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RESEARCH ARTICLE

INTEREST TOWARDS PHYSICS LEARNING AND ITS EFFECT ON THE ACADEMIC PERFORMANCE OF STUDENTS IN INTEGRATED TEACHER TRAINING PROGRAMME

***Noufal, P., Param Preet Kaur and Ambady, K.G.**

Regional Institute of Education- Mysuru, Karnataka, India

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ABSTRACT

Physics is the one of the interesting subject for the students in the undergraduate and post graduate level. Students prefer to learn Physics because of their own interest or any external factors. Students wants to spend more time on the subject in order to get mastery over it. In the similar manner, to maintain the quality education, the teacher education institutes have the prominent role, they want to focus more on the education part of the subject. Students who were enrolled to the teacher training colleges should have to play a crucial role in developing and maintaining the future science education. This study focussed on finding the interest towards Physics subject of the prospective teachers who are enrolled in the integrated teacher training programmes. The study was conducted among prospective teachers of integrated teacher training institute who are pursuing their MSc. Ed programme in the south India. The study was employed the descriptive survey study method. Sample of the study includes the students from various academic years. Results shows that the boys having more interest towards learning Physics than girls in the integrated teacher training institute and other factors like pre-school education, plus two percentage of marks in Physics, etc. are not depending on the learning of Physics.

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INTRODUCTION

Physics is the one of the interesting subject for the students in the undergraduate and post graduate level. Students prefer to learn Physics because of their own interest or any external factors. Students wants to spend more time on the subject in order to get mastery over it. In the similar manner, to maintain the quality education, the teacher education institutes have the prominent role, they want to focus more on the education part of the subject. Students who are enrolled to the teacher training colleges should have to play a crucial role in developing and maintaining the future science education. The measurement of student's interest towards Physics should take into account their interest towards learning environment. If students have negative attitudes or interest towards science, they also do not like Physics courses and Physics teachers. Based on this premise, numerous studies have been conducted to determine the factors that affect the students' attitudes and interest in science. From these studies, some basic factors can be listed, including : teaching –learning approaches, the type of science

courses taken, methods of studying, intelligence, gender, motivation, science teachers and their attitudes, students attitudes to science courses, self-adequacy, cognitive style of students, career interest, socio economic levels, influence of parents, and so on. (Halladyna and Shanghnessy, 1982; Mattern and Schau, 2002; Rivard and Straw, 2000). Physics is basically a study to find the answers to the questions of 'why' and 'how' natural phenomenon in daily life occur. Most students consider Physics a difficult subject, mainly due to the learning processes involved in understanding Physics, which require the learners to deal with different types of representations, such as formulas, calculations, graphics representations, and also a conceptual understanding at an abstract level. Furthermore it is also indicated that students' motivation to learn Physics is still very well below the acceptable level. Hence, Physics has become a subject of least choice at schools, and most students have been reported to veer away from Physics related courses (except for engineering courses) at the higher level of education. In the integrated teacher training colleges, the students wants to spend more time on the Subject paper as well as education paper. In this scenario, it is essential to conduct a research study related to the interest or attitude of students related to the course they are taken. Whether they can able to accomplish the Physics learning and Education learning.

***Corresponding author: Noufal, P.,**
Regional Institute of Education- Mysuru, Karnataka, India.

Review of related literature: One of the utmost significant factors which affect students' academic success is their interest towards school, lessons and academic success. Interest depends on student's own experiences, knowledge and skills, and some are gained from other sources. However, the interest towards learning does not stay the same, it changes in the course of time. In the context of Physics learning worldwide, it is found that there are far fewer students taking Physics than any other science subjects at the higher level of education (Dawson, 2000; Osborne et al., 2003; Lyons, 2006; Owen et al., 2008). There is a consensus among students and people in general, including teachers, that Physics is a very difficult subject (Lavonen et al., 2007; Lyons 2006; Angell et al. 2004; Sidin, 2004; Osborne et al., 2003; Stokking, 2000), which influences the motivation to learn Physics. Students' interest towards Physics have been found to be on the decline across the phases of study (Murphy & Whitelegg, 2006; Reid, 2003). The most pronounced decline in the interest towards Physics, especially for female students, is associated with the increase of negative feelings towards the Physics subject in school (Murphy & Whitelegg, 2006). Male students, in general, are found to be more interested in the aspects of physical sciences, while female students' interests in science are focused more on the biological and environmental aspects (Murphy & Whitelegg, 2006). Therefore, male students tend to be more motivated in learning Physics than female students (Stadler et al., 2000; Alexander et al., 2010).

It has also been found that traditionally, girls' interest in Physics decreases as they grew older (Hoffmann, 2002; Dawson, 2000). Compared to male students, female students are found to have more negative views of Physics (Osborne & Collins, 2000). Although male students are found to have a higher self-concept towards Physics, female students, on the other hand, despite their decreased interest and negative views, tend to perform significantly better than boys in Physics, and rated Physics as their favourite subject (Joshi & Srivastava, 2009). Studies conducted by DuBois et al. (2002) found that environmental factors also play an important role in determining an individual's motivation level. Students from urban areas are generally found to have higher motivation than those coming from rural areas (Abdul Rahman, 1980). Rural students have been found to exhibit lower performance, due to the lack of exposure to a stimulating environment (Markstrom et al., 2000), such as the narrow scope of curriculum in their schools, instructional practices that constrain individual opportunities for acceleration and remediation, and lack of access to the supports and resources of programs, organizations, and educational institutions prevalent in urban and suburban areas (Redding & Walber, 2012).

Richardo Trumper (2006) conducted a study on Factors affecting junior high school student's interests in Physics." In his study, it was learnt that the interest of students is decreasing in science which is going to vitally affect the scientific literacy of future generations. There was also seen that number of girls who took science as higher secondary level were very few in number. In this article, basically dealt in Israel and how gender of the students affects the interest and in turn the performance of the students. Various studies were conducted to find out the reasons and based on that changes were induced. It was learnt the boys always showed interest

towards physics. Olusola, (2012), conducted a study on the topic "Attitudes of students towards the study of Physics in college of education Ikereekiti, Nigeria". The attitude comprised of two components parts which are effective in dealing with mental process. The attitude profusely affects students' performance .It was observed that very less number of students were attracted towards Physics because of poor infrastructure, laboratories and various other factors like family and peer effects and one's interest. The devastating academic performance of students in Physics has been a topic of concern. Hence to unveil the reasons behind a questionnaire was prepared and conclusions were made on the results.

Endikaarandia, Kristinszuza and Jenarogesiseisola (2016) conducted a study on the topic "Attitudes and motivations towards Physics and its learning at both high school and university". With the advancement in science and technology the infrastructure and the teaching faculty has improved but sadly the student's interest has been profusely declining. Hence a lot of work is done in science education to bring forth a change in attitude of students. Their paper dealt with how to improve student's interest and attitude varied at different stages of education. A study is being conducted on high school students and on engineering students.

Objectives of the study: To find out the difference in variables such as Gender, Year of study, previous school education on the interest towards Physics learning of students in the integrated teacher training programme.

-) To find out the relationship between GPA in Physics and interest towards Physics of students in the integrated teacher training programme.
-) To find out the levels of interest among the students with respect to Gender, Year of Study on the interest towards Physics learning of students in the integrated teacher training programme.
-) To find out the relationship between plus two percentage and interest towards Physics of students in the integrated teacher training programme.

Hypotheses of the Study

-) There is no significant difference on the interest towards Physics learning of the students in the integrated teacher training programme with respect to Gender.
-) There is no significant difference on the interest towards Physics learning of the students in the integrated teacher training programme with respect to year of study.
-) There is no significant difference on the interest towards Physics learning of the students in the integrated teacher training programme with respect to previous school education
-) There is no significant relationship between current GPA in Physics and the interest towards Physics learning of the students in the integrated teacher training programme.

) There is no significant relationship between plus two percentage and interest towards Physics of students in integrated teacher training programme.

METHODS

The study was employed the descriptive survey study method for fulfilling the objectives. The sampling technique used for this study was simple random technique. The data was collected from the total population and from that it is selected randomly based on the positive feedback that they are given.

Participants of the study: This study focussed on the interest towards Physics learning in an integrated teacher training programme. The population of the study was all the students who are enrolled for MScEd Physics in the southern region of India. The sampling was done by simple sampling method. The students joined for first, second, third fourth fifth and sixth year of integrated teacher training programme was selected for the study. This study includes 24 male students and 39 female students

Instrument used: The instrument used for this study contains two parts. In the first part, the general details related to the participant are collected. Which consist of Name, Gender, Previous school of education, Age, and current GPA on the Physics subject that they got up to the present semester. The second part of the instrument consists of questionnaire including 20 items related to the interest towards Physics learning. The questionnaire is based on the four point rating scale consists of the following ratings (Strongly disagree, disagree, agree, strongly agree). The questionnaire contains both positive questions and negative questions. The score for the positive questions as Strongly Disagree --1, Disagree--2, Agree--3, and strongly agree—4 and for the negative questions it is as vice versa. The score has given according to the positive and negative items. The tool is prepared by the researcher and it is validated by the experts.

Data analysis And Interpretation: The data collected through the questionnaire contains 20 test items related to the interest towards Physics learning in the integrated teacher training programme are analysed by using Statistical Package for Social Science (SPSS). Descriptive statistics is used to describe demographic data and whereas inferential statistics, involving independent samples t-test and ANOVA test, is used to determine the differences between the groups involved in the research.

Table 1. Percentage of levels of interest on Physics learning

Levels of interest	Frequency	Percentage
High	34	54.0
Medium	28	44.4
Low	1	1.6
Total	63	100.0

Total score obtained towards the interest on Physics learning is classified in to three levels namely High, Medium and Low interest. The maximum possible range of scores is 20-80. This possible range is divided equally in order to classify in to three levels.

The scores of interest are classified into high interest (61-80), medium interest (41-60) and low interest (20-40).The number of students and percentage of students falling on each level is shown in the table 1. It is clear that 54% of students having high interest towards Physics learning in the integrated teacher training programme. Only 1.6 % students having low interest.

Hypothesis 1: There is no significant difference on the interest towards Physics learning of the students in the integrated teacher training programme with respect to Gender.

Table 2. T test on Gender versus Interest

	Gender	N	Mean	Std. Deviation	t	Sig.
Interest	Male	24	64.54	6.04	3.616	.001
	Female	39	58.38	6.86		

In order to find the significant difference on Gender on Interest towards Physics learning, independent sample t test was done. The results shows in the table (2). From the table it is clear that there is a significant difference between males and females in the interest towards Physics learning. So the hypothesis is rejected. It is also clear from the table that male students (Mean=64.54) have more interest than the female students (Mean=58.38).

Table 3. Percentage of students with respect to levels of interest in Physics learning based on Gender

Gender	Levels of interest	Frequency	Percent
Male	High	19	79.2
	Medium	5	20.8
	Total	24	100.0
Female	High	15	38.5
	Medium	23	59.0
	Low	1	2.6
	Total	39	100.0

Total score obtained towards the interest on Physics learning is classified in to three levels namely high, medium and low based on Gender. The number of students falling on each level is shown in the table (3). Compared to girls, boys having high interest towards Physics learning. It is clear that, among boys, 79.2% having high interest whereas among girls 38.5% only having high interest.

Hypothesis 2: There is no significant difference on the interest towards Physics learning of the students in the integrated teacher training programme with respect to year of study

Table 4. ANOVA on Interest of Physics learning by present year of study

Year of study	N	Mean	Std. Deviation
1	14	63.79	7.18
2	9	60.56	7.75
3	14	62.86	6.63
4	8	58.50	9.09
5	12	55.92	5.47
6	6	61.50	3.02
Total	63	60.73	7.17

Interest	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	515.70	5	103.14	2.20	.067
Within Groups	2674.71	57	46.93		
Total	3190.41	62			

In order to find the significant relation between interest over year study one way ANOVA was done. The result obtained is included in the table (4). From the table it is clear that there is no significant difference between year of study and interest. Hence the hypothesis is accepted. It shows that year of study of the students is not influencing factor of students in the interest towards Physics learning.

Level of interest by year of study

Table 5. Percentage of students with respect to levels of interest on Physics learning based on year of study

Present year of study	Levels of Interest	Frequency	Percent
1	High	9	64.3
	Medium	5	35.7
	Total	14	100.0
2	High	4	44.4
	Medium	5	55.6
	Total	9	100.0
3	High	9	64.3
	Medium	5	35.7
	Total	14	100.0
4	High	5	62.5
	Medium	2	25.0
	Low	1	12.5
	Total	8	100.0
5	High	3	25.0
	Medium	9	75.0
	Total	12	100.0
6	High	4	66.7
	Medium	2	33.3
	Total	6	100.0

Total score obtained towards the interest on Physics learning is classified in to three levels namely high, medium and low based on year of study. The number of students falling on each level based on year of study was shown in the table (5). In all the year, the students having high interest towards the Physics learning. In the 5th year, the percentage of high interest students are less. After 4th year the students are entering in to post graduation level. So in the initial stage of the post-graduation, the students are losing interest towards the Physics learning.

Hypothesis 3: There is no significant difference on the interest towards Physics learning of the students in the integrated teacher training programme with respect to previous school education.

Table 6. ANOVA on pre-school education versus Interest towards Physics learning

	N	Mean	Std. Deviation
CBSE	28	61.32	7.12
ICSE	10	58.00	5.60
State Board	25	61.16	7.78
Total	63	60.73	7.17

Table 7. ANOVA on previous school education versus Interest towards Physics learning

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	88.95	2	44.47	.860	.428
Within Groups	3101.47	60	51.69		
Total	3190.41	62			

In order to find the significant difference on pre-school education on Interest towards Physics learning, on way ANOVA was done. The results shows in the table (6) and (7). From the table it is clear that there is no significant difference between previous school education towards Physics learning. Hence the hypothesis is accepted. It shows that previous school education has not influencing the interests of the students towards Physics learning in the integrated teacher training programme.

Hypothesis 4: There is no significant relationship between current GPA in Physics and the interest towards Physics learning of the students in the integrated teacher training programme.

Table 8. T test on Interest versus GPA obtained in the Physics learning

	Mean	Std. Deviation	N	r	Sig. (2-tailed)
Interest	60.73	7.17	63	-.231	.069
GPA	7.68	1.16	63		

In order to find the significant relationship between GPA obtained during various semester with respect to the Physics subject learning towards the Interest of the Physics learning one sample t test was done. The result obtained is included in the table 8. From the table it is clear that there is no significant difference between Interest and GPA obtained. Hence the proposed hypothesis is accepted. This shows that GPA will not affecting the Interest of the students towards the Physics learning.

Hypothesis 5: There is no significant relationship between plus two percentage and interest towards Physics of students in integrated teacher training programme.

Table 8. Correlation between plus two percentage and interest towards Physics learning

	Mean	Std. Deviation	N	Pearson Correlation	Sig. (2-tailed)
Plus two percentage	88.20	9.05	63	-.178	.164
Interest	60.73	7.17	63		

In order to find the significant relationship between plus two percentage on Interest towards Physics learning, independent sample t test was done. The results shows in the table (8). From the table it is clear that there is no significant relationship between plus two percentage towards Physics learning in the integrated teacher training programme. Hence the proposed hypothesis is accepted. The value of Pearson coefficient obtained is -0.178. This shows that the percentage of marks obtained during plus two level is not related with the interest towards Physics learning.

Major Findings and Conclusion

Interest towards Physics learning depending on many factors. It may be due innate interest or through the motivations and support given by parents, friends and Physics teachers. From this study, it is shown that boys having more interest than girls. It may be due to the content included in the curriculum. Boys

having more interest towards application level content in Physics rather than rote learning. Majority of the students enrolled in the integrated teacher training program are having more interest and it is not decreasing according to the year of study, except when they go for the post-graduation level. Majority of the students opinioned that they are satisfying with the infrastructural facilities available related to the Physics learning. But, if they include updated information in the curriculum it will be create more interest among them. From this study it is shows that the interest is not based on the previous school education, or plus two percentage marks or the academic performance in the present programme. With their own interest, the students are jointed for the integrated teacher training program. So it is the responsibility of the all the associated persons (teachers, administrators, etc.)to provide maximum academic and non-academic input to the students and provide the aspirations of the students.

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