent learning became the main strategy because the participant did not rely heavily on peers. A turning point occurred after completing a challenging practice problem, which helped consolidate understanding and showed that continued practice could make the topic more manageable. At present, the participant recommended that peers *"do not rely only on the teacher's discussion. Watch YouTube videos to support more effective learning."* Temporality was shown in the shift from strong preparation to difficulty and then to active learning; sociality emphasized limited peer reliance and the influence of instruction; and place included the classroom and home study environment.

4.1.4 Narrative Portrait of Participant P08

P08 entered college with limited high school physics exposure. This limited preparation became important in the participant's narrative because college physics required computations, derivations, and formula application that were difficult to manage. The participant shared, *"I often found Physics tasks challenging, especially calculations and derivations. During exams, my short-term memory caused me to mix up formulas."* This statement reflected how the difficulty was experienced not only during class activities but also during examinations, where remembering and applying formulas became a source of struggle.

The participant's learning experience was marked by continued effort despite the challenge of mixing up formulas. Coping strategies included self-study, AI tools, and YouTube videos. These resources helped the participant review lessons outside class and work through concepts at a more manageable pace. Although the struggle continued, the participant's account showed persistence rather than complete withdrawal from physics learning.

The turning point occurred after successfully solving a previously challenging problem with the help of AI-guided tutorials. This experience helped the participant see that difficult tasks could be handled through repeated study and the use of available learning tools. P08 emphasized the importance of consistent study routines and advised peers to *"just pray, don't give up and be wise in studying."* In terms of temporality, the narrative reflected ongoing struggle and gradual adjustment; in terms of sociality, it emphasized peer and family support; and in terms of place, it included classroom, home, and digital study environments.

4.1.5 Narrative Portrait of Participant P09

P09's narrative reflected minimal prior exposure to physics. This limited background influenced how the participant encountered college-level topics, especially those involving computation and abstract reasoning. The participant identified thermodynamics and modern physics as particularly difficult, stating, *"Thermodynamics and modern physics, in particular, involve complex calculations, and having a teacher who uses a teacher-centered approach makes it more challenging to learn."*

This experience showed how the difficulty was connected not only to the subject matter but also to the way the lessons were delivered.

The participant's engagement was shaped by the need to understand complex calculations while adjusting to teacher-centered instruction. Group discussions and lesson review became important coping strategies. These strategies allowed the participant to revisit difficult lessons and process ideas with others. The narrative suggested that collaboration helped reduce the burden of learning physics alone and created opportunities for clearer understanding.

A turning point occurred when peer assistance during laboratory exercises improved the participant's understanding and engagement. This moment showed the value of collaborative learning in helping the participant move from limited exposure toward more active participation. P09 later advised peers to *"practice consistently, ask questions, and persist."* Temporality appeared in the growth from limited preparation to increased engagement; sociality was reflected in peer and teacher support; and place included classroom and collaborative study environments.

4.1.6 Narrative Portrait of Participant P10

P10's GAS strand experience provided basic prior exposure to physics. The participant's narrative showed that this background helped establish some familiarity with the subject, but it did not fully prepare the participant for the difficulty of college physics. The participant shared, *"I found Thermodynamics challenging because it was taught in a teacher-centered manner, emphasizing discussion over activities. Additionally, I felt intimidated by the teacher, which made it difficult to express my ideas or ask questions."* This statement showed that the challenge was connected to both the content of thermodynamics and the classroom atmosphere.

The participant's emotional response was shaped by intimidation and hesitation to participate. Because the teacher-centered approach emphasized discussion over activities, the participant found it difficult to express ideas or ask questions. To cope, P10 consulted peers and online resources. These strategies helped the participant seek clarification from different sources rather than relying on one mode of instruction alone.

The turning point occurred after the participant successfully applied hands-on simulation exercises, which improved conceptual understanding. This experience helped shift the participant from passive learning toward more active comprehension. P10 came to perceive physics as challenging but rewarding and advised peers to *"study conceptually and not rely solely on memorization."* Temporality was shown in the movement from basic prior exposure to intimidation and then to improved understanding; sociality emphasized peer guidance; and place included the classroom, peer groups, and home study.

4.2 Cross-Narrative Theme Summaries

4.2.1 Research Question 1: Personal Difficulties in Learning Physics

Table 2. Cross-Narrative Theme Summary for Research Question 1

Major Theme	Subthemes	Key Participant Quotations
Physics as a Challenging but Meaningful Subject	Difficulty in Formulas, Computation, and Problem-Solving	P05: *"Physics is very difficult for me because of the problem solving and I easily forgot how to use the formulas and what formulas to use. However it is interesting at the same time because it helps me understand the natural world."*
Abstract and Advanced Topics as Sources of Struggle	Thermodynamics, Modern Physics, and Electromagnetism as Challenging Areas	P07: *"I think Thermodynamics was the most traumatic physics topic for me. The computation, problem solving, it beyond my capacity at that time."*
Prior Learning Experiences Shaped Readiness for College Physics	Limited Background from Previous Schooling	P09: *"Since my strand during my senior high is caregiving which closely related to HUMSS, I have limited background knowledge about physics."*
Teacher-Centered Instruction Increased Difficulty	Passive Learning and Limited Student Expression	P10: *"They focused on discussion rather than activities. I often feel drowsy doing discussion."*
Emotional Struggles Accompanied Cognitive Difficulty	Frustration, Pressure, and Low Confidence	P08: *"It affect my self esteem. I am scared to participate since I am aware to myself that my answer would probably wrong."*

Major Theme 1: Physics as a Difficult but Meaningful Subject

The data collected from the six undergraduate participants revealed that learning physics is experienced as challenging, particularly in the areas of formulas, computation, and problem-solving. Participants described struggles with remembering formulas, choosing the correct formulas for given problems, performing calculations, and handling variables during problem-solving exercises. For instance, Participant P05 stated, *"Physics is very difficult for me because of the problem solving and I easily forgot how to use the formulas and what formulas to use. However it is interesting at the same time because it helps* *me understand the natural world and the laws of nature."* Similarly, Participant P08 reflected, *"For me, my experience in Physics is fun but most of the time since now and then is somehow difficult. I really struggle especially in calculation when it comes to remembering the formula and derivation of formulas but when it come to concept I understand it somehow."*

The thematic analysis of the participants' narratives identified consistent patterns across the interviews. All participants emphasized that difficulties were not limited to isolated topics but spanned multiple areas requiring formula application and problem-solving. A recurring pattern was the interplay between memory limitations and procedural execution; participants often described their short-term memory as a barrier to correctly recalling formulas during examinations (P08, P05). Another emerging trend involved the reliance on supplementary resources such as YouTube tutorials or peer assistance as coping mechanisms when computations became overwhelming (P06, P10). Additionally, participants noted that abstract topics, teacher-centered approaches, and complex variable integration intensified these difficulties, indicating that the challenge is both cognitive and contextual. The consistency of these experiences highlights that formula retention and problem-solving processes are primary sources of difficulty for college physics students.

The analysis indicates that physics learning difficulties are multifaceted, rooted not only in the abstract nature of the subject but also in the students' prior educational exposure and cognitive capacities. The frequent mention of memory issues suggests that students face intrinsic cognitive challenges when handling multi-step problem-solving tasks, particularly under examination pressure. This aligns with the constructivist perspective, which posits that knowledge is actively constructed through reflection and prior experiences (Nugroho, 2017; Pham, 2024). Moreover, students' narratives suggest that the difficulty in formulas and computations is exacerbated when pedagogical approaches do not scaffold learning effectively, resonating with literature that emphasizes the importance of instructional support in reducing cognitive load (Bagnoli & Gronchi, 2025; Slisko, 2017).

Major Theme 2: Abstract and Advanced Topics as Sources of Struggle

The narratives from participants indicate that certain physics topics are universally perceived as particularly challenging, specifically Thermodynamics, Modern Physics, and Electromagnetism. Participants highlighted these areas as cognitively demanding due to the abstract concepts, complex computations, and multifaceted problem-solving required. For example, Participant P07 expressed, *"I think Thermodynamics were the most traumatic physics topic for me, I do not know if the problem is the topic, the teacher or me. I can still recall it's laws but the computation, problem solving, it beyond my capacity at that time."* Participant P09 similarly stated, *"Almost everything actually but I really was on the verge of giving up during the teaching of thermodynamics and modern physics."* Participant P10 further described, *"The topic I find challenging was Thermodynamic, mainly because the lesson was delivered in a teacher-centered approach. It was more on discussion rather than activities. Aside from that, I was also kind off intimidated by his aura (the teacher). I can't fully express my idea and even asked questions for clarification as I was intimidated by him."*

Thematic analysis revealed a clear pattern: students struggle most when topics combine abstract theoretical principles with intensive computational requirements. Across participants, Thermodynamics emerged repeatedly as a topic that triggers both cognitive overload and emotional stress, followed closely by Modern Physics and Electromagnetism. A contributing factor identified by participants was the instructional approach; teacher-centered methods and heavy reliance on lecture-based explanation intensified difficulty, as seen in the experiences of P10 and P09. Other participants mentioned the challenges of visualizing abstract phenomena or integrating multiple variables simultaneously, indicating that these difficulties are both content-specific and context-dependent.

Major Theme 3: Prior Learning Experiences Shaped Readiness for College Physics

The participants' narratives indicated that prior learning experiences significantly shaped their readiness for college physics, with some reporting limited exposure due to their senior high school strands. Participants who pursued strands such as GAS, HUMSS, or Caregiving had fewer opportunities to study physics-related courses before entering college. Participant P09, for example, stated, *"Since my strand during my senior high is caregiving which clearly show no connection on physics, my preparation for college physics is kind of shallow."* Similarly, P10 shared, *"Teaching basic concepts. My previous schooling helped me developed basic study habits, but since I took the GAS strand, I had limited background in physics. This made me work harder in college by reviewing basics and practicing more."*

Thematic analysis revealed a clear pattern in which students' senior high school experiences dictated their initial preparedness. Those from STEM-focused strands reported stronger conceptual foundations, whereas learners from non-science tracks expressed the need to compensate through self-directed learning or additional study. Participants emphasized that their earlier exposure—or lack thereof—shaped both confidence and the ease with which they approached complex topics in college physics. For example, P08 noted that junior high provided a basic foundation, but senior high lacked physics subjects relevant to their GAS strand, requiring adaptation in college study habits. The data suggest that prior schooling not only influenced the cognitive readiness of students but also shaped their engagement, motivation, and strategies for learning complex physics topics.

Major Theme 4: Teacher-Centered Instruction Increased Difficulty

Participants consistently described teacher-centered instruction as a factor that increased the difficulty of learning physics. The narratives emphasized limited engagement, minimal hands-on activities, unclear explanations, and teachers who intimidated students. Participant P10 shared, *"They focused on discussion rather than activities. As someone who easily learned through engaging in the activities, the way they teach makes me a passive learner. I often feel drowsy doing discussion."* Participant P07 added, *"I think our teacher back then focuses on teacher centered approach. It doesn't allow us to discover and construct our own knowledge and understanding so we find it not just difficult but boring."*

Thematic analysis revealed that students' learning difficulties were magnified in classrooms dominated by teacher-centered methods. Across narratives, participants reported reduced opportunities for inquiry, experimentation, and active engagement. The lack of interactive activities and overwhelming reliance on lecture-based teaching contributed to passivity, boredom, and decreased motivation. For example, participants P10 and P07 described feeling unable to express ideas, ask questions, or participate meaningfully during discussions, highlighting a pattern in which instructional approach directly influenced engagement and comprehension. Additionally, the perception of intimidating instructors further discouraged participation, revealing an intersection of cognitive and socio-emotional factors in teacher-centered classrooms.

Major Theme 5: Emotional Struggles Accompanied Cognitive Difficulty

Participants described a range of emotional struggles that accompanied their cognitive difficulties in learning physics. These emotional experiences included frustration, pressure, confusion, hopelessness, exhaustion, and diminished confidence. Participant P05 articulated, *"I felt unease pressured and less determined,"* while P06 shared, *"Frustrated, somewhat irritated, and sometimes hopeless."* Participant P08 expressed, *"I can say I feel like exhausted, worry, and sad since I can't understand it even tho I want to learn more."*

Thematic analysis shows that emotional struggles are closely intertwined with cognitive challenges. Participants consistently reported that frustration and pressure arose when facing difficult problem-solving tasks or abstract topics. Patterns across the narratives indicate that these emotional responses impacted not only confidence but also active engagement, with students frequently withdrawing or hesitating to participate. The data suggest a cyclical relationship in which cognitive challenges heighten emotional strain, and these emotional difficulties, in turn, limit students' ability to engage effectively and persist in learning tasks.

4.2.2 Research Question 2: Influence on Engagement and Learning Approaches

Table 3. Cross-Narrative Theme Summary for Research Question 2

Major Theme	Subthemes	Key Participant Quotations
Motivation Fluctuated Based on Understanding, Success, and Classroom Support	Difficulty and Failure Reduced Motivation	P05: *"It affects me by making me less motivated and unfocused."*
	Success and Validation Increased Motivation	P06: *"It made me feel frustrated at first but then I needed to understand it to be able to answer in exams. And gradually, it made me realize that I just needed someone to explain it in simple terms."*
Participation Became Conditional and Confidence-Based	Difficulty Reduced Class Participation	P08: *"I am scared to participate since I am aware to myself that my answer would probably wrong."*
	Peer Support and Group Activities Encouraged Participation	P10: *"Yes, by actively asking with my peers what are their ways to easily understand the concepts."*
Difficulty Affected Academic Performance but Also Encouraged Strategic Learning	Low Scores and Self-Doubt	P09: *"They significantly affect my confidence and motivation resulting to the decline of my academic performance."*
	Review, Practice, Chunking, and Smarter Studying	P07: *"I watched videos on youtube to understand the concept, learn how to solve problems and practice sample problem."*

Major Theme 1: Motivation Fluctuated Based on Understanding, Success, and Classroom Support

The participants' narratives revealed that motivation in learning physics fluctuated depending on understanding, success, and classroom support. Subtheme 1 highlighted that difficulties and repeated failure led to reduced motivation. For instance, Participant P05 stated, *"It affects me by making me less motivated and unfocused."* Similarly, P08 reported, *"It affect my self esteem. I am scared to participate since I am aware to myself that my answer would probably wrong."* Participants often described that when concepts were hard to visualize, instruction was unclear, or academic pressure was high, they resorted to surface-level understanding rather than deeper engagement.

Conversely, Subtheme 2 illustrated that successful experiences and validation increased motivation. P06 shared, *"It did, it made me feel frustrated at first but then I needed to understand it to be able to answer in exams. And gradually, it made me realize that I just needed someone to explain it in simple terms."* Similarly, P09 described, *"My feelings change over time, having to face the subject for almost everyday from 1st to 3rd years of my college days, I learned to handle my frustration and deal things with less care on the result."*

Major Theme 2: Participation Became Conditional and Confidence-Based

Participants reported that classroom participation was heavily influenced by their confidence levels, creating a conditional pattern of engagement. Subtheme 1 highlighted that difficulty and lack of self-assurance caused some students to participate less in discussions or oral recitations. For example, Participant P08 stated, *"It affect my self esteem. I am scared to participate since I am aware to myself that my answer would probably wrong."* Similarly, P10 shared, *"It affected my confidence that I became too low to the point that. I am not confident in our examination and quiz results."*

In contrast, Subtheme 2 illustrated that peer support and structured group activities facilitated participation. Participant P09 remarked, *"Through asking to my classmate/friends who are clearly intelligent and through using supplemental videos,"* while P10 added, *"Yes, by actively asking with my peers what are their ways to easily understand the concepts. Aside from that, I directly ask the instructor for any clarifications to correct any of the misconceptions."*

Major Theme 3: Difficulty Affected Academic Performance but Also Encouraged Strategic Learning

Participants reported that difficulties in physics directly affected their academic performance, often resulting in low scores and self-doubt. Subtheme 1 illustrates these challenges: Participant P05 described, *"I try to focus, but I keep on forgetting it especially the formulas and the process of each formulas,"* while P09 noted, *"They significantly affect my confidence and motivation resulting to the decline of my academic performance and the totality of my grade."*

Conversely, Subtheme 2 highlighted adaptive strategies students employed to overcome these challenges. Participants described reviewing notes, practicing sample problems, chunking complex concepts, and using external resources such as videos to enhance understanding. For example, P07 said, *"I watched videos on youtube to understand the concept, learn how to solve problems and practice sample problem,"* and P10 added, *"Yes, by actively asking with my peers what are their ways to easily understand the concepts. Aside from that, I directly ask the instructor for any clarifications to correct any of the misconceptions."*

4.2.3 Research Question 3: Coping Strategies and Interventions

Table 4. Cross-Narrative Theme Summary for Research Question 3

Major Theme	Subthemes	Key Participant Quotations
Students Used Self-Directed and Technology-Supported Learning	YouTube, Online Explanations, and Simplified Materials	P06: *"I would go to YouTube and watch crashcourse that would explain the topic."*
	Self-Study and Advanced Preparation	P10: *"I watched youtube videos to fully grasp the topics that was discussed in class."*
Students Managed Stress Through Rest, Prayer, Emotional Regulation, and Support Systems	Rest and Emotional Regulation	P08: *"Everytime I faced that kind of difficulty. I choose to chill at the back than pushing my brain to understand. Then after that I study at home."*
	Prayer, Family, Friends, Teachers, and Classmates	P08: *"just pray, don't give up and be wise in studying."*
Students Recommended Contextualized, Hands-On, and Supportive Teaching	Simulation, Real-Life Application, and Concept-Based Teaching	P05: *"Simulation based, real life application, concept based teaching methods rather than computation or solving based alone."*
	Clear Explanations, Practice, Materials, and Learning Support	P07: *"I think if we exposed student in an investigative way or discovery learning they tend to engaged and understand physics well."*
Learning Physics Became a Lesson in Patience, Persistence, and Practical Understanding	Patience and Persistence	P06: *"I try to stay consistent and ask questions whenever I don't understand."*
	Moving Beyond Rote Memorization	P07: *"We realized that physics is not just about memorizing formulas. It's about understanding and applying concepts."*

Major Theme 1: Students Used Self-Directed and Technology-Supported Learning

Participants described various self-directed and technology-supported strategies to address their challenges in learning physics. Subtheme 1 emphasized the use of YouTube, online explanations, AI tools, and simplified materials to better understand complex topics. Participant P06 shared, *"I would go to YouTube and watch crashcourse that would explain the topic."* P07 reported, *"I watched videos on youtube to understand the concept, learn how to solve problems and practice sample problem."* P10 stated, *"I watched youtube videos to fully grasp the topics that was discussed in class."*

Subtheme 2 highlighted traditional self-study and advanced preparation strategies. Participants described studying in advance, reading textbooks, practicing sample problems, and reviewing lessons before class. P08 noted, *"Everytime I faced that kind of difficulty. I choose to chill at the back than pushing my brain to understand. Then after that I study at home."*

Major Theme 2: Students Managed Stress Through Rest, Prayer, Emotional Regulation, and Support Systems

Participants described managing stress and emotional strain as an integral part of their strategies to cope with physics learning difficulties. Subtheme 1 highlighted rest and emotional regulation, where students engaged in short breaks, snacks, naps, and breathing exercises, as well as reviewing notes at a slower pace. For example, Participant P08 explained, *"Everytime I faced that kind of difficulty. I choose to chill at the back than pushing my brain to understand. Then after that I study at home."*

Subtheme 2 illustrated the reliance on prayer, family, friends, teachers, and classmates. Participants sought motivation, guidance, and reassurance from social and spiritual support systems. P08 stated, *"just pray, don't give up and be wise in studying."* P06 said, *"It did, it made me feel frustrated at first but then I needed to understand it to be able to answer in exams. And gradually, it made me realize that I just needed someone to explain it in simple terms."*

Major Theme 3: Students Recommended Contextualized, Hands-On, and Supportive Teaching

The participants' narratives showed that students recommended more contextualized, hands-on, and supportive teaching as ways to address difficulties in learning physics. Under Subtheme 1, participants emphasized simulation-based teaching, real-life applications, simplified terms, discovery learning, and hands-on activities. Participant P05 stated, *"Simulation based, real life application, concept based teaching methods rather than computation or solving based alone."* Participant P06 similarly suggested, *"When topics are explained using simplified terms and is contextualized."* Participant P07 also emphasized discovery-based learning by saying, *"I think if we exposed student in an investigative way or discovery learning they tend to engaged and understand physics well."*

Under Subtheme 2, participants also emphasized clear explanations, practice, materials, tools, and support systems. P09 stated, *"Of course, by providing clear explanations, practice and supportive classmates,"* while P06 mentioned, *"educational support like assistances to buy adequate tools like smart calculator."*

Major Theme 4: Learning Physics Became a Lesson in Patience, Persistence, and Practical Understanding

Participants described learning physics as a process that required patience, persistence, and practical understanding. Under Subtheme 1, students emphasized patience and persistence as critical to coping with challenging topics. Participant P06 stated, *"Everytime I faced that kind of difficulty. I choose to chill at the back than pushing my brain to understand. Then after that I study at home."* P06 remarked, *"I try to stay consistent and ask questions whenever I don't understand."*

Subtheme 2 illustrated the realization that physics should go beyond rote memorization and connect with conceptual understanding and real-life applications. P07 said, *"We realized that physics is not just about memorizing formulas. It's about understanding and applying concepts."* P09 added, *"It helped me understand that memorization alone is not enough; linking concepts to real life makes it easier."*

4.3 Narrative Synthesis

The experiences of undergraduate students reveal that learning physics is a multifaceted journey shaped by cognitive, emotional, and social challenges, as well as proactive strategies to overcome them. Across the narratives, students described the difficulties they faced—from abstract concepts, formulas, and computations to gaps in prior schooling and teacher-centered instruction—as influencing motivation, participation, and academic performance. Yet, these challenges also catalyzed the adoption of self-directed learning, strategic problem-solving, reflective practices, peer support, and technology-mediated strategies. Collectively, these accounts illustrate that engagement and learning are not static outcomes but evolving processes shaped by past experiences, current classroom contexts, and future-oriented learning strategies.

In addressing Research Question 1, students described physics as both difficult and meaningful. They reported struggles with formulas, computation, and problem-solving, abstract and advanced topics such as Thermodynamics, Modern Physics, and Electromagnetism, and limited prior exposure due to non-STEM senior high strands. Teacher-centered instruction intensified challenges, while frustration, pressure, and low confidence further affected engagement.

Research Question 2 showed that these difficulties influenced motivation, participation, and learning approaches dynamically. Students reported that repeated challenges demotivated them, while moments of success, validation, or peer support increased engagement. Participation became conditional and confidence-based: fear of giving wrong answers limited classroom engagement, whereas peer collaboration and supportive group activities encouraged interaction. Academic performance was affected, with low scores prompting self-doubt, but these difficulties also prompted strategic learning, including reviewing notes, practicing problems, and chunking complex topics.

Research Question 3 revealed students' proactive strategies and interventions. They engaged in self-directed and technology-supported learning, using YouTube, online explanations, AI tools, and simplified materials, and practiced self-study and advanced preparation. Students also managed stress through rest, emotional regulation, and social/spiritual support. They recommended contextualized, hands-on, and supportive teaching, including simulations, real-life applications, discovery learning, and concept-based instruction. Finally, students emphasized patience, persistence, and moving beyond rote memorization, internalizing strategies to sustain learning and conceptual understanding.

5. Conclusion and Recommendations

5.1 Summary

This chapter presents the summary, conclusions, implications, and recommendations of the study titled "Navigating Difficulties in Physics Education: College Students' Insights—A Narrative Research Study." The study explored the lived experiences of six undergraduate students enrolled in physics courses within the Bachelor of Secondary Education major in Science program at Davao de Oro State College. Specifically, it examined the students' personal experiences of difficulties in learning physics, how these difficulties influenced their engagement and approaches to learning, and what strategies or interventions they shared as helpful in addressing their challenges.

The study used a qualitative narrative research design. Data were gathered through semi-structured interviews, allowing participants to narrate their experiences, struggles, coping strategies, turning points, and reflections in learning physics. The narratives were analyzed through narrative reconstruction and cross-narrative thematic analysis. The analysis was guided by narrative inquiry and constructivist learning theory, emphasizing that students actively constructed meaning from their learning experiences through reflection, interaction, and adaptation.

Summary of Findings

The study was conducted to understand how college students experienced and navigated difficulties in learning physics. The participants' narratives showed that learning physics was not merely an academic task involving formulas and computations. Rather, it was a personal, emotional, social, and contextual experience shaped by prior learning background, classroom instruction, confidence, peer support, available resources, and students' own coping efforts.

The findings were organized according to the three research questions of the study.

For the first research question, which asked about the personal experiences of college students regarding difficulties in learning physics, the findings revealed that participants experienced physics as both difficult and meaningful. They commonly struggled with formulas, computations, problem-solving, and abstract concepts. Topics such as Thermodynamics, Modern Physics, and Electromagnetism were repeatedly described as challenging because they required conceptual understanding, mathematical reasoning, and the ability to apply formulas correctly.

The participants' difficulties were also shaped by their prior learning experiences. Students who had limited exposure to physics in senior high school, particularly those from non-STEM-related strands, described feeling less prepared for college physics. Even participants with stronger science backgrounds still encountered difficulty when college physics became more abstract and computation-heavy. This showed that readiness for physics was connected not only with students' interest but also with the depth of their previous exposure to science and mathematics.

The findings also revealed that teacher-centered instruction was perceived as a factor that increased students' difficulty. Participants narrated that lessons dominated by discussion, computation, and limited hands-on activities made physics harder to understand. Some participants felt passive, hesitant, or intimidated when they could not ask questions freely or participate actively. These classroom experiences were connected with emotional struggles such as frustration, anxiety, pressure, exhaustion, low confidence, and self-doubt.

For the second research question, which asked how difficulties influenced students' engagement and approaches to learning physics, the findings showed that engagement was not fixed. It changed depending on the students' understanding, confidence, classroom support, and experiences of success or failure. When students repeatedly encountered difficult topics without enough support, they became less motivated, less focused, and less willing to participate. Some avoided class discussions because they feared giving wrong answers or being judged.

However, the narratives also showed that difficulty did not always lead to withdrawal. In some cases, students became more strategic because of their struggles. Low scores, confusion, and difficulty remembering formulas encouraged them to review lessons, practice sample problems, ask classmates for help, consult instructors, and use online resources. This showed that difficulty functioned both as a barrier and as a starting point for adaptation. Students' learning approaches became more deliberate as they searched for ways to understand physics better.

Participation was also strongly connected with confidence and social support. Students were more likely to participate when they felt supported by peers, classmates, or instructors. Group activities, peer explanations, and guided clarification helped reduce fear and allowed students to engage more actively. In contrast, intimidating or highly lecture-based classroom environments contributed to silence, hesitation, and passive learning.

For the third research question, which asked what strategies or interventions students shared as ways to address their challenges, the findings showed that participants used self-directed, technology-supported, emotional, social, and practical strategies. Many relied on YouTube videos, online explanations, AI tools, and simplified materials to supplement classroom instruction. These resources helped them review lessons at their own pace, visualize abstract concepts, and understand topics that were unclear during class.

Students also used traditional study strategies such as reading, reviewing notes, practicing sample problems, studying in advance, and breaking down complex problems into smaller parts. These strategies helped them manage the cognitive demands of physics. Aside from academic strategies, the participants also used emotional coping methods such as rest, prayer, breathing, taking breaks, and seeking support from family, classmates, friends, and teachers. These coping strategies helped them regain focus and continue learning despite frustration.

The participants recommended more contextualized, hands-on, and supportive teaching. They suggested the use of simulations, real-life applications, discovery learning, guided practice, simplified explanations, clear instructional materials, and activities that allow students to explore and apply concepts. They also emphasized that physics should not be taught through memorization alone. Instead, students should be guided to understand concepts, connect lessons to real-life situations, and apply knowledge through meaningful practice.

5.2 Conclusions

Based on the findings, the study concludes that students' difficulties in learning physics were experienced as cognitive, emotional, social, and contextual challenges. These difficulties were not limited to formulas, computations, and abstract concepts. They were also connected with students' confidence, prior learning background, classroom environment, instructional approach, and available academic support. Therefore, students' struggles in physics should be understood through their lived experiences rather than through academic performance alone.

The study also concludes that physics learning difficulties influenced students' engagement in varied ways. Some participants became less motivated, less confident, and less participative when lessons became difficult or when they felt unsupported. However, other participants responded to difficulty by developing more strategic learning habits. This means that difficulty did not automatically result in disengagement. Its effect depended on how students interpreted their struggles and what forms of support were available to them.

The narratives further show that confidence played an important role in participation. Students who feared giving wrong answers or being judged were less likely to engage in class discussions. However, when peer support, instructor guidance, and collaborative activities were present, students became more willing to ask questions, clarify ideas, and participate. Thus, engagement in physics was strongly connected with the emotional safety and supportiveness of the learning environment.

The study also concludes that students were active meaning-makers in their learning process. They were not passive recipients of difficulty. Even when they experienced frustration, low scores, and confusion, they searched for ways to cope. They used online resources, peer support, self-study, practice, emotional regulation, and spiritual or social support. These strategies showed that students gradually reconstructed their understanding of physics and their identity as learners.

Finally, the study concludes that students' own voices provide valuable guidance for improving physics education. Their recommendations for contextualized, hands-on, and supportive teaching came directly from their lived experiences. Since the participants personally encountered the barriers to learning physics, their insights can help instructors and institutions develop more responsive, student-centered, and experience-based instructional practices.

5.3 Implications of the Study

The findings imply that physics instruction should address both the cognitive and emotional dimensions of learning. Since students experienced physics as difficult because of abstract topics, formulas, and computations, teachers need to provide clear explanations, guided examples, and scaffolded activities. At the same time, because students also experienced anxiety, fear, and low confidence, teachers need to create a classroom environment where students can ask questions and make mistakes without embarrassment.

The study also implies that prior learning background should be considered in planning physics instruction. Students enter college with different levels of preparation. Some may have limited exposure to physics, especially those from non-STEM strands. This means that instructors may need to begin with diagnostic activities, bridging lessons, or review sessions before introducing more complex topics. Such support can help reduce the gap between students' previous learning and the demands of college physics.

For students, the findings imply that learning physics requires persistence, strategy, and self-awareness. The participants' narratives showed that memorization alone was not enough. Students need to practice regularly, understand concepts, ask for clarification, use available resources, and identify study methods that fit their learning needs. Their experiences also show that seeking help is part of learning, not a sign of weakness.

For the institution, the findings imply the need for stronger academic and socio-emotional support systems for students taking physics courses. Tutorial programs, peer mentoring, consultation hours, access to digital learning materials, and supportive laboratory or simulation activities may help students navigate difficult topics more effectively. The institution may also support faculty development programs focused on student-centered and inclusive physics teaching.

For future research, the study implies that narrative inquiry is useful in understanding how students make sense of academic difficulty. The participants' stories revealed details that may not be captured through test scores alone. Their narratives showed how learning difficulties developed over time, how students responded emotionally, and how support systems shaped their engagement. This highlights the value of qualitative research in improving science education.

5.4 Recommendations

Based on the findings and conclusions of the study, the following recommendations are offered:

1. Scaffolded Teaching Approaches. Physics instructors may use more scaffolded teaching approaches. Lessons may be introduced from simple concepts before moving to complex computations and applications. Instructors may provide step-by-step demonstrations, worked examples, guided problem-solving activities, and regular formative checks to help students monitor their understanding.

2. Contextualized and Real-Life Examples. Physics instruction may include more contextualized and real-life examples. Since participants found abstract topics difficult, teachers may connect lessons to familiar situations, natural phenomena, daily experiences, and practical applications. This may help students see physics as meaningful and understandable rather than purely formula-based.

3. Hands-On, Inquiry-Based, and Simulation-Supported Activities. Instructors may integrate hands-on, inquiry-based, and simulation-supported activities. Laboratory tasks, demonstrations, discovery learning, simple experiments, visual models, and digital simulations may help students visualize abstract concepts and participate more actively in the learning process.

4. Supportive Classroom Climate. Teachers may create a more supportive classroom climate. Students should be encouraged to ask questions, express confusion, and attempt answers without fear of embarrassment. Positive feedback, patience, and respectful correction may help students build confidence and participate more actively.

5. Strengthened Peer Collaboration. Peer collaboration may be strengthened in physics classes. Structured group work, peer tutoring, study circles, and collaborative problem-solving sessions may help students learn from classmates who can explain concepts in simpler or more familiar terms. These activities may also reduce feelings of isolation and anxiety.

6. Self-Directed Learning Habits. Students may be encouraged to develop self-directed learning habits. They may be guided to review lessons regularly, practice sample problems, study in advance, use online resources responsibly, and focus on understanding concepts instead of memorizing formulas alone.

7. Curated Supplementary Learning Materials. Instructors may provide curated supplementary learning materials. Recommended videos, digital modules, practice exercises, simulations, and simplified review materials may support students who need more time and repeated exposure to difficult topics.

8. Institutional Academic Support Programs. The institution may provide academic support programs for students taking physics. These may include tutorial sessions, mentoring programs, scheduled consultation hours, physics learning resource centers, and access to digital or laboratory materials.

9. Faculty Development Programs. Faculty development programs may be conducted to help instructors strengthen student-centered physics teaching. Training may focus on scaffolding, contextualized teaching, inquiry-based learning, classroom engagement, assessment feedback, and strategies for supporting students with low confidence or limited prior exposure.

10. Future Research. Future researchers may conduct related studies involving more participants, other year levels, or students from different programs and institutions. Future studies may also include the perspectives of physics instructors to compare teacher experiences with student narratives. Other researchers may also explore specific interventions, such as simulation-based learning, peer tutoring, or contextualized instruction, to determine how students experience these approaches in actual classroom settings.

5.5 Suggestions for Further Study

Future studies may expand the scope by including students from other science-related programs or institutions to examine whether similar experiences are present in different learning contexts. A comparative qualitative study may also be conducted among students from STEM and non-STEM senior high school backgrounds to further understand how prior preparation shapes college physics learning.

Further research may also include the perspectives of physics teachers, laboratory instructors, and academic support personnel. Their narratives may provide a broader understanding of instructional challenges and possible support mechanisms. In addition, future researchers may explore the effectiveness of specific learner-informed interventions, such as peer-assisted learning, simulation-based instruction, contextualized physics modules, or structured consultation programs.

Since the present study focused on students' narratives and did not aim for statistical generalization, future mixed-methods research may combine narrative data with classroom observation, assessment results, or intervention evaluation. This may provide a broader but still learner-centered understanding of physics learning difficulties.

Overall, future research should continue to place student voices at the center of physics education improvement. Listening to students' stories can help educators design learning environments that are not only academically effective but also supportive, inclusive, and responsive to the real experiences of learners.

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