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TEACHERS' VIEWS ON PROBLEM AREA REMEDIATION IN PHYSICAL SCIENCES DIAGNOSTIC TESTING

Dr. J. Jeya
Principal, Meera College of Arts and Science for Women,
Keelapalur, Tamil Nadu, India

Dr. R. Gopinath
D.Litt. (Business Administration) - Researcher, Madurai Kamaraj University,
Madurai, Tamil Nadu, India

ABSTRACT

Today event-based marketing is succeeding the traditional approaches, Event-based marketing proceedings with human sensations, emotions and that serves the brand to attach with them for a more sustained time thus building product sales. Event-based marketing is also experiential marketing and trigger marketing. If a brand event stimulates positive feelings in people then they are more likely to join those emotions with that brand. This promotes brand loyalty and the greater possibility of sales. Experiential marketing is a kind of marketing that provides unbelievable one-to-one experiences among customers and a brand. By giving consumers physical, memorable experiences, brands can join with their target market and on a more personal and emotional level. The authenticity of event-based marketing is to create various kinds of sensations inside the people. Emotions deeply influence the way people imagine and act; and, in experiential marketing, customers who experience events that create goodwill associate those positive feelings with the appropriate brand. These productive outcomes enhanced consumer brand recognition and brand loyalty. This study investigates the impact of event-based marketing experience on customer engagement in Kerala state.

Key words: Physics; Diagnostic Test; Problem Areas; Gender; Qualifications

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1. INTRODUCTION

Teachers and students benefit from learning about physical science at school since it enhances their understanding of the subject matter. Some science concepts are difficult for teachers to explain to children for reasons that are beyond their grasp. Students and teachers both have a role to play in addressing the issue of waning interest in physics in the classroom. When people have a bad view of physics, it's like a negative feedback loop. Despite the fact that physics has long been regarded as a practical discipline, just 15 percent of an exam's total marks are allotted to practical work, according to Harry *et al* (1969).

1.1 Statement of the Problem

According to Ford (1989), physics has long been considered one of the hard sciences since it is viewed as obscure, objective and extremely mathematical. In fact, the general public and physicists alike regard it with an almost reverent respect. Teachers of physics are widely believed to be influenced by their own opinions on physics when it comes to how they teach the subject (Gopinath, 2020a).

As a result, the primary goal of this study is to determine how instructors in the Tiruchirappalli District of Tamilnadu view the challenges associated with remediating diagnostic testing in physical sciences secondary schools.

2. LITERATURE REVIEW

Teachers' perceptions of remediation testing in Physical Sciences have been studied by a number of academics.

To name a few examples: College-level explicit instruction was the focus of Marshall, JA and Dorward, JT (2000). Contextual discussion was a major topic of Finkelstein, N. (2001). Inquiry-based teaching techniques in science have been examined by Von-Secker (2002). N. Ding (2005) investigated how to instruct students in physics to solve problems creatively. Several observations were made by Mahajan, S. (2005) regarding the teaching of first-year physics. N. Finkelstein (2005) talked on the importance of putting students' physics learning in perspective. Karthikeyan, M., and Mohideen, S. R. (2005) studied the relationship between physics laboratory facilities and students' attitudes toward practical physics. Mji, A., &Makgato, M. (2006) investigated the elements that contribute to low math and physics performance; In a 2006 study by Whiteleg, E., Murphy, P., Lunn, S. &Jones, H., Murphy examined the impact that authentic learning had on students' learning of physics; Balasubramanian & Wilson &Cios & Stelzer & Gladding (2007) described the design of an interactive learning environment; Waltner, C., Wiesner, C; and Murphy, P., examined reflective activities in a classroom; and Waltner, C., Wiesner, C., and Murphy, P., examined the impact of authentic learning on students' learning of physics; An investigation of what makes physics difficult has been conducted by Ornek, Funda; Robinson, William R.; and Haugan, Mark P. (2008). According to Susanne Engström's content objectives for physics education, published in 2008, alişkan, S., &Selçuk, G. S. (2009) studied the impact of problem solving strategy education on students' attitudes toward physics. For the purpose of assessing high school students' understanding of mechanical waves, Caleon and Subramanian (2009) created and validated a four-tiered multiple-choice diagnostic test. S. E. Toksoy and S. Alişkan (2009) investigated the validity and reliability of the problem-solving techniques scale developed by Alşkan (2007) for university students taking a physics course in high schools. It was reported in a survey of diagnostic tests in the physical sciences by Bates and Galloway (2010) that An introduction to physics lab was presented by Eugenia Etkina, *et al* (2010), who explained how to incorporate design. Students in Nigeria's Ebonyi State were studied by D. U. Onah and E. I. Ugwu (2010) to determine the factors that influence their performance in physics; Alşkan, S.,

Selçuk, G. S., and M. Erol (2010) investigated the effects of problem solving strategies instruction on students' physics problem solving performance and strategy use; Bello, T. O. (2011) investigated the outcomes of using group instructional strategy on learning physics in senior secondary school. To better understand how students actually learn physics by looking at how they actually learn it, Alias, N., and Siraj, S. (2012) undertook a research study. A classroom action research study on the difficulties of teaching optics in middle school in Assam was performed in 2012 by Debnath, D., Barthakur, n. K., Baruah, R. S., and Goswami, P. K. Debnath, D., Barthakur, n. K., Baruah, R. S., and Goswami, P. K. D. C. Senan (2013) investigated the impact of the Cognitive Development Model on secondary school physics achievement; Secondary school physics material presentation approaches have been examined by Farkunda Rasheed Coudhary *et al*. (2013). Results of non-traditional teaching of the fundamental physics course were presented by Kriák,., Nmec, M. &Danihelová, Z. (2014). Phenomenological thermodynamics and Newtonian physics are incompatible, according to Martinás, K., and Tremmel, B. (2014). Students' and teachers' impressions of the Active Science curriculum were analysed by Finn, K. E., and McInnis, K. J. (2014) in the development of a holistic professional development (HPD) model for 75 secondary school physics teachers; Gopinath (2020b) has conducted a study on influence of self actualization and job involvement on academic efficiency of faculties. Research by Warren DiBiase & Judith R. McDonald (2015) was conducted to determine teachers' beliefs about inquiry; Ryan Manuel Guido and Ruby Ann B. Dela Cruz (2016) studied the learning outcomes of the physics diagnostic test; Mustafa Zafer BALBA, Alaattin ERDEM (2017) studied science teaching and physics students' attitudes toward the study of space; Kijkuakul, S. (2018) conducted a qualitative research to examine what primary teachers think about astronomy.

An aerial perspective shows that study into the topic at hand appears to be in its early stage within the Indian subcontinent.

3. RESEARCH METHODOLOGY

For this study, a random sample of 100 physics professors was chosen. Six topics of physics teaching are covered by the questionnaire, including moving objects, the rule of motion, the earth's gravity, why bodies float, and energy, the driving force. The statistical information was gleaned using the Chi-square test.

4. RESULT AND DISCUSSION

Through a chi-square test, the results of the questionnaire were evaluated and deduced. HO1. For secondary school teachers in Tiruchirappalli District (Tamilnadu), there is no significant variation in their attitudes about remediation of diagnostic testing for Physical Sciences, with special reference to gender.

Table 1 Crosstab on perceptions of teachers on moving objects

				Moving Objects				Total
			Very Easy	Easy	Average	Difficult	Very Difficult	
Gender	Male	Count % of Total	11	11	12	5	9	48
			11.0%	11.0%	12.0%	5.0%	9.0%	48.0%
	Female	Count % of Total	9	6	24	6	7	52
			9.0%	6.0%	24.0%	6.0%	7.0%	52.0%
Total		Count % of Total	20	17	36	11	16	100
			20.0%	17.0%	36.0%	11.0%	16.0%	100.0%

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	5.861[a]	4	.210
Likelihood Ratio	5.952	4	.203
Linear-by-Linear Association	.251	1	.616
N of Valid Cases	100		

a. 0 cells (0.0%) have expected count less than 5. The minimum expected count is 5.28.

Using a chi-square test of independence, we investigated the relationship between gender and the issue areas in remediation of diagnostic testing of Physical sciences, with particular reference to Unit-10, Moving Objects, The Pearson Chi-Square p-value for the correlation between these variables was found as 0.210. Consequently, there is no significant difference in the teachers' perceptions of the issue areas in remediation of diagnostic testing of Physical sciences at secondary school level with reference to unit-10, and the hypothesis was held (Gopinath, 2020c).

Table 2 Crosstab perceptions of teachers on the law of motion

			The Law of Motion					Total
			Very Easy	Easy	Average	Difficult	Very Difficult	
Gender	Male	Count % of Total	4	8	21	10	5	48
			4.0%	8.0%	21.0%	10.0%	5.0%	48.0%
	Female	Count % of Total	0	13	19	13	7	52
			0.0%	13.0%	19.0%	13.0%	7.0%	52.0%
Total		Count % of Total	4	21	40	23	12	100
			4.0%	21.0%	40.0%	23.0%	12.0%	100.0%

	Value	df	Asymp. Sig. (2sided)
Pearson Chi-Square	5.864[a]	4	.209
Likelihood Ratio	7.414	4	.116
Linear-by-Linear Association	.815	1	.367
N of Valid Cases	100		

a.2 cells (20.0%) have expected count less than 5. The minimum expected count is 1.92.

Gender and the issue areas in remediation of diagnostic testing of Physical sciences were examined using a chi-square test of independence in the table above, with particular reference to Unit-11: the Law of Motion. The Pearson Chi-Square p-value for the correlation between these variables was found as 0.209. For unit-11 remediation of diagnostic testing of Physical sciences at secondary school level, there was no significant variation in teachers' perceptions of the problem areas (Gopinath, 2020d).

Table 3 Crosstab on Showing perceptions of teachers on the pull of the earth

				The Pull of the Earth			Total
			Very Easy	Easy	Average	Difficult	Very Difficult	
Gender	Male	Count % of Total	20	0	26	2	0	48
			20.0%	0.0%	26.0%	2.0%	0.0%	48.0%
	Female	Count % of Total	25	1	19	4	3	52
			25.0%	1.0%	19.0%	4.0%	3.0%	52.0%
Total		Count % of Total	45	1	45	6	3	100
			45.0%	1.0%	45.0%	6.0%	3.0%	100.0%

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	6.161[a]	4	.187
Likelihood Ratio	7.715	4	.103
Linear-by-Linear Association	.000	1	.989
N of Valid Cases	100		

6 cells (60.0%) have expected count less than 5. The minimum expected count is .48.

As part of an effort to investigate the relationship between gender and issue areas in remediation of diagnostic testing for Physical sciences, a chi-square test of independence was conducted. The Pearson Chi-Square p-value for the correlation between these variables was 0.187. For unit-12 remediation of diagnostic testing of Physical sciences at secondary school level, teachers' judgments were not significantly different from each other, and the hypothesis was retained. The same was proved by (Gopinath, 2020e)

Table 4 Crosstab Showing perceptions of teachers on why bodies float?

				Why Bodies Float?			Total
			Very Easy	Easy	Average	Difficult	Very Difficult	
Gender	Male	Count % of Total	4	8	21	10	5	48
			4.0%	8.0%	21.0%	10.0%	5.0%	48.0%
	Female	Count % of Total	0	13	19	13	7	52
			0.0%	13.0%	19.0%	13.0%	7.0%	52.0%
Total		Count % of Total	4	21	40	23	12	100
			4.0%	21.0%	40.0%	23.0%	12.0%	100.0%

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	5.864[a]	4	.209
Likelihood Ratio	7.414	4	.116
Linear-by-Linear Association	.815	1	.367
N of Valid Cases	100		

2 cells (20.0%) have expected count less than 5. The minimum expected count is 1.92.

Chi-square tests were used to analyse the relationship of the gender and the issue areas related to remediation diagnostic testing in the physical sciences, with particular reference to Unit-13, why bodies flotation? The Pearson Chi-Square p-value for the correlation between these variables was found as 0.209. Due to this lack of considerable variation in teacher perspectives on issue areas in diagnostic testing remediation for physical sciences at the secondary school level with respect to unit-13, the hypothesis was retained (Gopinath, 2020f).

Table 5 Crosstab Showing perceptions of teachers on energy, the driving force

			Energy: The Driving Force					Total
			Very Easy	Easy	Average	Difficult	Very Difficult	
Gender	Male	Count % of Total	11	11	12	5	9	48
			11.0%	11.0%	12.0%	5.0%	9.0%	48.0%
	Female	Count % of Total	9	6	24	6	7	52
			9.0%	6.0%	24.0%	6.0%	7.0%	52.0%
Total		Count % of Total	20	17	36	11	16	100
			20.0%	17.0%	36.0%	11.0%	16.0%	100.0%

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	5.861[a]	4	.210
Likelihood Ratio	5.952	4	.203
Linear-by-Linear Association	.251	1	.616
N of Valid Cases	100		

a. 0 cells (0.0%) have expected count less than 5. The minimum expected count is 5.28.

Using a chi-square test of independence, we investigated the relationship between gender and the issue areas in remediation of diagnostic testing in the physical sciences, with particular reference to Unit 14, Energy, the driving force. The Pearson Chi-Square p-value for the correlation between these variables was found to be 0.210. A substantial difference in teachers' evaluations of issue areas for remediation of physical science diagnostic testing at the secondary school level was thus not found, and the hypothesis was preserved as a working hypothesis.

Table 6 Crosstab Showing perceptions of teachers on the music of sound

			The Music of Sound					Total
			Very Easy	Easy	Average	Difficult	Very Difficult	
Gender	Male	Count % of Total	20	0	26	2	0	48
			20.0%	0.0%	26.0%	2.0%	0.0%	48.0%
	Female	Count % of Total	25	1	19	4	3	52
			25.0%	1.0%	19.0%	4.0%	3.0%	52.0%
Total		Count % of Total	45	1	45	6	3	100
			45.0%	1.0%	45.0%	6.0%	3.0%	100.0%

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	6.161[a]	4	.187
Likelihood Ratio	7.715	4	.103
Linear-by-Linear Association	.000	1	.989
N of Valid Cases	100		

a. 6 cells (60.0%) have expected count less than 5. The minimum expected count is .48.

A music of sound chi-square test of independence was used to explore the relationship between gender and issue areas in remediation of diagnostic testing in the Physical sciences with particular reference to Unit-15. The Pearson Chi-Square p-value for the correlation between these variables was 0.187. A substantial difference in instructors' judgments of issue areas for remediation of diagnostic testing related to unit-15 in physical sciences was not found, hence the hypothesis was kept.

H_0: Teachers in the Tiruchirappalli District of Tamilnadu's State have no significant differences in their perceptions of the issue areas in remediation of diagnostic testing of Physical Sciences at secondary school level.

Table 7 Crosstab showing perceptions of teachers qualification on moving objects

			Moving Objects					Total
			Very Easy	Easy	Average	Difficult	Very Difficult	
Qualifications	B.Sc, B.Ed,	Count % of Total	5	4	19	8	14	50
			5.0%	4.0%	19.0%	8.0%	14.0%	50.0%
	M.Sc, B.Ed,	Count % of Total	15	13	17	3	2	50
			15.0%	13.0%	17.0%	3.0%	2.0%	50.0%
Total		Count % of Total	20	17	36	11	16	100
			20.0%	17.0%	36.0%	11.0%	16.0%	100.0%

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	21.149[a]	4	.000
Likelihood Ratio	22.843	4	.000
Linear-by-Linear Association	19.586	1	.000
N of Valid Cases	100		

a. 0 cells (0.0%) have expected count less than 5. The minimum expected count is 5.50.

Because of its focus on movement in Unit.10 of the Physical Sciences curriculum, the Chi-square test was used to investigate the relationship between teachers' qualifications and specific areas of difficulty in remediation of diagnostic testing. There is a 0.001 significance level for Pearson ChiSquare p-value. As a result, the original theory is ruled out. Teachers' qualifications are strongly linked to Unit.10, i.e., moving things (Gopinath, 2020g).

Table 8 Crosstab showing perceptions of teachers qualification on law of motion

				The Law of Motion				Total
			Very Easy	Easy	Average	Difficult	Very Difficult	
Qualifications	B.Sc, B.Ed,	Count % of Total	0	15	20	9	6	50
			0.0%	15.0%	20.0%	9.0%	6.0%	50.0%
	M.Sc, B.Ed,	Count % of Total	4	6	20	14	6	50
			4.0%	6.0%	20.0%	14.0%	6.0%	50.0%
Total		Count % of Total	4	21	40	23	12	100
			4.0%	21.0%	40.0%	23.0%	12.0%	100.0%

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	8.944[a]	4	.063
Likelihood Ratio	10.626	4	.031
Linear-by-Linear Association	.340	1	.560
N of Valid Cases	100		

a. 2cells (20.0%) have expected count less than 5. The minimum expected count is 2.00.

A chisquare test of independence was used to investigate the relationship between credentials and problem areas in remediation of diagnostic testing in Physical sciences, with a focus on Unit-11, the law of motion. The Pearson Chi-Square p-value for the relationship between these variables was 0.063, indicating that it was significant. As a result, there was no significant difference in teachers' evaluations of the problem areas in remediation of diagnostic testing of Physical sciences at the secondary school level with reference to unit-11, and the hypothesis was kept.

Table 9 Crosstab showing perceptions of teachers qualification on the pull of the earth

			The Pull of the Earth					Total
			Very Easy	Easy	Average	Difficult	Very Difficult	
Qualifications	B.Sc, B.Ed,	Count	15	0	30	5	0	50
		% of Total	15.0%	0.0%	30.0%	5.0%	0.0%	50.0%
	M.Sc, B.Ed,	Count	30	1	15	1	3	50
		% of Total	30.0%	1.0%	15.0%	1.0%	3.0%	50.0%
Total		Count	45	1	45	6	3	100
		% of Total	45.0%	1.0%	45.0%	6.0%	3.0%	100.0%

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	16.667[a]	4	.002
Likelihood Ratio	18.650	4	.001
Linear-by-Linear Association	6.096	1	.014
N of Valid Cases	100		

a. a. 6 cells (60.0%) have expected count less than 5. The minimum expected count is .50.

A chisquare test of independence was used to determine the relationship between credentials and problem areas in remediation of diagnostic testing in Physical Sciences with special reference to Unit-12, the pull of the Earth. The Pearson Chi-Square p-value for the relationship between these variables was 0.002, indicating that it was significant. As a result, there was no significant difference in teachers' perceptions of the problem areas in remediation of diagnostic testing of Physical sciences at the secondary school level with reference to unit-12, and the hypothesis was kept (Gopinath, 2020h).

Table 10 Crosstab Showing perceptions of teachers qualification on why bodies float?

			Why bodies float?					Total
			Very Easy	Easy	Average	Difficult	Very Difficult	
Qualifications	B.Sc, B.Ed,	Count	0	15	20	9	6	50
		% of Total	0.0%	15.0%	20.0%	9.0%	6.0%	50.0%
	M.Sc, B.Ed,	Count	4	6	20	14	6	50
		% of Total	4.0%	6.0%	20.0%	14.0%	6.0%	50.0%
Total		Count	4	21	40	23	12	100
		% of Total	4.0%	21.0%	40.0%	23.0%	12.0%	100.0%

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	8.944[a]	4	.063
Likelihood Ratio	10.626	4	.031
Linear-by-Linear Association	.340	1	.560
N of Valid Cases	100		

a. 2 cells (20.0%) have expected count less than 5. The minimum expected count is 2.00.

The Chi-square test is used to determine the significant relationship between teachers' credentials and problem areas in remediation of diagnostic testing in Physical Sciences at the secondary school level, with a focus on Unit.13, which deals with moving objects. The p-value for Pearson ChiSquare is 0.063, which is significant. As a result, the hypothesis is disproved. There is a strong link between teacher qualifications and Unit.13, i.e., why do bodies float?.

Table 11 Crosstab showing perceptions of teachers qualification on energy, the driving force

				Energy, the driving force				Total
			Very Easy	Easy	Average	Difficult	Very Difficult	
Qualifications	B.Sc, B.Ed,	Count % of Total	5	4	19	8	14	50
			5.0%	4.0%	19.0%	8.0%	14.0%	50.0%
	M.Sc, B.Ed,	Count % of Total	15	13	17	3	2	50
			15.0%	13.0%	17.0%	3.0%	2.0%	50.0%
Total		Count % of Total	20	17	36	11	16	100
			20.0%	17.0%	36.0%	11.0%	16.0%	100.0%

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	21.149[a]	4	.000
Likelihood Ratio	22.843	4	.000
Linear-by-Linear Association	19.586	1	.000
N of Valid Cases	100		

a. 0 cells (0.0%) have expected count less than 5. The minimum expected count is 5.50.

The Chi-square test is used to determine whether there is a significant relationship between teachers' qualifications and problem areas in remediation of diagnostic testing in Physical Sciences at the secondary school level, with special reference to Unit.14, which deals with moving objects. The p-value for Pearson ChiSquare is 0.001, which is significant. As a result, the hypothesis is disproved. There is a strong link between teacher qualifications and Unit.14, i.e. energy, the driving force (Gopinath, 2020i).

Table 12 Crosstab showing perceptions of teachers qualification on the music of sound

				The music of sound				Total
			Very Easy	Easy	Average	Difficult	Very Difficult	
Qualifications	B.Sc, B.Ed,	Count % of Total	15	0	30	5	0	50
			15.0%	0.0%	30.0%	5.0%	0.0%	50.0%
	M.Sc, B.Ed,	Count % of Total	30	1	15	1	3	50
			30.0%	1.0%	15.0%	1.0%	3.0%	50.0%
Total		Count % of Total	45	1	45	6	3	100
			45.0%	1.0%	45.0%	6.0%	3.0%	100.0%

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	16.667[a]	4	.002
Likelihood Ratio	18.650	4	.001
Linear-by-Linear Association	6.096	1	.014
N of Valid Cases	100		

a. 6 cells (60.0%) have expected count less than 5. The minimum expected count is .50.

A chi-square test of independence was used to investigate the relationship between teacher qualifications and issue areas in remediation of diagnostic testing in Physical sciences, with a focus on Unit-15, sound music. The Pearson Chi-Square p-value for the relationship between these variables was 0.002, indicating that it was negligible. As a result, the hypothesis was rejected since there is a substantial variation in teachers' judgments of the problem areas in remediation of diagnostic testing of Physical sciences at the secondary school level with reference to unit-15.

5. CONCLUSION

Rather than measuring the efficacy of a research-designed remedy, the current study attempts to investigate Physics teachers' opinions of their issue areas in remediation of diagnostic testing. The findings of this study show that there was no significant difference in teachers' perceptions of the problem areas in remediation of diagnostic testing in Physical Sciences viz., moving objects; on the law of motion; the pull of the earth; why bodies float? ; energy, the driving force, and the music of sound at secondary school with special reference to their gender, but there was a significant difference with regard to their qualifications.

It does, however, have a slew of ramifications for instructors, students, authorities, and policymakers. Physics teachers show a broad understanding of how to apply and adapt a variety of teaching, learning, and behaviour management tactics. They assist pupils with comprehending many concepts such as moving things, the law of motion, the earth's pull, why bodies float?, energy, the driving force, and sound music. As a result, it is imperative that Physics teachers be exposed to capacity-building programmes so that they can successfully address the issue areas. As a result, when teaching physics to students, it's important to take a broad view of the subject and be well-versed in its pedagogical understanding. Some times the level of wok stress of the teacher (Sivakumar & Chitra, 2017) and their emotional intelligence also matters in their teaching efficiency (Gopinath & Chitra, 2020)

Students are the scientists of the future. As a result, laboratory activities and classroom lectures should not be separated. The problem areas should be identified ahead of time, and novel ways for making Physics alchemy for students could be implemented. Policymakers and authorities can also develop rules and programmes that will aid both instructors and students in instilling a positive attitude toward learning Physics. The current research has some limitations. As a result, future study should concentrate on other issues as well as more extensive diagnostic testing remedies.

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