Perceptions of Students Toward Physics Learning Strategies at the Secondary Level

Sandeep Dawadi [a]
[a] Mahendra Ratna Campus, Tribhuvan University
Email: sandeepdawadi515@gmail.com

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ABSTRACT: The study aimed to find out the perception of students towards physics learning strategies and to analyze perceptions of the student's learning strategies. The research design is quantitative in nature and follow survey design with random sampling methods to take the perceptions of 500 students for the sample size was selected 75 students from five government school towards physics learning strategies. Data was collected by using paper based closed ended, which utilized a Likert scale format. Descriptive statistics such as frequency, percentage, mean and standard deviation were used for the analysis of data. The study revealed that students generally exhibited a positive attitude towards learning physics and showed a preference for social interaction, group study, ICT based learning, logic resonance, collaborative learning, note taking, and note making, problem solving, laboratory method and feedback from teachers. While the use of lecture method and rote learning strategies, students gave a negative response. The study emphasized the importance of considering students' opinions and preferences when designing and implementing effective learning strategies. It suggested that teachers and educators prioritize the use of collaborative learning, laboratory methods, feedback and problem solving strategies in physics classes. A physics lab is required to effectively understand the material for students towards visualizing concepts in physics were positive from the statements that visualizing concepts helps students remember and understand physics easily and quickly. This study also highlighted the need for further research to explore the integration of these effective learning strategies into physics instruction in order to enhance student learning outcomes.

Introduction

Learning strategies man that the learners how to get the information or knowledge, content or topic. Learning strategy is a composite of environmental and perceptual preferences, which influence our physical and sensing needs, cognitive variables, which determine how we approach, conceptualize, and structure our world and social preferences which arise from

cognitive, personality, and affective factors and which shape our behavioral tendency in learning situations (Galloway and Labarca, 1990).

Learning strategy instruction focuses on strategies that facilitate the active learning process by teaching students how to learn and how to use what they have learned to solve problems and be successful. These strategies involve teaching how to develop a plan for studying for a test, monitoring understanding of the content, clarifying the materials, and evaluating work. According to (Nyikos & Oxford, 1993) "Learning strategies are operations employed by the learner to aid the acquisition, storage, retrieval, and use of the Information." Therefore, implementation of appropriate learning strategies relates to the student's self-management behavior which in turn should be encouraged by pedagogical designs. This type of self-regulated learning is the key to successful life-long learning and includes the development of such strategies as goal setting, self-instruction, and self-monitoring (Graham et al., 1992). Learning is defined by individuals engaged in learning. The learners describe their experience of events involved in learning. Learning, described in this fashion, can be categorized in several different ways, that is, everyone's experience of learning is not the same. At the extremes, one learner might describe learning as the literal retention of knowledge often achieved through repetition and recitation, while another might describe it as an interpretive process aimed at understanding reality. The authors of the present text use the label conceptions of learning to describe variation in students' interpretations of their experiences of learning (Schmeck, 1988).

The learning is a lifelong process. Learning is a process which leads to change, which occur as a result of experience and increase the potential for improved performance and future learning (Ambrose et al., 2010). A learning strategy is internally based characteristics, often not perceived or continuously used by learners, for the intake and comprehension of new information (Vermunt, 1996). Learners learn various ways of learning according to their way of learning process and interact with instructional environments.

Teaching and learning develops high levels of physical pedagogical content knowledge (Etkina, 2010). It included knowledge of how particular physics subject matter topics, Problems, and issues can be organized, represented, and adapted to the diverse interests and abilities of learners and presented for instruction (Crouch et al., 2007). Teachers with physics content knowledge is more likely facilitate meaningful learning outcomes in secondary school students (Gess-Newsome & Lederman, 2001). In-service teachers typically use content oriented subject matter structures initially formed during secondary courses, then reinforced by the act of teaching, so physics teachers can be heavily influenced by the types of secondary science courses they took (Etkina et al., 2010). Learning in secondary courses and traditional in-service professional development often reinforces, and does not challenge, the fragmented nature of teachers' knowledge and relative inability to apply that acknowledge within the context of teaching and facilitating student learning (Filgona, 2020).

The relationship between learning strategies and physics is that effective strategies which can help students to better understand and retain the material they are learning. Physics is a challenging subject which requires a deep understanding of mathematical and conceptual concepts as well as the ability to apply that knowledge to the real world situations. By using a variety of learning strategies, such as inquiry based learning, problem based learning and so

on, teachers can help students develop a deeper understanding of the material and to see how the concepts relate to each other and to the world around them (Taylor and Francis, 2003).

Overall, the use of a variety of learning strategies can help to make physical education more engaging, relevant and effective for students and can help them to develop a deeper understanding and appreciation of the subject. The objective of the current study was to find out the perception of the student's towards Physics learning strategies.

Objective of the Study

The objective of research is to generate new knowledge or deepen existing knowledge on a particular topic or problem through a systematic investigation (Schroeder, M., & Lodemann, S, 2021). The objectives of this research were as follows:

- To find out the perception of the student's towards Physics learning strategies.

Literature Review

A review of literature is a summary, analysis and interpretation of the theoretical, conceptual and research literature related to the topic or theme (Nabors, 2012). A literature review is the process of locating, obtaining, reading and evaluating the research literature in the area of your interest (Jesson et al., 2011). A detailed summary of previous research on the specific topic. It examines scholarly articles, books and other sources that are relevant to a specific area of the study. This previous research should be enumerated, described, summarized, objectively evaluated and clarifying the review.

Theoretical Framework

This study is primarily concerned with the relationship between learning science and learning strategy. The traditional transmission view of knowledge continues to dominate the classroom environment in Nepal. The learning process is affected by various factors.

Learning Strategies

According to (Hismanoglu, 2000) learning strategies are "Intentional behavior and thoughts that learners make use of during learning in order to better help them understand, learn or remember new information. These may include focusing on certain aspects of new information, analyzing and organizing information during learning to increase comprehension, evaluating learning when it is completed to see if further action is needed." Learning strategies are the specific actions taken by learners to help their own learning, to make the learning easier, faster, more enjoyable, more self-directed, more effective and more transferable (Shi, 2017). The concept of learning strategy depends on the assumption of learners consciously engage in activities to achieve certain goals and learning strategies can be regarded as broadly conceived intestinal direction and learning technique (Corno & Mandinach, 1983) as cited in, (Hismanoglu, 2000). According to (O'malley et al., 1990) learning strategies are the special thoughts or behavior that individuals used to help them comprehend, learn or retain new information. It is organized plans of action or steps for learning which are done in order to achieve a learning outcome, which what we hope to be able to do at the end of our learning experiences. It is the individual way of organizing and using a particular set of skills in order to learn the content and other tasks more effectively and efficiently in school as well as non-academic settings (Schumaker & Deshler, 1992). Learning strategies instruction focuses on

strategies which facilitate active learning by teaching the student's how to learn and how to apply what they have learned to solve the problems and succeed. This implies a series of learning activities that should be based on the intrinsic nature of the students learning process (Kuo, 2007) and other researcher also focus on it is the process of using explicit methods and skills to solve the problems encountered by the students during their internal learning process (Taconis et al., 2001).

Learning strategies is a broad term that typically refers to the learner's cognitive process while learning. This includes a wide range of learners or students' behaviors such as note taking, note making, organizing information, time management, concentration capacity, self-motivation and methods of memorizing information. In order to achieve a certain level of academic achievement, students will employ various learning strategies in their studies. Overall, the learning strategies are special information processing tools which learners used to improve their comprehension, learning or retention of new information. Also, it helps to understand the new information and solve the problem.

Constructivism

Constructivism is a learning theory in which learning is both an active process and a personal representation of the world (Christie & Viner, 2005). It is a learning theory which states that the individuals actively construct their own understanding of the world through experiences and interactions with their environment. Constructivism is a psychological theory of knowledge, which argues that learners generate knowledge and meaning from their experiences. Constructivism is an approach to learning that holds people actively construct or making their own knowledge and that reality is determined by the experiences of the learner (Bada & Olusegun, 2015). Constructivist believe that human reality is in a sense "create" by the interpretation and dialogic process through which people bounded and influenced as they are the context of their lives from and modify the meanings (Allen, 1994). In the context of physics at the secondary level, this means that students should be given opportunities to engage in hands-on and inquiry-based activities which allows them to construct their own understanding of physics concepts. This approach to learning supports the development of critical thinking and problem solving skills, and can lead to a deeper and more meaningful understanding of physics. Therefore, incorporating constructivist oriented learning strategies, such as inquiry based projects, simulations and collaborative problem solving activities can enhance students learning and engagement in physics.

The Social Constructivism of Lev Vygotsky

Social constructivism, a social learning theory developed by Russian psychologist Lev Vygotsky, posits that individuals are active participants in the creation of their own knowledge (Schreiber & Valle, 2013). He believed that learning takes place primarily in social and cultural settings, rather than solely within the individual (Schreiber & Valle, 2013). This theory emphasizes the role of social interaction and cultural tools in learning. When applied to learning strategies of physics at the secondary level, a student centered approach is necessary. This approach encourages students to actively engage in the learning process, collaborate with their peers, and construct their understanding of physics concepts. In students centered classroom, students are encouraged to explore and investigate physics phenomena through the activities, experiments, and discussions. This approach allows them to actively construct their knowledge by interacting with their peers and the teachers. This theory suggested that students can benefit

from working together in small groups such as teachers or friends who have a deeper understanding of physics knowledge. Students engaging in collaborative activities, they can engage in discussions, share their ideas and collectively construct meaning. They can also develop higher order thinking skills, such as critical thinking, problem solving and metacognition. The students centered approach in physics education aligns with Vygotsky's emphasis on the social nature of learning and the importance of scaffolding, where more knowledgeable individuals provide support and guidance to less knowledge individuals.

Overall, Vygotsky's social constructivism theory supports student centered learning strategies in physics at the secondary level. By promoting collaboration, interaction and group study tool, students can actively construct their knowledge and concepts of physics.

The zone of proximal development (ZPD), is the key concept in Vygotsky's theory of social constructivism which highlights the importance of the teacher in a student's learning process. The ZPD suggests that, with the help of an instructor, students are able to understand and master the knowledge and skills that they would not be able to on their own (Schreiber & Valle, 2013). Once the students master a particular skill they are able to complete it independently. In this theory, the teacher plays an integral role in the students' acquisition of knowledge, rather than serving as a passive figure (Mascolo, 2009). In my opinion the zone of proximal development focuses primarily on the student's ability to learn new skills or knowledge. When the student is in a good environment with access to more opportunities, their cognitive development is quickly. When we agreed that the class environment or size is primarily related to the student's achievement. That has class environment an effect on student achievement in Science.

Implications of Review

A researcher studies several prior works which are relevant to this research. These research projects will be conducted using various aims, methodologies, and study designs. For data gathering in various contexts, researchers used a variety of study tools. After evaluating all of those research studies, I upgrade my research methodology and tools, which has been really helpful for my research. The execution of my research was made possible by all these empirical studies. They serve as the foundation of my research study and help to make it most enlightening and trustworthy.

The reviews from all sources have assisted me in bringing clarity and focus to the research problem, choosing a methodology, and estimating the results. Kolody (1997) did an experimental research "learning strategies of Albert college students". The aim of this research to identify the learning strategies used by students at these colleges, to investigate the relationship between learning strategies and demographic variables and to explore patterns of learning of distinct groups that existed in the sample. The research found that the distinct group of learners exists in adult learning situations and that learning strategies are not linked to various demographic variables. Imposing sense upon the data through preconceived grouping with discriminant analysis was not the best way to uncover differences in using of learning strategies. Mohtfyza & Mohammad (2013), carried out in title "Learning Style and academic achievement among building construction students". The main objective of this research was to find out the how learning styles influence the students' academic achievements based on cognitive mastery & vocational elements building. The main finding of this study was the

cognitive learning style frameworks called act as a guideline for teachers to facilitate students to learn more effectively and to boost the academic achievements in building construction subject. Devkota (2015) carried out research on "Independent Learning Strategies Adopted by Higher Secondary Level Learners". The aim of this research to find out perception of learners 33 towards independent learning and learners independent practice in learning English. He had selected eighty students as the sample of the study through the use of purposive non-random sampling procedure from different four higher secondary schools in the Kathmandu valley. He used a set of questionnaire with close-ended questions as a tool for data collection. He found that the students' endeavor of independent learning helps their classroom learning and learning process and the learners made good practice in independent learning.

Sanchee Cho (2016) carried out in the title "Exploring teaching & learning style of Mathematics at an urban university in South Africa". The main objective of this study was to explore the best teaching & learning style in Science. The main finding of this study was the traditional lectures can often produce under graduate without the skills needed for professional success. Rifqi (2017) conduct a study on "students learning strategies in success fully studying at two majors" with the aim to investigate the learning strategies and difficulties that the students who study in two majors may counter. He found that the learners use cognitive learning strategy, behavioral learning strategy and self-regulated learning strategy in their learning process. Tharu (2017), did an experimental research "learning strategies adopted by Tharu learners at the secondary level". The aim of this research to identify the learning strategies used by Tharu learners at the secondary level while learning the English language. And he found that all kinds of learning strategies such as cognitive, metacognitive and social cognitive were used by the Tharu students but among these cognitive strategies were used much by the Tharu students. Mubarak (2019) did an experimental research on "students learning strategies and their English achievement in speaking." The aim of this research to know learning strategies was used by students of English department in learning in speaking at Muhammadiyah University of Makassar. He found that the students who get low English achievement also use cognitive strategies for learning and students have a problem in monitoring their learning. Dahal (2021) did an experimental research "Pedagogical practices in mathematics classroom in semester system". The aim of this research to investigate the method being used & the best teaching learning models/strategies for making learner friendly in the semester system. And he found that interactive, instructional, ICT-based, collaborative, group discussion, project-based methods are appropriate in the semester system. Noticeable observations there are many methods/ strategies used in math class. Where the finding of this study contributes to the use of learner friendly teaching learning activities of the semester system and also inform stakeholders as well as policy maker. Regmi (2022) did an experimental research "Existing teaching and learning style of school science in Panchthar District".

The aim of this research to investigate the teaching & learning style of science used in secondary level. He found that from this research is that interactive, instructional, ICT based, group discussion, problem solving, note taking, note making and concept mapping teaching and learning style are dominantly used in science at secondary level. Individual teaching and learning style are rarely used in science class. Similarly, lecture style was not appropriate for science teaching. Most of the students learned about the subject matter of science by internationally, collaboratively and using ICT based learning strategy.

The literature review on the topic of learning strategies and their relationship to demographic variables and academic achievement shows a variety of findings. Kolody (1997) found that distinct groups of learners exist in adult learning situations and that learning strategies are not linked to various demographic variables. Mohtfyza & Mohammad (2013) found that cognitive learning style frameworks can be used as a guideline for teachers to facilitate more effective learning and boost academic achievement in building construction subjects. Devkota (2015) found that students' efforts in independent learning can help their classroom learning and learning process. Sanchee Chou (2016) found that traditional lectures may not produce undergraduate students with the necessary skills for professional success. Rifqi (2017) found that students use cognitive, behavioral and self-regulated learning strategies in their learning process. Tharu (2017) found that all kinds of learning strategies such as cognitive, metacognitive and socio-cognitive were used by Tharu secondary level learners. Mubarak (2019) found that students with low English achievement also use cognitive strategies on learning and have a problem in monitoring their learning. Dahal (2021) found that interactive, instructional, ICT-based, collaborative, group discussion, project-based methods are appropriate for making learner friendly in the semester system. Research gaps in this literature include the need for more research on the relationship between learning strategies and demographic variables, and the need for more studies that explore the effectiveness of different learning strategies in different subject areas and educational contexts. Additionally, there is a need for more research to be conducted on the learning strategies used by students from different cultural backgrounds and how those strategies might impact academic achievement.

Methodology

The research design is quantitative nature which deals quantified and analyzed variables in order to get the results. Being quantitative in nature to collect data from a questions or opinion and deciding on the mode of data collection. In this research study to collected in the data from 500 students sampling size to select from 75 students on randomly selected population five government secondary schools. The sources of data took information from both primary and secondary sources. The primary source taken from the chosen school, students and secondary source tool from topic related thesis, journal, articles, books, websites and the internet. The data collection tool is interviewed, close-ended questionnaire, survey was used to collect data for this research study. This open-air statement was ranked by using five points Likert scale, and students will give their opinion on these options which are “Strongly Agree”, Agree ”, Neutral”, “Disagree”, and “Strongly Disagree”. This five options was the sample weight of 5,4,3,2 &1. On this scale 1 & 2 indicates negative opinion or disagree, while 4 & 5 indicates positive opinion or agreement and 3 express as a neutral opinion (Joshi et al., 2015). After preparing the research tools, I went to the five Government Secondary School of Tarkeshowar municipality then I concerned with the authorized person in selected school and meet with students also observed classroom. Then I selected randomly 75 students and distribute the oppinnaire statement to choose the best option in Likert scale tick (√) form. The opponnaire collected from them and finally the8 researcher analyze and interpreted the collect data and present them. In this research study Student’s response and answer was collected in

the form of this option and for the further process using the SPSS program. Data such as frequency, percentage, mean and Standard Deviation subjected to descriptive analysis.

Findings

The analysis and interpretation of data collected for a research study focused on student's perceptions towards physics learning strategies in secondary level. The data was gathered through Opponnaire tests administered from 75 Students who were studying in class nine from five government secondary schools in the Tarkeshowar Municipality of Kathmandu district. The Opponnaire tests were in the form of a Likert scale, which provided five options for the students to give their opinions. The collected data were analyzed using appropriate statistical tools, including the frequency, percentage of students, weighted mean and Standard Deviation.

Overall, this chapter presents a descriptive analysis and interpretation of the collected data, which provides insight into the learning strategies of physics in secondary education and the pedagogical implications that can be drawn from the findings. The collected data were analyzed and interpreted under the following topic.

Table 1. *Students interested to learn physics in classroom*

	N	% of total N	Mean	S. D	Remarks
Strongly Agree	15	20			
Agree	55	73.33			
Neutral	5	6.67	4.13	3.63	Positive
Disagree	0	0			
Strongly Disagree	0	0			
Total	75	100			

Table 1 indicates that students had a positive response towards learning physics in a classroom setting. The majority of students (73.33%) agreed with the statement, with 20% strongly agreeing and 6.67% remaining neutral. It is worth noting that no students chose disagree or strongly disagree options. The mean score obtained from the student responses was 4.13, which was higher than the acceptable score of 3 on the Likert scale. Furthermore, the standard deviation (S.D) of 3.63, suggesting that some students were more interested in learning physics in the classroom than others. Overall, the results suggest that the majority of students had a strong interest in learning physics in a classroom setting.

Table 2. *Interaction is essential with friends and teachers for learning physics*

	N	% of total N	Mean	S. D	Remarks
Strongly Agree	50	66.67			
Agree	25	33.33			
Neutral	0	0	4.67	4.16	Positive
Disagree	0	0			
Strongly Disagree	0	02			
Total	75	100			

The table 2 presents the statement Interaction is essential with friends and teachers for learning physics. The result indicates that the majority of the students (66.67% of total N) strongly agree that interaction with friends and teachers is essential for learning Physics. Twenty five students (33.33% of total N) agree with the statement. None of the students selected the "Neutral," "Disagree," or "Strongly Disagree" options. The table reports a weighted mean of 4.67, which was higher than the mean score of 23. Indicating an overall positive attitude towards the statement. The standard deviation (S. D) Of 4.16. Overall, the data suggests that the majority of students hold a positive attitude towards the importance of interaction with friends and teachers for learning Physics. The high percentage of students who strongly agree with the statement and the highest weighted mean score indicate that the students place great importance on the interaction in their learning process. The absence of any negative responses indicates a general consensus among the students on this issue.

Table 3. *Parents help and support to learn Physics.*

	N	% of total N	Mean	S. D	Remarks
Strongly Agree	45	60			
Agree	30	40			
Neutral	0	0	4.60	4.09	Positive
Disagree	0	0			
Strongly Disagree	0	0			
Total	75	100			

The table 3 presents information on the level of help and support that parents provide their children in learning physics. The data was collected from 75 students and is presented in the form of frequency distributions. The table shows that 60% of the students strongly agree and 40% agree that their parents help and support them in learning physics. No students chose the neutral, disagree or strongly disagree options. The weighted mean score for the responses is 4.60, which is higher than that of average mean score 3 so it is acceptable in Likert scale which indicates a positive trend. The standard deviation (S.D) of 4.09. Overall, the results suggest that the majority of students feel that their parents help and support them in learning physics. The absence of any negative responses indicates that students feel that their parents play a positive role in their education.

Table 4. *Physics chapter is quite difficult than others chapter.*

	N	% of total N	Mean	S. D	Remarks
Strongly Agree	35	46.67			
Agree	35	46.67			
Neutral	5	6.67	4.4	3.91	Positive
Disagree	0	0			
Strongly Disagree	0	0			
Total	75	100			

The table 4 provides information on students' perception of the difficulty level of physics chapters in comparison to other chapters. The data was collected from a sample of 75 students and2 is presented in the form of frequency distributions. The results show that 46.67% of students strongly agree and 46.67% agree that physics chapters are quite difficult than other

chapters. Only 6.67% of students were neutral in their response. No students chose disagree or strongly disagree options. The weighted mean score for the responses is 4.4, which suggests a positive trend. The standard deviation (S.D) of 3.91, so that the results indicate that the majority of students find physics chapters to be more challenging than other chapters. However, the absence of any negative responses suggests that students have a positive attitude towards learning physics, despite its perceived difficulty level.

Table 5. *Science exhibition Program helps to better understand the physics concepts.*

	N	% of total N	Mean	S. D	Remarks
Strongly Agree	0	0			
Agree	15	20			
Neutral	55	73.33	3.13	2.63	Neutral
Disagree	5	6.67			
Strongly Disagree	0	0			
Total	75	1002			

The table 5 shows that the student's opinion towards the Science exhibition program helps to better understand the physics concepts. The data was collected from a sample of 75 students and is presented in the form of frequency distributions. The results show that only 20% of students agree that the science exhibition program helped them to better understand physics concepts, while 73.33% of students were neutral in their response. 6.67% of students disagreed with the statement. No students strongly agreed or strongly disagreed. The weighted mean score for the responses was 3.13, which is in the neutral range. The standard deviation (S.D) of 2.63. As a result suggest that the science exhibition program may not be as effective in helping students to understand physics concepts, as most of the students remained neutral in their response. It also shows that the majority of the students did not take part in the science exhibition and they did not have any idea.

Table 6. *Group study is the effective way to learn Physics.*

	N	% of total N	Mean	S. D.	Remarks
Strongly Agree	45	60			
Agree	20	26.67			
Neutral	10	13.33	4.47	4	Positive
Disagree	0	0			
Strongly Disagree	0	0			
Total	75	100			

The table 6 illustrates the student's response regarding the effectiveness and sustainability of group study in learning physics. The results indicate that the majority of students, 60% strongly agree, 26.67% Agree and 13.33% remains neutral on this statement. No one expressed disagreement or strongly disagree. The mean score derived from the student feedback was 4.47, which was higher than the average mean score 3 which was acceptable in Likert scale and standard deviation was 4. So that these indicate that the majority of students agreed with the statement. Therefore, it can be inferred that most students prefer learning physics through group study strategies.

Table 7. *Using I C T methods and tools is the effective way to learn physics.*

	N	% of total N	Mean	S. D	Remarks
Strongly Agree	60	80			
Agree	15	20			
Neutral	0	0	4.8	4.28	Positive
Disagree	0	0			
Disagree 0		0			
Total	75	100			

The results presented in table 7 indicate that the majority of students (80%) strongly agree and 20% agree that ICT-based learning strategies are effective for learning Physics. None of the students gave their opinion on the Neutral, Disagree, or Strongly Disagree options. The mean score calculated from the students' responses was 4.8, which was higher than the average mean score of 3. Based on the Likert scale, this score was acceptable, and standard deviation is 4.28 which indicate the indicating that the majority of students agreed with the statement using ICT methods and tools is an effective way to learn physics. These findings suggest that most students find ICT-based learning strategies helpful in learning Physics quickly and easily.

Table 8. *Ability to learn own after teaching from teachers which gives them a lot of confidence.*

	N	% of total N	Mean	S. D.	Remarks
Strongly Agree	40	53.33			
Agree	25	33.33			
Neutral	10	13.33	4.4	3.93	Positive
Disagree	0	0			
Strongly Disagree	0	0			
Total	75	100			

The results in table 8 indicate the students' response towards the statement "Learning physics on their own helps in constructing knowledge and feeling more confident in the classroom." The majority of students (53.33%) strongly agree, (33.33%) agree, and (13.33%) remain neutral, while there are no responses in disagree and strongly disagree options. The mean score obtained from the students' opinions was 4.4, which was higher than the average mean score of 3, and standard deviation was 3.93 According to the Likert scale, it was acceptable, which means that the majority of students agreed. Based on the participant's responses, it can be inferred that most students feel more confident when they learn physics on their own, which helps in constructing knowledge.

Table 9. *Teacher motivation plays an important role in learning physics.*

	N	% of total N	Mean	S. D.	Remarks
Strongly Agree	60	80			
Agree	15	20			
Neutral	0	0	4.8	4.28	Positive
Disagree	0	0			
Strongly Disagree	0	0			
Total	75	100			

The results in table 9 display the students' response towards the role of teacher's motivation in learning physics. It indicates that the majority of students (80%) strongly agree, (20%) agree, while no one provided their opinion on the Neutral, Disagree, and Strongly Disagree options. The mean score from the students' feedback was 4.8, and standard deviation is 4.28 which exceeded the average mean score of 3. Based on the Likert scale, it was acceptable, indicating that most students agreed. The participants' responses suggest that most students have learned physics through the motivation provided by their teachers. Therefore, implementing motivational learning strategies is crucial for effective physics learning.

Table 10. *Ask questions to the teachers and clarify any confusion during the class*

	N	% of total N	Mean	S. D.	Remarks
Strongly Agree	0	0			
Agree	15	20			
Neutral	60	80	3.2	2.68	Neutral
Disagree	0	0			
Strongly Disagree	0	0			
Total	75	100			

Table 10 shows that the opinion Ask questions to the teachers and clarify any confusion during the class to the students. In this statement the majority of the students 80% remains Neutral, 20% were agree where there were no any students gave their opinion in Strongly agree, Disagree and Strongly Disagree option. The mean score was obtained in 3.2 which is same as average mean score 3, and standard deviation was obtain 2.68 which means the majority of the students remains Neutral views towards the statements.

Table 11. *Collaborative learning strategies are the effective way to learn physics*

	N	% of total N	Mean	S. D.	Remarks
Strongly Agree	40	53.33			
Agree	30	40			
Neutral	5	6.67	4.46	3.98	Positive
Disagree	0	0			
Strongly Disagree	0	0			
Total	75	100			

Table 11 displays the responses of students to the statement about taking an active role in the classroom. It shows that the majority of students (53.33%) strongly agree, (40%) agree, and (6.67%) remain neutral, while no one gives their opinion in the disagree and strongly disagree option. The mean score obtained from the students' responses was 4.46, which was higher than the average mean score of 3, standard deviation is 3.98. According to the Likert scale, this score was acceptable, indicating that the majority of students agreed. Based on the participants' responses, it can be inferred that most students work collaboratively with their friends and teachers to better understand physics.

Table 12. *Life related occurrence, physics learn quickly and comfortably*

	N	% of total N	Mean	S. D.	Remarks
Strongly Agree	65	86.67			
Agree	10	13.33			
Neutral	0	0	4.87	4.35	Positive
Disagree	0	0			
Strongly Disagree	0	0			
Total	75	100			

Table 12, the student's feedback regarding the statement "Learning physics through real-world occurrences is quick and comfortable." It indicates that the vast majority of students (86.67%) strongly agree, while a small proportion (13.33%) agree. No one has provided their opinion on the Neutral, Disagree, and Strongly Disagree options for this statement. The mean score derived from the students' responses was 4.86, which was higher than the average mean score of 3, standard deviation is 4.35. As per the Likert scale, it was acceptable, indicating that the majority of students agreed. From the participant's response, it can be inferred that connecting physics to real-life situations facilitates a quicker and more comfortable learning experience.

Discussion

Students had a stronger interest in learning physics in a classroom than others students can be inferred to agree that interaction with friends and teachers is the most effective way to learn physics, suggesting a positive outlook toward the statement. Student's opinion of the group study was that it was effective for learning. Physics had a positive response, which means that the majority of the students learn physics from group study agreed with the statement that using ICT methods and tools is an effective way to learn physics. These findings suggest that most students find ICT-based learning strategies helpful in learning physics quickly and easily. The students expressed a positive opinion towards the use of logic resonance as a means to improve their understanding and learning in physics. This suggests that such learning strategies were essential for effective learning physics. Based on the participants' responses, it can be inferred that most students feel more confident when they learn physics on their own after a teacher teaches in the classroom, which helps in constructing knowledge and motivation, collaborative learning in physics was positive then students collaborate with friends and teachers for a better understanding of physics, life-related occurrences and learning physics quickly and comfortably. Students can learn physics from life-related subject matter, effective and essential to learning physics.

In this strategy, teachers play an active role in learning while students are passive in nature, learning was negative then they was not an effective strategy to learn physics. Positive opinions of the laboratory method, indicating that they had learned most of the physics subject through using the materials in the lab, which aids in greater comprehension. Physics lab is required to effectively understand the material towards visualizing concepts in physics were positive. It can be calculated from the statements that visualizing concepts helps students remember, understand easily and quickly. Problem-solving strategies help to increase the student's understanding level and bring them out of difficulties, which means these strategies are also effective in learning physics.

Conclusion

The study revealed that the majority of students held a positive attitude towards learning physics and expressed their interest towards learning physics in the classroom. They believe that social interaction with peers and teachers is an effective way to learn physics, and group study is an effective way to learn. The students' perception of ICT-based learning strategies, logic resonance, and their capacity to learn on their own gave them confidence after teachers teach in classroom, indicating that these types of learning strategies are essential to learn physics. Furthermore, the students' opinions towards teacher motivation, collaborative learning, life-related occurrences, note-taking, laboratory method, feedback from teachers, practice terminal exams, visualizing concepts, homework, and problem-solving strategies were positive. This suggests that these strategies are effective in learning physics.

However, the majority of students had negative opinions towards lecture method and rote learning. They believe that these strategies are not effective in learning physics and cannot grow their understanding level. Students prefer collaborative strategies, note-making, laboratory methods, feedback. It is crucial for teachers and educators to take into account the students' opinions and preferences towards different learning strategies to enhance their learning outcomes. The use of effective learning strategies such as collaborative learning, Group study strategies, I.C.T based strategies, laboratory strategies, feedback, and problem-solving strategies, Note taking and Note making strategies can help students to develop a better understanding of physics.

This study provides valuable insights into the students' opinions and preferences towards different learning strategies. The findings can be used by teachers and educators to develop effective teaching strategies and create a positive learning environment that supports student learning in physics. Effective learning strategies can improve students' understanding and retention of physics concepts, leading to better academic performance and successful careers in the field of Physics in the future.

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