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RESEARCH ARTICLE

Investigating the Reasons for Students' Lack of Interest and Motivation in Learning Physics

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ABSTRACT

Physics is the base of science crucial for the development of science and technology. The problem generally occurs in physics learning is students' lack of interest and motivation. This research aims to investigate reasons for Students' Lack of Interest and Motivation in Learning Physics. It uses descriptive research and the data collection used the Reasons for Students' Lack of Interest and Motivation in Learning Physics questionnaire. The sampling technique in this study used purposive sampling with a total sample of 381 students from 10th, 11th and 12th class from four high schools. The investigation examines various elements such as students' perceptions of their teachers' teaching practices, of school environment, and students' perceptions about physics. Based on the findings of the study, it can be concluded that significant differences exist across schools, indicating that institutional factors such as teaching methods, class environment and experiments play a major role in shaping students' motivation and interest.

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Introduction

Physics is a fundamental branch of science which is the backbone for the development of science and technology. The problem that often occurs in physics learning in general is students' lack of interest and motivation in learning physics. Interest is an attitude that makes a person more active and students' interest in learning increases when they are involved in activities (Nair et al., 2014). Interest in learning is a psychological state involves positive feelings, increases attention towards efforts to gain knowledge (Hidi & Renninger, 2006). In learning activities, students at school study various science and efforts are made so that all students get good grades which of course can be achieved by having a high interest in learning (Astuti, 2015). Learning motivation is a desire, and students are successful in learning if they gave their desire to learn (Amir, 2016). The word "motivation" comes from the Latin word "movere," means "to move." (Asanre et al. 2024; Cleopatra, 2015). Motivation is an important factor in learning because motivation can encourage a student in their learning activities (Suprihatin, 2015; Hasanah, 2024).

Interest and motivation to learn are two psychological factors that have been empirically proven to have a significant influence on student's academic achievement (Lena et al., 2022). Students having high interest and good teaching environment are usually characterized by better learning and grades (Kahu et al., 2018), have structured study habits, have a good understanding of each reading (Black, & Allen, 2017), have high self-efficacy (Blatt et al., 2020), and have high learning performance (Howard, et al., 2015). Students who have low interest and motivation to learn usually tend to do not attend school and have low academic results (Sturges et al., 2016).

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Teaching methods and practices also have profound impact on student's motivation and interest (Guido, 2025). In teacher-centered learning, students' opportunities may be limited for active participation, while student-centered learning method encourages students for active engagement and can support their academic motivation (Ghafar, 2023) Also, teachers who have sufficient knowledge about subject and better teaching ability can motivate students and create positive attitudes toward physics (Keller et al., 2017). Conversely, poorly prepared teachers and inadequate teaching practices can lead to student disengagement (Ayamweogo, 2024).

Another crucial factor is students' low self-efficacy, which reflects their believes in their ability to succeed in learning physics. Research has shown that student's self-efficacy is an important index of their motivation, interest, academic achievement, and persistence (Li et al., 2020). Faer of failure lead to negative attitudes toward physics (Henry et al., 2021), while positive attitudes and self-efficiency lead to higher motivation and better academic achievement (Kurniawan & Kuswanto, 2025).

The relationship between Physics concepts and student's daily life has crucial impact on motivation, because when student does not see the needs of physics concept in his/her daily life, he/she believes that the subject is useless and irrelevant. Therefore, connection between physics concepts and everyday life increase students' motivation in daily experiences and technology (Yehya, 2023).

Classroom learning environment also plays role in students' motivation and interest (Sánchez, A. X., & Ríos, L. 2020). According to Partovi and Razavi a classroom with better teacher-student relationships, cooperation, and participation in learning activities encourages students to actively learn. On the other hand, an inappropriate and unsupportive classroom environment reduces student motivation and interest (Partovi & Razavi, 2019). In addition, conducting experiments can help students better understand abstract concepts and increase their interest and motivation in learning physics (Wilcox & Lewandowski, 2017). The lack of laboratories and teaching aids limits students' motivation and interest towards learning physics (Guido, 2018). Institutional weaknesses, limited educational resources, human-resource constraints, and challenges in policy implementation can negatively affect the quality of educational environments in developing countries (Ahmadzai et al., 2025). The study examined curriculum quality, teaching effectiveness, practical exposure and graduate outcomes at Shaikh Zayed University. It identifies practical learning and teaching management as areas requiring improvement (Ahmadzai et al, 2026).

Method and Materials

1. Study Area

The study was conducted in four secondary schools (Shaheed Mohammad Dawood High School, Shaheed Matiullah High School, Alfatha High School, and Pohaand Abdulhai Habibi High School) in Matun (Khost City), Khost Province, Afghanistan.



https://www.google.com/search?&q=matun+,khost+province+map+matoon&

2.Method

The present study used a mixed-methods research design, with related quantitative and qualitative methods to explore the factors affecting students' interest and motivation in learning physics. The study investigated students' perceptions of teaching practices, the school environment, and attitudes toward physics

3. Sampling

The study considered a target population of approximately 100,000 and used a stratified probability sampling technique to select 381 students from grades 10, 11, and 12 across the four selected secondary schools. The sample size was calculated based on Cochran's (1977) formula, with a confidence level of 95%, a margin of error of 5%, and a population proportion of 50%, $n = \mathbf{1} + \frac{\frac{z^2.P(1-P)}{E^2}-1}{N}$.

The four schools were selected in consultation with the Provincial Directorate of Education, while students were selected through stratified sampling. Therefore, generalization is limited to the selected schools.

4. Data Collection

Primary data were collected from 381 students using a structured questionnaire adapted from the TIMSS Advanced 2015 Physics Student Questionnaire (IEA, 2014) and the Science Motivation Questionnaire II (Glynn et al.,

2011). The questionnaire included 22 Likert-scale items covering teaching practices (9), school environment (7), and students' attitudes toward physics (6), using a five-point scale from Strongly Agree to Strongly Disagree.

5. Data Analysis

The collected data were analyzed using the Statistical Package for Social Sciences (SPSS). Students' answers were summarized using descriptive statistics, such as frequencies, percentages, averages, standard deviations, and other measures of dispersion. Statistical assumptions were followed when using parametric tests, suitable post-hoc comparisons, and non-parametric tests, such as the Kruskal–Wallis test and Dunn's post-hoc test. The 5% level of statistical significance (p less than 0.05) was used.

Results and Discussion

This research aims to investigate reasons for Students' Lack of Interest and Motivation in Learning Physics. The research sample consisted of 381 students who were tested from four schools in the center of Khost Province, Afghanistan. The results of data analysis obtained using SPSS regarding the reasons for Students' Lack of Interest and Motivation in Learning Physics. According to Handayani each student has a very diverse level of learning motivation (Handayani & Goodwell, 2023). This means that there are those who have high, medium and low learning motivation. To study the reasons for students' lack of motivations the data that has been distributed to each school, SPSS results were obtained using descriptive statistics, namely the results for research describing Reasons for Students' Lack of Interest and Motivation in Learning Physics in four high schools which can be seen in table 1, table 2 and table 3.

Table-1: Students' Perceptions of their physics teacher's teaching practices

statements	SA f. %	A f. %	NO f. %	D f. %	SD f. %	Mean	σ	Decision
I like my physics teacher's teaching method.	88	199	44	26	24	3.79	1.07	High perception
	23.1	52.2	11.5	6.8	6.3			
My physics teacher uses different teaching methods.	66	150	92	40	33	3.46	1.15	Low perception
	17.3	39.4	24.1	10.5	8.7			
My physics teacher provides me encouraging feedback on my physics homework.	76	128	71	57	49	3.32	1.30	Low perception
	19.9	33.6	18.6	15.0	12.9			
My physics teacher gives me confidence in solving physics problems so that I can solve them.	102	188	38	32	21	3.83	1.08	High perception
	26.8	49.3	10.0	8.4	5.5			
My physics teacher gives me opportunities to demonstrate what I have learned.	92	175	44	42	28	3.69	1.17	High perception
	24.1	45.9	11.5	11.0	7.3			
My physics teacher asks me motivating questions.	86	171	52	44	28	3.64	1.17	Low perception
	22.6	44.9	13.6	11.5	7.3			
My physics teacher gives clear answers to my questions.	142	179	33	18	9	4.12	0.92	High perception
	37.3	47.0	8.7	4.7	2.4			
My physics teacher relates new lessons to what we have previously studied.	86	171	52	44	28	3.7	1.12	High perception
	22.6	44.9	13.6	11.5	7.3			
The lessons taught by my physics teacher are easy for me to learn.	74	153	54	65	35	3.44	1.24	Low perception
	19.4	40.2	14.2	17.1	9.2			

Note: N=381, SA = Strongly Agree; A = Agree; NO = No Opinion; D = Disagree; SD = Strongly Disagree and f.=frequency. Decisions – weighted average = sum of the mean divided by the number of statements = 32.99/9 = 3.67.

Using the weighted average the data analysis form table-1 revealed that the majority of the respondents (23.1% strongly agreed and 52.2% agreed) reported highly perceptions about they like physics teacher's teaching method. Most respondents (26.8 strongly agreed and 49.3% agreed) indicated high perception that their teacher provided them with confidence in solving physics problems. They (24.1% strongly agreed and 45.9% agreed) also perceived that their physics teacher provided opportunities to demonstrate what they had learned. Students (37.3% strongly agreed and 47.0% agreed) highly perceived that their teacher gave clear answers to their

questions. Furthermore, respondents (22.6% strongly agreed and 44.9% agreed) reported that their physics teacher effectively related new lessons to previously studied content. On the other hand, a considerable proportion of the participants expressed lower perceptions regarding certain aspects of teaching, including the use of a variety of teaching methods (17.3% strongly agreed and 39.4% agreed), asking motivational questions (22.6% strongly agreed and 44.9% agreed), the provision of encouraging feedback on physics homework (19.9% strongly agreed and 33.6% agreed), and the ease with which they could learn the lessons taught by their physics teacher (19.4% strongly agreed and 40.2% agreed).

Since the data were not normally distributed, non-parametric statistical test specifically, Kruskal–Walli's test was performed to determine whether students' perceptions of teaching practices differed across Grade 10, Grade 11, and Grade 12. The analysis showed that Grade 12 students had the mean rank (MR = 200.20), Grade 11 (MR = 190.92) and Grade 10 (MR = 178.64). However, the differences among the three grade levels were not statistically significant, H (2) = 2.170, $(df) = 2$, p = .338 and $(\varepsilon^2) = 0.0005$. Thus, the findings form the table-1 statements indicate that students' perceptions of teaching practices were similar across the three grade levels.

Also, a Kruskal–Wallis H test was conducted to determine whether students' perceptions of teaching practices differed among the four schools. The results revealed a statistically significant difference among the schools, H(3) = 58.155, p < .001, with an epsilon-squared effect size of 0.146. Bonferroni-adjusted pairwise comparisons identified significant differences between Shaheed Matiullah and Shaheed Mohammad Daoud High Schools, Al-Fatha and Shaheed Mohammad Daoud High Schools, and Abdulhai Habibi and Shaheed Mohammad Daoud High Schools (adjusted p < .001 for all comparisons). No statistically significant differences were found among the other three comparisons (adjusted p = 1.000). The detailed post-hoc results are presented in Table-2.

Table-2: shows Pairwise Comparisons of Schools.

Pairwise Comparisons of Schools					
Sample 1-Sample 2	Test Statistic	Std. Error	Std. Test Statistic	Sig.	Adj. Sig.[a]
Shaheed Matiullah-Al-Fatha	3737.000	328.658	.006	.498	1.000
Shaheed Matiullah-Pohaand Abdulhai Habibi	4696.000	413.460	-.787	.216	1.000
Shaheed Matiullah-Shaheed Mohammad	1390.500	319.486	-6.949	.000	.000
Al-Fatha-Pohaand Abdulhai Habibi	5181.500	438.017	-.602	.274	1.000
Al-Fatha-Shaheed Mohammad	1841.000	339.814	-6.103	.000	.000
Pohaand Abdulhai Habibi-Shaheed Mohammad	7780.500	426.312	5.904	.000	.000
Each row tests the null hypothesis that the Sample 1 and Sample 2 distributions are the same. Asymptotic significances (1-sided tests) are displayed. The significance level is .050.					
a. Significance values have been adjusted by the Bonferroni correction for multiple tests.					

Table-3: Students' Perceptions of their School Environment

statements	SA f. %	A f. %	NO f. %	D f. %	SD f. %	Mean	σ	Decision
I like my school.	158	165	21	27	10	4.13	0.99	High perception
	41.5	43.3	5.5	7.1	2.6			
I enjoy seeing my classmates.	141	180	24	24	12	4.09	0.98	High perception
	37.0	47.2	6.3	6.3	3.1			
I feel close to my physics teacher.	61	134	93	59	34	3.34	1.18	Low perception
	16.0	35.2	24.4	15.5	8.9			
I am proud to attend my school.	161	168	21	18	13	4.17	0.97	High perception
	42.3	44.1	5.5	4.7	3.4			
I have learned a great deal of physics at my school.	73	147	66	61	34	3.43	1.22	Low perception
	19.2	38.6	17.3	16.0	8.9			
My classmates highly value students who know physics well.	66	82	121	72	40	3.16	1.22	Low perception
	17.3	21.5	31.8	18.9	10.5			
My classmates love students who make a great effort.	98	176	49	38	20	3.77	1.09	High perception
	25.7	46.2	12.9	10.0	5.2			

Note: N=381, SA = Strongly Agree; A = Agree; NO = No Opinion; D = Disagree; SD = strongly Disagree and f.=frequency. Decisions – weighted average = sum of the mean divided by the number of statements = 26.09/7 = 3.73.

Using the weighted average the analysis of the data from table-3 revealed that most respondents (41.5% strongly agreed and 43.3% agreed) reported highly perceptions about they liked their school. Most of the respondents (37.0% strongly agreed and 47.2% agreed) also highly perceived that they enjoyed interacting with their classmates. In addition, respondents (25.7% strongly agreed and 46.2% agreed) have high perception about that their classmates loved students who put forth considerable effort, and most of them (42.3% strongly agreed and 44.1% agreed) expressed a strong sense of pride in attending their school. On the other hand, the majority of the participants demonstrated a lower level of perception to certain aspects of their school. Specifically, the respondents (16.0% strongly agreed and 35.2% agreed) reported low perception about they felt close to their physics teacher, low perceived that they (19.2% strongly agreed and 38.6% agreed) had learned a great deal of physics at school, and (17.3% strongly agreed and 21.5% agreed) believed that their classmates value students who were more knowledgeable in physics.

A Kruskal–Wallis H test was conducted to examine whether students' perceptions of their school environment differed across Grade 10, Grade 11, and Grade 12. The results indicated no statistically significant differences in school environment perceptions among Grade 10 (MR = 184.60), Grade 11 (MR = 181.84), and Grade 12 (MR = 206.05), $H(2) = 3.870$, $p = .144$.

A Kruskal–Wallis H test was conducted to determine whether students' perceptions of the school environment differed among the four schools. The results revealed a statistically significant difference in school environment scores across schools, $H(3) = 24.670$, $p < .001$. Therefore, the null hypothesis was rejected, indicating that students' perceptions of the school environment were not the same across all schools.

Bonferroni-adjusted pairwise comparisons were conducted following the significant Kruskal–Wallis test to identify differences in students' perceptions of teaching practices among the four schools. The results (see table-4) revealed statistically significant differences between Shaheed Matiullah High School and Shaheed Mohammad Daoud High School (adjusted $p < .001$), Al-Fatha High School and Shaheed Mohammad Daoud High School (adjusted $p < .001$), and Pohaand Abdulhai Habibi High School and Shaheed Mohammad Daoud High School (adjusted $p = .003$). However, no statistically significant differences were found among the remaining three school comparisons (adjusted $p > .05$). These findings indicate that students' perceptions of teaching practices differ significantly in comparisons involving Shaheed Mohammad Daoud High School.

Table-4: shows the Pairwise Comparisons of Schools

Pairwise Comparisons of Schools					
Sample 1-Sample 2	Test Statistic	Std. Error	Std. Test Statistic	Sig.	Adj. Sig.a
Shaheed Matiullah-Al-Fatha	3881.000	328.314	.445	.328	1.000
Shaheed Matiullah-Pohaand Abdulhai Habibi	4371.000	413.142	-1.575	.058	.346
Shaheed Matiullah-Shaheed mohammad	2129.500	319.727	-4.632	.000	.000
Al-Fatha-Pohaand Abdulhai Habibi	4974.000	437.592	-1.076	.141	.845
Al-Fatha-Shaheed mohammad	2579.500	339.690	-3.932	.000	.000
Pohaand Abdulhai Habibi-Shaheed mohammad	6659.500	426.928	3.270	.001	.003
Each row tests the null hypothesis that the Sample 1 and Sample 2 distributions are the same. Asymptotic significances (1-sided tests) are displayed. The significance level is .050.					
a. Significance values have been adjusted by the Bonferroni correction for multiple tests.					

Table-5: Students' Attitudes Toward Physics

Decision	σ	Mean	SD f. %	D f. %	NO f. %	A f. %	SA f. %	statements
High perception	1.01	3.96	13	27	45	175	121	I like learning physics.
			3.4	7.1	11.8	45.9	31.8	
Low perception	1.13	3.66	22	47	57	166	89	I have learned many interesting things in physics.
			5.8	12.3	15.0	43.6	23.4	
High perception	0.96	4.17	9	22	28	160	162	I enjoy conducting experiments in physics.
			2.4	5.8	7.3	42.0	42.5	
High perception	0.95	4.02	11	22	35	195	118	I feel confident when solving physics problems.
			2.9	5.8	9.2	51.2	31.0	
Low perception	1.12	3.79	19	46	34	178	104	I like doing physics homework.
			5.0	12.1	8.9	46.7	27.3	
High perception	0.98	4.02	12	23	36	184	126	I like learning the laws and principles of physics.
			3.1	6.0	9.4	48.3	33.1	

Note: N=381, SA = Strongly Agree; A = Agree; NO = No Opinion; D = Disagree; SD = Strongly Disagree.

Decisions – weighted average = sum of the mean divided by the number of statements = 23.62/6 = 3.94.

Using the above weighted average the analysis of the data from table -5 indicated that the majority of the respondents (31.8% strongly agreed and 45.9% agreed) reported that they liked learning physics. Mot of the respondents (33.1% strongly agreed and 48.3% agreed) also expressed high perception that they enjoyed studying the laws and principles of physics. Moreover, they (31.0% strongly agreed and 51.2% agreed) perceived themselves as being confident when solving physics problems and highly agreed that they enjoyed conducting experiments in physics. however, most participants (23.4% strongly agreed and 43.6% agreed) reported lower perceptions regarding having learned many interesting aspects of physics, and they (27.3% strongly agreed and 46.7 agreed) also indicated a lower perception of doing physics homework.

A Kruskal–Wallis H test was conducted to examine whether students' perceptions of physics differed across Grade 10, Grade 11, and Grade 12. The results indicated no statistically significant differences in physics perceptions among Grade 10 (MR = 197.45), Grade 11 (MR = 174.93), and Grade 12 (MR = 204.37), $H(2) = 5.54$, $p = .063$.

Also, a Kruskal–Wallis H test was conducted to examine whether students' perceptions of physics differed among the four schools. The results showed a statistically significant difference in physics perceptions across schools, $H(3) = 29.622$, $p < .001$. Therefore, the null hypothesis was rejected, indicating that students' perceptions of physics were not the same across all schools.

Bonferroni-adjusted pairwise comparisons were conducted following the Kruskal–Wallis test to identify specific differences in students' perceptions of teaching practices among the four schools. The results revealed statistically significant differences between Shaheed

Matiullah High School and Pohaand Abdulhai Habibi High School (adjusted p = .002), Shaheed Matiullah High School and Shaheed Mohammad Daoud High School (adjusted p < .001), and Al-Fatha High School and Shaheed Mohammad Daoud High School (adjusted p = .007). However, no statistically significant differences were observed among the remaining three school comparisons (adjusted p > .05). These findings indicate that students' perceptions of teaching practices vary significantly across certain school comparisons see table-6).

Table-6: shows Pairwise Comparisons of Schools

Pairwise Comparisons of Schools					
Sample 1-Sample 2	Test Statistic	Std. Error	Std. Test Statistic	Sig.	Adj. Sig.a
Shaheed Matiullah-Al-Fatha	4498.500	327.651	2.330	.010	.059
Shaheed Matiullah-Pohaand Abdulhai Habibi	3631.500	412.681	-3.368	.000	.002
Shaheed Matiullah-Shaheed mohammad	1856.000	319.200	-5.497	.000	.000
Al-Fatha-Pohaand Abdulhai Habibi	5033.000	436.957	-.943	.173	1.000
Al-Fatha-Shaheed mohammad	2884.000	339.020	-3.041	.001	.007
Pohaand Abdulhai Habibi-Shaheed mohammad	6224.500	426.121	2.255	.012	.072
Each row tests the null hypothesis that the Sample 1 and Sample 2 distributions are the same. Asymptotic significances (1-sided tests) are displayed. The significance level is .050.					

a. Significance values have been adjusted by the Bonferroni correction for multiple tests.

Levene's Test of Equality of Error Variancesa,b					
		Levene Statistic	df1	df2	Sig.
physicsperceptions	Based on Mean	4.737	82	161	.000
	Based on Median	2.453	82	161	.000
	Based on Median and with adjusted df	2.453	82	47.992	.001
	Based on trimmed mean	4.523	82	161	.000

Tests the null hypothesis that the error variance of the dependent variable is equal across groups.

a. Dependent variable: physicsperceptions

b. Design: Intercept + teachingpractices + schoolenvironment + teachingpractices * schoolenvironment

Levene's test of equality of error variances was conducted to assess the homogeneity of variance assumption for the dependent variable, physics perceptions. The results revealed a statistically significant difference in error variances across groups (Levene's statistic = 4.737, df1 = 82, df2 = 161, p < 0.001). Similar results were obtained using the median-based and trimmed-mean approaches. These findings indicate that the assumption of homogeneity of error variances was violated. Consequently, caution is required when interpreting the factorial ANOVA results, and appropriate robust statistical procedures should be considered to account for unequal variances.

Table-7: shows Tests of Between-Subjects Effects

Tests of Between-Subjects Effects								
Dependent Variable: physicsperceptions								
Source	Type III Sum of Squares	df	Mean Square	F	Sig.	Partial Eta Squared	Noncent. Parameter	Observed Powerb
Corrected Model	176.136a	219	.804	3.399	.000	.822	744.410	1.000
Intercept	1978.314	1	1978.314	8361.035	.000	.981	8361.035	1.000
teachingpractices	27.931	31	.901	3.808	.000	.423	118.046	1.000
schoolenvironment	34.053	25	1.362	5.757	.000	.472	143.918	1.000
teachingpractices * schoolenvironment	55.727	163	.342	1.445	.010	.594	235.522	1.000
Error	38.094	161	.237					
Total	6115.806	381						
Corrected Total	214.230	380						
a. R Squared = .822 (Adjusted R Squared = .580)								
b. Computed using alpha = .05								

The factorial ANOVA results indicate that the overall model was statistically significant, $F(219, 161) = 3.399$, $p < 0.001$, with an R^2 of 0.822 and adjusted R^2 of 0.580. Teaching practices ($F = 3.808$, $p < 0.001$, partial $\eta^2 = 0.423$) and school environment ($F = 5.757$, $p < 0.001$, partial $\eta^2 = 0.472$) both had statistically significant effects on physics perceptions. Additionally, their interaction was statistically significant ($F = 1.445$, $p = 0.010$, partial $\eta^2 = 0.594$), suggesting that the relationship between teaching practices and physics perceptions varies across school environments. However, Levene's test was significant ($p < 0.001$), indicating a violation of the homogeneity of variance assumption. Therefore, the findings should be interpreted with caution.

The Tukey HSD post-hoc test indicates that students' physics perceptions differ significantly across several teaching-practice response groups. Many pairwise comparisons were statistically significant ($p < 0.05$), while some comparisons showed no significant differences ($p > 0.05$). The largest differences generally occurred between strongly agreeing and strongly disagreeing response groups. These findings suggest that perceptions of teaching practices are associated with differences in students' physics perceptions. However, because Levene's test indicated unequal variances ($p < 0.001$),

Conclusion

From the previous discussion Students' low interest and motivation in learning physics may be associated with multiple cognitive, instructional, and environmental factors. Previous studies have discussed perceived difficulty, negative attitudes of low self-efficacy, ineffective teaching methods, low self-efficacy, inadequate learning resources, limited real-life relevance and unsupportive classroom environments all as potential factors influencing students' lack of interest and motivation towards physics.

In the present study, the findings specially revealed relationships among teaching practices, school environment, and students' perceptions of physics. Furthermore, significant differences in students'

perceptions of their teaching practices were observed across the four selected schools. These findings emphasize the importance of effective teaching practices and supportive school environments in physics education.

Recommendation

From the students' suggestions, this study advises teachers to employ a variety of strategies to increase students' motivation towards physics. Furthermore, the government should strengthen teacher and experimental resources to allow students to learn more conveniently, motivationally and enjoyably.

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Conflicts of Interest

The authors declare no conflict of interest.

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