



Students' Perception about the Content of Physics Course of NIOS in Relation to their Personal Variables

Mrs. Trisha Bhattacharya, Research Scholar,

Department of Education, Handia PG College, Affiliated to Veer Bahadur Singh Purvanchal University, Jaunpur, U.P., India

Abstract

School is a more dominant agent for bringing change in society because it works with teachers, curriculum and also with a systematic plan. It has been said that the "Destiny of the nation is shaped in its classroom." This shaping depends upon the nature of curriculum and its implementation. Hence in this paper the researcher examines in detail about the objective to study the students' perception about the content of physics course of NIOS at the sr. secondary stage in relation to their personal variables e.g. (a.) medium of instruction; (b.) area (locality); (c.) gender (sex). in order to investigate, the researcher has purposively selected 132 physics students studying at senior secondary stage in NIOS as a sample and out of them 126 were responded. Further, he employed Perception Scale for Physics Students of NIOS (PSPS) for data collection and four way ANCOVA for analyzing the data. The main findings of the study were : (a.) medium of instruction differences more positively affects to the Hindi medium and female students' perception about content of physics course (CPC) than that of their English medium and male counter parts; (b.) Medium of instruction equally influence to both the urban & rural area students' perception about CPC and area differences hasn't any significant impact on senior secondary school students' perception about content of physics course (CPC).

Key Words : Perception, Content of Physics Course, NIOS, Personal Variables, Virtual Education, Physics Curriculum, Sr. Secondary Stage, Critical Analysis etc.

Introduction : For the development of every country, the people of country should be educated. Education is a process of drawing out the best in child and man body and spirit. It is a process of -modification of natural tendencies of an individual. It contributes to the natural and harmonious development of innate power and bring out the complete development of man and women. According to the Dewey "education helps us in anticipating certain salvations and consequence. We therefore plan our future experiences in such a way that we secure their beneficial consequences and avert the undesirable ones."

In the above mentioned purpose, school is a more dominant agent for bringing change in society because it works with teachers, curriculum and also with a systematic plan. It has been said that the "Destiny of the nation is shaped in its classroom." This shaping depends upon the



nature of curriculum and its implementation. The curriculum also includes required social, political, economic issues and ethos, philosophy, culture of a society. A curriculum is defined as totality of student experiences that occur in educational process. The term refers to a planned sequence of instruction, in other word a view of the student's experiences in term of education or school at of course and content offered by school, college or university. We know that our society is being change very fast so need and nature of our society is changing very fast. So curriculum has also been changing.

After reviewing the related literature, it is found that many researches have been conducted in the area and they have created a lot of contradiction with their results. Where on one side some of the researchers reported that participation in co-curricular activities play a key role in students' academic success (Stephens & Schaben, 2002; Huang & Chang, 2004; Hunt, 2005), and contribute to bachelor's degree attainment (Tan & Pope, 2007). Students also realize the importance of developing overall competences, by joining co-curricular activities and working collaboratively with their student peers on academic work in order to gain hands-on experience (Fung, Lee, & Chow, 2007). Co-curricular activities were positively correlated to academic performance (Hanks & Eckland, 1976; Camp, 1990). While on the other side some of the researchers found no such correlation between co-curricular involvement and academic performance (Light, 1990; Hartnett, 1965). One research finding suggested that only an academic curriculum would enhance academic performance (Chambers & Schreiber, 2004). It implied that the participation in some non-academic co-curricular activities might not directly benefit academic performance. Black (2002) suggested that involvement in student clubs and organizations might even distract students from their regular study, and not all activities were of benefit to academic performance. Here, the two opposing hypotheses have been proposed to explain the relationship between organized curricular & co-curricular activities and academic performance, academic success, attainment of proper knowledge, understanding, perceptions, skills and perception etc. Whether organized curricular & co-curricular activities enhance academic performance or distract students from their regular study and degrade their academic performance. The researcher found the same case with the Students' Perception about the Content of Physics Course of NIOS at the Sr. Secondary stage in Relation to their Personal Variables. Therefore, the following questions arose in the mind of the researcher:



- (1) Whether Students' Perception about the Content of physics course of NIOS at the Sr. Secondary stage is independent of their medium of instruction?
- (2) Whether Students' Perception about the Content of Physics course of NIOS at the Sr. secondary stage is independent of their locality?
- (3) Whether Students' Perception about the Content of physics course at Sr. Secondary stage is Independent of their gender?

In the light of above research question, the researcher has formulated the following objective:

- To study the Students' Perception about the Content of Physics Course of NIOS at the Sr. Secondary stage in Relation to their Personal Variables:
 - a. Medium of Instruction;
 - b. Area (Locality);
 - c. Gender (Sex);

Hypotheses of the Study : For obtaining the above research objective, the researcher has formulated the following null hypotheses :

H0.1. There is no significant difference between the mean scores of Hindi and English medium students' perception about the content of physics course of NIOS at the Sr. secondary stage.

H0.2. There is no significant difference between the mean scores of urban and rural area students' perception about the content of physics course of NIOS at the Sr. secondary stage.

H0.3. There is no significant difference between the mean scores of male and female students' perception about the content of physics course of NIOS at the Sr. secondary stage.

i.Operational Definition of the Key Terms Used in the Study:

- i) **Physics:-** The word physics is derived from the Latin word physics, which means "natural thing." It is the branch of science concerned with the nature and properties of matter and energy. The subject matters of physics includes mechanics, heat, light and other radiation, sound, electricity, magnetism, and the structure of atom.
- ii) **Curriculum:-** Curriculum in Latin measure a course for racing". In education broadly defined as arability of students experiences that occur development. In general education, it is set of courses, course work and content offered at a school or university. in the educational process (wiles, Jon (2008) Leading curriculum development). In general education, it is set of courses; course work and content offered at a school or university.



-
- iii) **Sr. Secondary Stage:** Sr. Secondary stage means Class XII, Which takes place after secondary; education, followed by higher education. Research was limited to Students of Class XII Science Stream only.
- iv) **Perception:** The ability to see, hear, or become aware of something thought the sources. It is a way in which something is regarded, understood or interpreted. Here perception would be the view regarding items covered in interview schedule/check list. I questionnaire noise covering different dimensions of science · curriculum. (Gold star,' E. Bruce Lee 13 Feb, 2009 al. sensation and perception).
- v) **Gender:** Both girl students and boy students were included in the study.
- vi) **Locale:** Locale is the specific place where something happens. A locale identifies consists at least a language identifier and a region identifies. Here in this study both students from Rural and Urban areas were considered.
- vii) **Medium of instruction:** The medium of Instruction is the language used by the teachers for teaching. Here medium of instruction is either Hindi or is English.

ii. Research Design:

- **Population :** The study required collection of information from Physics Students studying at Senior Secondary Stage in NIOS. Their Perception about different issues (e.g. objectives, course material, transaction methodology and evaluation pattern etc.) related to Physics curriculum prescribed in NIOS at Senior Secondary Stage was taken. Considering the above situations, the Physics Students of Uttar Pradesh (U.P.) who studying at Senior Secondary Stage in NIOS were defined as population of the study.
- **Sampling Technique and Sample :** For purpose of the present study, the sample has been taken from population of the study in two stages in the following way :
- **Selection of the Students :** For selecting sample from the population of Physics Students of Uttar Pradesh (U.P.) who studying at Senior Secondary Stage in NIOS, the purposive sampling technique was adopted. Twelve (12) districts of Eastern U.P. were selected randomly. One hundred thirty two (132) Physics Students from these twelve districts were taken purposively in the sample. The developed tool was administered on them. At the final stage only 126 out of 132 Physics Students responded. The names of districts and number of Physics Students from those districts have been given below in table 1.:



Table 1.: District-wise Distribution of Physics Students in the Sample

Sl. No.	Name of the District	No. of Physics Students in the Sample	Actual Respondents
1.	Varanasi	14	11
2.	Gorakhpur	14	11
3.	Faizabad	14	11
4.	Ballia	10	10
5.	Allahabad	14	11
6.	Mau	10	10
7.	Azamgarh	14	11
8.	Basti	10	10
9.	Deoria	14	11
10.	Siddharthnagar	10	10
11.	Kushinagar	10	10
12.	Balrampur	10	10
		N = 132	n = 126

3. Tools:

- **Perception Scale for Physics Students of NIOS** has been constructed and standardized by the Researcher herself to critically evaluate the physics curriculum of NIOS at the Sr. Secondary stage for the Physics Students of Uttar Pradesh (U.P.) who studying at same standard in NIOS.

Statistical Analysis of the Data :

- **Objective No. 1.** To study the Students' Perception about the Content of Physics Course of NIOS at the Sr. Secondary stage in Relation to their Personal Variables:
 - a. Medium of Instruction;
 - b. Area (Locality);
 - c. Gender (Sex);



Table – 2.: Showing the Mean (M) and Standard Deviation (σ) of Students’ Perception Scores Falling in the Different Strata of their personal variables e.g. Medium of Instruction (A), Sex (B), Area (C), Socio-Economic Status (E)

Factors and its stages		Different stages of Factor B Sex)												
		B1 (Male)						B2 (Female)						Σ
		Different Stages of Factor C (Area)						Different Stages of Factor C (Area)						
		C1 (Urban Area)			C2 (Rural Area)			C1 (Urban Area)			C2 (Rural Area)			
		Different Stages of Factor D (Socio-Economic Status)			Different Stages of Factor D (Socio-Economic Status)			Different Stages of Factor D (Socio-Economic Status)			Different Stages of Factor D (Socio-Economic Status)			
		D1 High (SES)	D2 Middle (SES)	D3 Low (SES)	D1 High (SES)	D2 Middle (SES)	D3 Low (SES)	D1 High (SES)	D2 Middle (SES)	D3 Low (SES)	D1 High (SES)	D2 Middle (SES)	D3 Low (SES)	
1		2	3	4	5	6	7	8	9	10	11	12	13	14
Different stages of factor A (Medium of Instruction)	A1 (Hindi Medium)ta l Group	N=5	N=8	N=4	N=4	N=8	N=3	N=6	N=9	N=4	N=4	N=6	N=2	N=63
		ΣM=51.20	ΣM=58.38	ΣM=56.25	ΣM=58.50	ΣM=47.50	ΣM=48.67	ΣM=54.83	ΣM=49.11	ΣM=53.00	ΣM=57.00	ΣM=50.17	ΣM=55.50	ΣM=53.5068
		Σσ=8.349	Σσ=9.410	Σσ=6.850	Σσ=12.503	Σσ=7.746	Σσ=6.028	Σσ=6.646	Σσ=4.729	Σσ=6.683	Σσ=14.514	Σσ=6.242	Σσ=3.536	Σσ=9.563
	A2 (English Medium)	N=5	N=8	N=4	N=4	N=8	N=3	N=6	N=9	N=4	N=4	N=6	N=2	N=63
		ΣM=34.80	ΣM=26.88	ΣM=23.75	ΣM=33.00	ΣM=30.63	ΣM=22.67	ΣM=34.17	ΣM=30.67	ΣM=21.00	ΣM=27.25	ΣM=29.17	ΣM=26.50	ΣM=25.8306
		Σσ=7.085	Σσ=8.026	Σσ=6.994	Σσ=9.764	Σσ=6.948	Σσ=10.017	Σσ=2.787	Σσ=3.969	Σσ=7.616	Σσ=8.057	Σσ=3.656	Σσ=.707	Σσ=7.195
		N=10	N=16	N=8	N=8	N=16	N=	N=1	N=8	N=8	N=8	N=12	N=4	N=126
Σ		ΣM=38.0	ΣM=42.63	ΣM=35.00	ΣM=35.75	ΣM=44.06	ΣM=35.67	ΣM=39.50	ΣM=44.89	ΣM=32.00	ΣM=42.12	ΣM=44.67	ΣM=36.00	ΣM=42.87
		Σσ=15.713	Σσ=18.330	Σσ=13.628	Σσ=17.136	Σσ=15.593	Σσ=16.046	Σσ=16.736	Σσ=15.235	Σσ=13.501	Σσ=19.261	Σσ=16.908	Σσ=11.165	Σσ=16.225

Table –IV : Summary Table of Four Way Four Way Analysis of Covariance (ANCOVA) of Chi-Square (χ²) of Chi-Square (χ²) (ANCOVA) of Chi-Square (χ²) of Students’ Perception Scores at Different Stages of Medium of Instruction (A), Sex (B), Area (C), Socio-Economic Status (E)

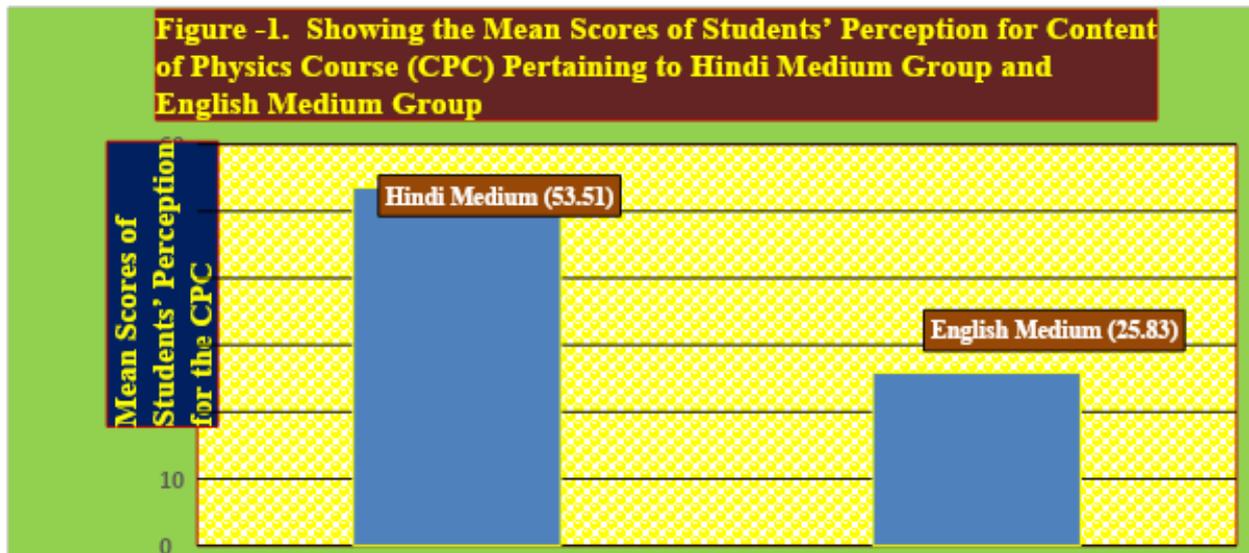


Source	Type III Sum of Squares	df	Mean Square	F	Level of Significance	Partial Eta Squared	Noncent. Parameter	Observed Powerb
Corrected Model	30339.385a	26	1166.899	97.850	.05	.963	2544.097	1.000
Intercept	11.708	1	11.708	.982	.324	.010	.982	.165
Perception Scores	467.255	1	467.255	39.181	.05	.284	39.181	1.000
I.Q	41.166	1	41.166	3.452	.066	.034	3.452	.452
Mental Health	34.482	1	34.482	2.892	.092	.028	2.892	.391
Medium of Instruction	19488.319	1	19488.319	1634.185	.05	.943	1634.185	1.000
Sex	94.252	1	94.252	7.904	.05	.074	7.904	.795
Area	17.759	1	17.759	1.489	.225	.015	1.489	.227
Socio-economic Status	52.814	2	26.407	2.214	.115	.043	4.429	.442
Medium of Instruction* Sex	67.960	1	67.960	5.699	.05	.054	5.699	.657
Medium of Instruction* Area	4.993	1	4.993	.419	.519	.004	.419	.098
Medium of Instruction* Socio-economic Status	76.925	2	38.462	3.225	.05	.061	6.450	.603
Sex * Area	31.423	1	31.423	2.635	.108	.026	2.635	.362
Sex * Socio-economic Status	34.586	2	17.293	1.450	.239	.028	2.900	.304
Area * Socio-economic Status	4.794	2	2.397	.201	.818	.004	.402	.081
Medium of Instruction* Sex * Area	39.558	1	39.558	3.317	.072	.032	3.317	.438
Medium of Instruction* Sex * Socio-economic Status	51.962	2	25.981	2.179	.119	.042	4.357	.436
Medium of Instruction* Area * Socio-economic Status	13.332	2	6.666	.559	.574	.011	1.118	.140
Sex * Area * Socio-economic Status	56.908	2	28.454	2.386	.097	.046	4.772	.472
Medium of Instruction* Sex * Area * Socio-economic Status	8.398	2	4.199	.352	.704	.007	.704	.105
Error	1180.615	99	11.925					
Total	229774.000	126						
Corrected Total	31520.000	125						

- a. R Squared = .963 (Adjusted R Squared = .953);
- b. Computed using alpha = .05;
- c. Table value of F-ratio is F.05= 3.94 and F.01= 6.90 for df = (1,99);
- d. Table value of F-ratio is F.05 = 3.09, and F.01 = 4.82 for df = (2,99);

The above **Table-3.** denotes that Four way analysis of **Covariance (ANCOVA) of Chi-Square (χ^2)** had been applied to the Senior Secondary School Students' Perception Scores at different stages of Medium of Instruction, sex, area, socio-economic status using Senior Secondary School Students' Perception Scores as within subject variable/dependent variable; pre-test Students' Perception scores, intelligence scores, mental health scores as covariates; and the variables like – Medium of Instruction, sex, area, socio-economic status as independent variables. The Senior Secondary School Students' Perception Scores had been divided in the different groups in accordance to their Medium of Instruction, sex, area, socio-economic status. The results of the four way Four Way Analysis of Covariance (ANCOVA) of Chi-Square (χ^2) shows that:

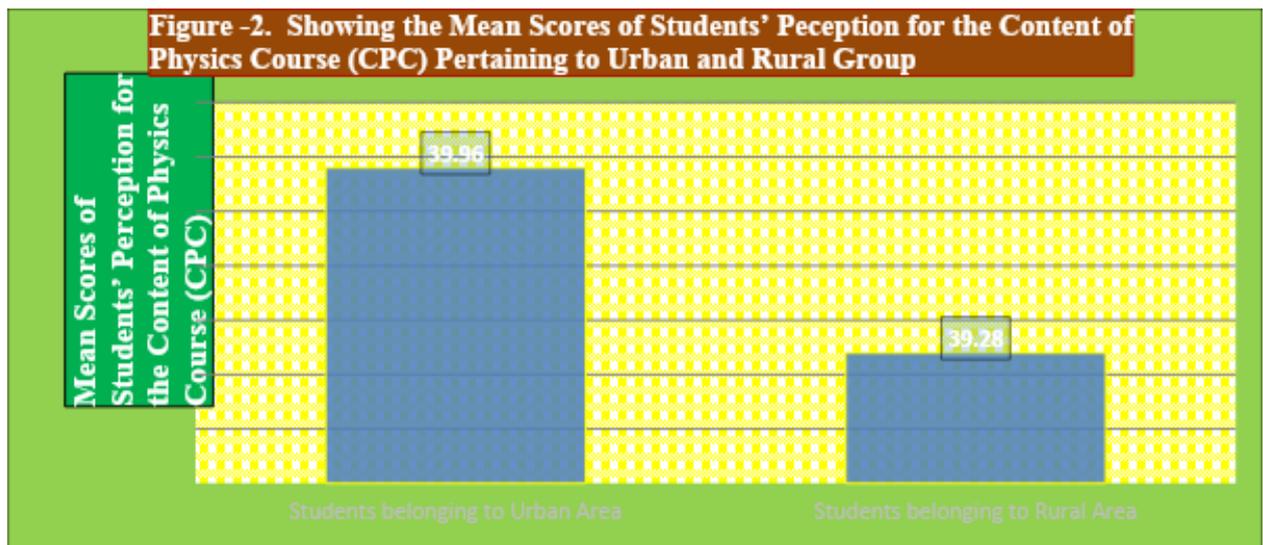
H01. The above **Table 3.** shows that the calculated value of $F(1, 99) = 1634.185$ ($P < .05$) for the main effect of Factor A (Medium of Instruction) far exceeds the critical value ($F_{.05} = 3.94$), therefore F- ratio is significant at .05 level. As indicated by the eta squared value (.943) that the main effect of Medium of Instruction accounts for 94.3% of the variance in total. Therefore null hypothesis is rejected and research hypothesis that is the mean scores of Student's Perception about the Content of physics course of NIOS at the Sr. Secondary stage are independent of their medium of instruction, is accepted.



The above Table- 2 & 3 and Figure-1. shows that the mean scores of Senior Secondary School students' Students' Perception for CPC pertaining to Hindi Medium group (**53.50794**) is comparatively much higher than that of English Medium group (**25.8254**) which shows that

Medium of Instruction affects significantly to the students' Perception for CPC. The possible reasons may be that Medium of Instruction creates the environment conducive to nurture the appropriate Students' Perception, understanding, perception, perception and skills for CPC among the students through organizing proper curricular and co-curricular activities in the class room. The same thing **Meyer (1998)** revealed that organized Curricular and co-curricular activities also provides structured time for students to think, talk, and write about their experiences; fosters an ethic of caring for others; and encourages them to value diversity.

H02.The above table- 3. shows that the calculated value of $F(1, 99) = 1.489$ ($P > .05$) for the main effect of Factor C (Area) is very less than the critical value ($F_{.05} = 3.94$), therefore F- ratio is not significant at .05 level. As indicated by the eta squared value (.015) that the main effect of area accounts for only 1.5% of the variance in total. Therefore the null hypothesis that is the mean scores of Senior Secondary School students' Perception for CPC pertaining to urban area group is not significantly different from that of rural area group is accepted and the observed difference between them may be due to sampling error.

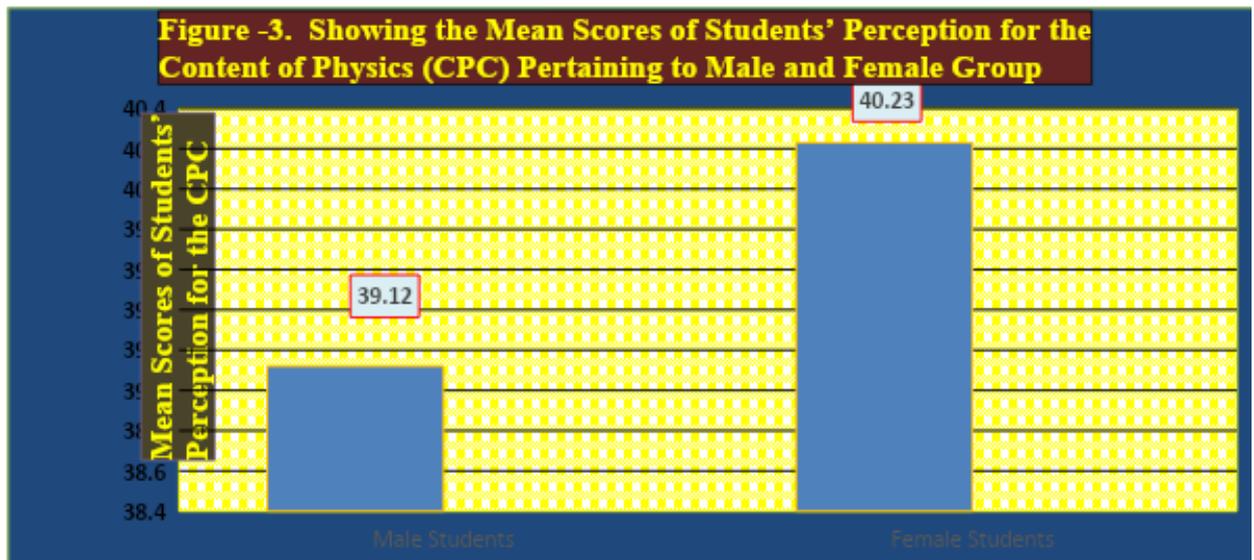


The above Table- 2 & 3 and Figure- 2 shows that the mean scores of Senior Secondary School students' Students' Perception for CPC pertaining to urban group (**39.96**) is comparatively a little higher or almost equal to that of rural group (**39.28**) or in other words there is no significant difference between the mean scores of Senior Secondary School students' Students' Perception for CPC pertaining to urban and rural area groups which shows that Medium of Instruction equally



influence to both the groups and area differences hadn't any significant impact on Senior Secondary School Students' Perception about CPC. The possible reasons may be that the students belonging to both the localities – urban and rural are facing almost similar problems in their day to day life situations like- home violence, social violence, structural violence, social injustices, corruption, ill social practices, prejudices and partialities that are detrimental to their physical, mental, emotional and spiritual health. The researches in the field like Banta & Kuh (1998) found that students became more receptive to ideas and more accepting of people from different backgrounds. They approached studies more seriously in subsequent years than they had in their first year : academic curriculum would enhance academic performance (Chambers & Schreiber, 2004). That directly benefit academic performance (Black, 2002).

H03. The above table- 3. shows that the calculated value of $F(1, 99) = 7.904$ ($P < .05$) for the main effect of Factor B (Sex) far exceeds the critical value ($F_{.05} = 3.94$), therefore F- ratio is significant at .05 level. As indicated by the eta squared value (.074) that the main effect of Sex accounts for 7.4% of the variance in total. Therefore null hypothesis is rejected and research hypothesis that is the mean scores of Student's perception of content of physics course were at Sr. Secondary stage is Independent of their gender, is accepted.



The above Table- 2 & and Figure- 3 shows that the mean scores of Senior Secondary School students' Students' Perception for CPC pertaining to male group (39.12) is comparatively



less than that of female group (40.23) which shows that Medium of Instruction affects more positively to the Female Students' Perception for CPC in comparison to that of male students. The possible reasons may be that the girls are more humane and sensitive by nature in comparison to boys. They were comparatively more sincere in taking part in all the curricular and co-curricular activities that were organized in the class room. They had participated in them with whole heartedly and fully enjoyed them. As some of the researches in the field like **Fung, Lee, & Chow (2007)** found that students realize the importance of developing overall competences, by joining co-curricular activities and working collaboratively with their student peers on academic work in order to gain hands-on experience : perception of physical self, personal self, social self, identity, and self-satisfaction (**Finkenberg, 1990**). Vulnerability to major depression is determined by how satisfied we are with our lives (**Locke & Latham, 1990, 1990b; Kreitner & Kinicki, 2007**).

Conclusion: After analyzing the above results, the following conclusions may be drawn :

- iii. Medium of Instruction differences more positively affects to the Hindi medium students' Perception about Content of Physics Course (CPC) than that of their English medium counter parts.
- iv. Medium of Instruction equally influence to both the urban & rural area Students' Perception about CPC and area differences hasn't any significant impact on Senior Secondary School Students' Perception about Content of Physics Course (CPC).
- v. Medium of Instruction affects more positively to the Female Students' Perception about Content of Physics Course (CPC) in comparison to that of male students.
- vi. Proper representation has been given to physics curriculum of National Institute of Open Schooling (NIOS) at the Sr. Secondary stage.
- vii. Curricular reform is urgently needed in the existing curriculum of physics of National Institute of Open Schooling (NIOS) at the Sr. Secondary stage.



References :

- Cunnings worth, A. (1995). Choosing your course book. Oxford: Heinemann.
- Flowerdew, J., & Peacock, M. (2001). The EAP curriculum: Issues, methods, and challenges. In J. Flowerdew & M. Peacock (Eds.), Research perspectives on English for academic purposes (pp. 177-194). Cambridge: Cambridge University Press.
- Gatehouse, K. (2001). Key issues in English for specific purposes (ESP) curriculum development. TESL Journal, 7 (10) (online). Retrieved July 9, 2007, from <http://iteslj.org/articles/gatehouse-ESP.html>
- Longman, D. G., & Atkinson, R. H. (2002). College learning and study skills (6th ed.). California: Thomson/Wadsworth.
- Lynch, B. K. (1996). Language program evaluation: Theory and practice. Cambridge: Cambridge University Press.
- Mahdavi-Zafarghandi, A. (2005). Failure of meeting EST objectives. Proceedings of the First National ESP/EAP Conference. Tehran,2 (1), 144-153.
- McDonough, J. (1984). ESP in perspective: A practical guide. London: Collins ELT.
- Nutan, D. (1999). The learner-centred curriculum (10th printing). Cambridge: Cambridge University Press.
- Pandey, Dheeraj K. (2008). Vishwavidyalaya star par adhyayanrat samanya jati, anusoochit jati tatha janjati ke chhatra-chhatraon ke vibhinna jivan moolyaon ka tulnatmak adhyayan. Unpublished M. Ed. Dissertation, Department of Education, Tilak Degree College, Auraiya, U.P., India.
- Pandey, Dheeraj K. (2009). A study of the effects of internet uses on mental health, adjustment and stress of adolescents. Unpublished M. Phil. Dissertation, Department of Education, C.S.J.M. University, Kanpur, U. P., India.
- Pandey, Dheeraj K. (2015). College teachers' life satisfaction in relation to their spiritual intelligence and job satisfaction. Unpublished PGDHE Project, School of Education, IGNOU, New Delhi, India.
- Pandey, Priyanka (2022). Education for peace: Self-instructional package for teacher educators. Retrieved, June 12, 2022, from www.uis.unesco.org/Education/Documents/fs30-teachers-en.pdf
- Payne, E., & Whittaker, L. (2000). Developing essential study skills. Essex: Pearson Education.



-
- Rahimian, M. (2005). Developing communicative syllabus in ESP/EAP classes and how to deal with it in EFL situations. Proceedings of the First National ESP/EAP Conference. Tehran, 2 (1), 86-98.
 - Rea-Dickins, P. (2002). Classroom assessment. In T. Hedge (Ed.), Teaching and learning in the language classroom (3rd ed.) (pp. 375-401). Oxford: Oxford University Press.
 - Richards, J. C. (2007). Curriculum development in language teaching (8th printing). New York: Longman.
 - Van Blerkom, D. L. (2003). College study skills: Becoming a strategic learner (4th ed.). California: Thomson/Wadsworth.