# Opinion of Senior Secondary School Students about their Science curriculum in Uttar Pradesh 

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#### Abstract

: Students' opinion about their science curriculum was sought. The items in the questionnaire were related to physics, chemistry and biology textbooks and curriculum. It covered all aspects of curriculum. The results were found in terms of the percentage of frequency of responses. Findings of the study have been presented. The conclusion has been given based on the findings. Index Terms: Science curriculum, secondary school education, text books, syllabus I. Introduction: Science text books occupy an important place in the secondary school curriculum. A country's development depends much upon scientific developments. At senior secondary school level, science includes subjects like physics, chemistry and biology. Students willingly opt subjects at senior secondary school level. The difficulty level of courses increase on moving from secondary school level to senior secondary school level. The study aims to find out the difficulty level of science text books for XI and XII students of science. It is based on the information collected from the students regarding science text books based on the questionnaire given to them. In the end findings are presented.


## II. Objectives of the study:

(i) To find out the difficulty level for students regarding textbooks of physics, chemistry and biology for classes XI and XII in Uttar Pradesh
(ii) To suggest measures for improvement based on the findings of the study.

## III. Methodology of the study:

The study is based on the data collected from English medium schools following CBSE curriculum from Agra, Aligarh, Lucknow, Allahabad and Bareilly. The total respondents were 600 students of science stream from PCB group (physics, chemistry and biology). They were given questionnaires which contained items related to science text books. The items covered different aspects of syllabus in the text books of Physics, Chemistry and Biology. Analysis of data was done based on the percentage of responses. Then finally the findings regarding the science text books are given.
IV. Given below are the responses of class XI students of PCB towards the statements given in the questionnaire about Physics, Chemistry and Biology Curriculum.
(1) The content of the textbook is:

| Students, <br> response <br> towards | Easy |  | Difficult |  | Apt (understandable) |  |
| :--- | :---: | :---: | :---: | :---: | :---: | :---: |
|  | Frequency <br> of response | \%age of <br> response | Frequency <br> of response | \%age of <br> response | Frequency <br> of response | \%age of <br> response |
| Physics | 148 | 24.667 | 250 | 41.667 | 202 | 33.667 |
| Chemistry | 148 | 24.667 | 146 | 24.333 | 306 | 51.000 |
| Biology | 73 | 12.167 | 129 | 21.500 | 398 | 66.333 |
| Total | 369 | 20.5 | 525 | 29.166 | 906 | 50.333 |

(2) Subject matter in the textbook is

| Students, <br> response <br> towards | Interesting |  | Not very interesting |  | Boring |  |
| :--- | :---: | :---: | :---: | :---: | :---: | :---: |
|  | Frequency <br> of response | \%age of <br> response | Frequency <br> of response | \% age of <br> response | Frequency <br> of response | \%age of <br> response |
| Physics | 210 | 45.000 | 267 | 44.500 | 123 | 20.500 |
| Chemistry | 212 | 35.333 | 268 | 44.667 | 120 | 20.000 |
| Biology | 421 | 70.167 | 158 | 26.333 | 21 | 3.500 |
| Total | 843 | 46.833 | 693 | 38.5 | 264 | 14.667 |

(3) Textbooks are

| Students' <br> response <br> towards | Lengthy |  | Short |  | Appropriate |  |
| :--- | :---: | :---: | :---: | :---: | :---: | :---: |
|  | Frequency <br> of response | \%age of <br> response | Frequency <br> of response | \%age of <br> response | Frequency <br> of response | \%age of <br> response |
| Physics | 257 | 42.833 | 43 | 7.167 | 300 | 50.000 |
| Chemistry | 292 | 48.667 | 92 | 15.333 | 216 | 36.000 |
| Biology | 396 | 66.000 | 06 | 1.000 | 198 | 33.000 |
| Total | 945 | 52.5 | 141 | 7.833 | 714 | 39.666 |

(4) Curriculum is

| Students, <br> response <br> towards |  <br> comprehensive |  | Narrow and limited |  | Heavy and <br> burdensome |  |
| :--- | :---: | :---: | :---: | :---: | :---: | :---: |
|  | Frequency <br> of response | \% age of <br> response | Frequency <br> of response | \%age of <br> response | Frequency <br> of response | \%age of <br> response |
| Physics | 264 | 44.000 | 89 | 14.833 | 247 | 41.167 |
| Chemistry | 312 | 52.000 | 67 | 11.167 | 221 | 36.833 |
| Biology | 399 | 66.500 | 05 | 0.833 | 196 | 32.667 |
| Total | 975 | 54.166 | 161 | 8.944 | 664 | 36.888 |

(5) Textbooks are

| Students, <br> response <br> towards | Cheap |  | Affordable |  | Costly |  |
| :--- | :---: | :---: | :---: | :---: | :---: | :---: |
|  | Frequency <br> of response | \%age of <br> response | Frequency <br> of response | \%age of <br> response | Frequency <br> of response | \%age of <br> response |
| Physics | 42 | 7.000 | 363 | 60.500 | 195 | 32.500 |
| Chemistry | 175 | 29.167 | 227 | 37.833 | 198 | 33.000 |
| Biology | 150 | 25.000 | 292 | 48.667 | 158 | 26.333 |
| Total | 367 | 20.388 | 882 | 49.000 | 551 | 30.611 |

(6) Division of course into semesters for class XI is

| Students, <br> response <br> towards | Beneficial |  | Not very beneficial |  | Semester pattern and <br> annual pattern of <br> studies are equally <br> good |  |
| :--- | :---: | :---: | :---: | :---: | :---: | :---: |
|  | Frequency <br> of response | \%age of <br> response | Frequency <br> of response | \%age of <br> response | Frequency <br> of response | \%age of <br> response |
| Physics | 216 | 36.000 | 203 | 33.833 | 181 | 30.167 |
| Chemistry | 284 | 47.333 | 229 | 38.167 | 87 | 14.500 |
| Biology | 296 | 49.333 | 208 | 34.667 | 96 | 16.000 |
| Total | 796 | 44.222 | 640 | 35.555 | 364 | 20.222 |

(7) Your syllabus is integrated with Information Technology

| Students' <br> response <br> towards | Yes |  | No |  | Can't say |  |
| :--- | :---: | :---: | :---: | :---: | :---: | :---: |
|  | Frequency <br> of response | \%age of <br> response | Frequency <br> of response | \%age of <br> response | Frequency <br> of response | \%age of <br> response |
| Physics | 216 | 36.000 | 315 | 52.500 | 69 | 11.500 |
| Chemistry | 244 | 40.667 | 284 | 47.333 | 72 | 12.000 |
| Biology | 170 | 28.333 | 394 | 65.667 | 36 | 06.000 |
| Total | 630 | 35.000 | 993 | 55.166 | 177 | 09.833 |

(8) Physics, Chemistry and Biology curriculum is mutually correlated

| Students' <br> response <br> towards | Yes |  | No |  | Can't say |  |
| :--- | :---: | :---: | :---: | :---: | :---: | :---: |
|  | Frequency <br> of response | \%age of <br> response | Frequency <br> of response | \%age of <br> response | Frequency <br> of response | \%age of <br> response |
| Physics | 286 | 47.667 | 261 | 43.500 | 53 | 8.833 |
| Chemistry | 316 | 52.667 | 218 | 36.333 | 66 | 11.000 |
| Biology | 191 | 31.833 | 363 | 60.500 | 46 | 7.667 |
| Total | 793 | 44.055 | 842 | 46.777 | 165 | 09.166 |

(9) Textbooks provide you with sufficient material on the subject

| Students' <br> response <br> towards | Yes |  | No |  | Can't say |  |
| :--- | :---: | :---: | :---: | :---: | :---: | :---: |
|  | Frequency <br> of response | \%age of <br> response | Frequency <br> of response | \%age of <br> response | Frequency <br> of response | \%age of <br> response |
| Physics | 367 | 61.167 | 220 | 36.667 | 13 | 2.167 |
| Chemistry | 513 | 85.500 | 70 | 11.667 | 17 | 2.833 |
| Biology | 292 | 48.667 | 258 | 43.000 | 50 | 8.333 |
| Total | 1172 | 65.111 | 548 | 30.444 | 80 | 04.444 |

(10) Time frame of the school is sufficient enough to cover the course content of the textbooks.

| Students' <br> response <br> towards | Yes |  | No |  | Can't say |  |
| :--- | :---: | :---: | :---: | :---: | :---: | :---: |
|  | Frequency <br> of response | \%age of <br> response | Frequency <br> of response | \%age of <br> response | Frequency <br> of response | \%age of <br> response |
| Physics | 234 | 39.000 | 343 | 57.167 | 23 | 3.833 |
| Chemistry | 370 | 61.667 | 205 | 34.167 | 25 | 4.167 |
| Biology | 172 | 28.667 | 400 | 66.667 | 28 | 4.667 |
| Total | 776 | 43.111 | 948 | 52.666 | 76 | 04.222 |

(11) Curriculum is sufficient enough to develop scientific attitude and skills required at senior secondary school level

| Students' <br> response <br> towards | Yes |  | No |  | Can't say |  |
| :--- | :---: | :---: | :---: | :---: | :---: | :---: |
|  | Frequency <br> of response | \%age of <br> response | Frequency <br> of response | \%age of <br> response | Frequency <br> of response | \%age of <br> response |
| Physics | 413 | 68.833 | 172 | 28.667 | 15 | 2.500 |
| Chemistry | 555 | 92.500 | 40 | 6.667 | 05 | 0.833 |
| Biology | 417 | 69.500 | 170 | 28.333 | 13 | 2.167 |
| Total | 1385 | 76.944 | 382 | 21.222 | 33 | 01.833 |

(12) Curriculum is complete in itself

| Students, <br> response <br> towards | Yes |  | No |  | Can't say |  |
| :--- | :---: | :---: | :---: | :---: | :---: | :---: |
|  | Frequency <br> of response | \%age of <br> response | Frequency <br> of response | \%age of <br> response | Frequency <br> of response | \%age of <br> response |
| Physics | 407 | 67.833 | 170 | 28.333 | 23 | 3.833 |
| Chemistry | 463 | 77.167 | 118 | 19.667 | 19 | 3.167 |
| Biology | 526 | 87.667 | 33 | 5.500 | 41 | 6.833 |
| Total | 1396 | 77.555 | 321 | 17.833 | 83 | 04.611 |

(13) Curriculum is community based

| Students' <br> response <br> towards | Yes |  | No |  | Can't say |  |
| :--- | :---: | :---: | :---: | :---: | :---: | :---: |
|  | Frequency <br> of response | \%age of <br> response | Frequency <br> of response | \%age of <br> response | Frequency <br> of response | \%age of <br> response |
| Physics | 316 | 52.667 | 265 | 44.167 | 19 | 3.167 |
| Chemistry | 261 | 43.500 | 331 | 55.167 | 08 | 1.333 |
| Biology | 276 | 46.000 | 220 | 36.667 | 104 | 17.333 |
| Total | 853 | 47.388 | 816 | 45.333 | 131 | 07.277 |

(14) Curriculum encourages learning by doing

| Students, <br> response <br> towards | Yes |  | No |  | Can't say |  |
| :--- | :---: | :---: | :---: | :---: | :---: | :---: |
|  | Frequency <br> of response | \%age of <br> response | Frequency <br> of response | \%age of <br> response | Frequency <br> of response | \%age of <br> response |
| Physics | 444 | 74.000 | 149 | 24.833 | 07 | 1.167 |
| Chemistry | 373 | 62.167 | 193 | 32.167 | 34 | 5.667 |
| Biology | 241 | 40.167 | 230 | 38.333 | 129 | 21.500 |
| Total | 1058 | 58.777 | 572 | 31.777 | 170 | 09.444 |

(15) The language of textbook is lucid, simple and precise

| Students' <br> response <br> towards | Yes |  | No |  | Can't say |  |
| :--- | :---: | :---: | :---: | :---: | :---: | :---: |
|  | Frequency <br> of response | \%age of <br> response | Frequency <br> of response | \%age of <br> response | Frequency <br> of response | \%age of <br> response |
| Physics | 473 | 78.833 | 127 | 21.167 | 00 | 0.000 |
| Chemistry | 443 | 73.833 | 152 | 25.333 | 05 | 0.833 |
| Biology | 416 | 69.333 | 168 | 28.000 | 16 | 2.667 |
| Total | 1332 | 74.000 | 447 | 24.833 | 21 | 01.166 |

(16) The textbooks contain necessary examples, figures, graphs, etc.

| Students' <br> response <br> towards | Yes |  | No |  | Can't say |  |
| :--- | :---: | :---: | :---: | :---: | :---: | :---: |
|  | Frequency <br> of response | \%age of <br> response | Frequency <br> of response | \%age of <br> response | Frequency <br> of response | \%age of <br> response |
| Physics | 396 | 66.000 | 201 | 33.500 | 03 | 0.500 |
| Chemistry | 322 | 53.667 | 255 | 42.500 | 23 | 3.833 |
| Biology | 358 | 59.667 | 79 | 13.167 | 163 | 27.167 |
| Total | 1076 | 59.777 | 535 | 29.722 | 189 | 10.500 |

(17) Prescribed curriculum increases curiosity and power of reasoning and observation

| Students, <br> response <br> towards | Yes |  | No |  | Can't say |  |
| :--- | :---: | :---: | :---: | :---: | :---: | :---: |
|  | Frequency <br> of response | \%age of <br> response | Frequency <br> of response | \%age of <br> response | Frequency <br> of response | \%age of <br> response |
| Physics | 526 | 87.667 | 55 | 9.167 | 19 | 3.167 |
| Chemistry | 314 | 52.333 | 260 | 43.333 | 26 | 04.333 |
| Biology | 246 | 41.000 | 290 | 48.333 | 64 | 10.667 |
| Total | 1086 | 60.333 | 605 | 33.611 | 109 | 06.055 |

(Q18) Experiments given in the textbooks are feasible to be performed in your school laboratory

| Students' <br> response <br> towards | Yes |  | No |  | Can't say |  |
| :--- | :---: | :---: | :---: | :---: | :---: | :---: |
|  | Frequency <br> of response | \%age of <br> response | Frequency <br> of response | \%age of <br> response | Frequency <br> of response | \%age of <br> response |
| Physics | 319 | 53.167 | 258 | 43.000 | 23 | 3.833 |
| Chemistry | 307 | 51.167 | 280 | 46.667 | 13 | 2.167 |
| Biology | 407 | 67.833 | 156 | 26.000 | 37 | 6.167 |
| Total | 1033 | 57.388 | 694 | 38.555 | 73 | 04.055 |

Q19.The new course is sufficient enough to help you compete All India Medical, Engineering and other entrance examinations

| Students, <br> response <br> towards | Yes |  | No |  | Can't say |  |
| :--- | :---: | :---: | :---: | :---: | :---: | :---: |
|  | Frequency <br> of response | \%age of <br> response | Frequency <br> of response | \%age of <br> response | Frequency <br> of response | \%age of <br> response |
| Physics | 506 | 84.333 | 82 | 13.667 | 12 | 2.000 |
| Chemistry | 289 | 48.167 | 284 | 47.333 | 27 | 4.500 |
| Biology | 329 | 54.833 | 213 | 35.500 | 58 | 9.667 |
| Total | 1124 | 62.444 | 579 | 32.166 | 97 | 05.388 |

V. Given below are the responses of class XII students of PCB towards the statements given in Questionnaire about Physics, Chemistry and Biology Curriculum.
(1) The content of the textbook is

| Students, <br> response <br> towards | Easy |  | Difficult |  | Apt (understandable) |  |
| :--- | :---: | :---: | :---: | :---: | :---: | :---: |
|  | Frequency <br> of response | \%age of <br> response | Frequency <br> of response | \%age of <br> response | Frequency <br> of response | \%age of <br> response |
| Physics | 186 | 31.000 | 178 | 29.667 | 236 | 39.333 |
| Chemistry | 84 | 14.000 | 113 | 18.833 | 403 | 67.167 |
| Biology | 117 | 19.500 | 42 | 7.000 | 441 | 73.500 |
| Total | 387 | 21.50 | 233 | 12.944 | 1080 | 60.000 |

(2) Subject matter in the textbook is

| Students' <br> response <br> towards | Interesting |  | Not very interesting |  | Boring |  |
| :--- | :---: | :---: | :---: | :---: | :---: | :---: |
|  | Frequency <br> of response | \%age of <br> response | Frequency <br> of response | \%age of <br> response | Frequency <br> of response | \%age of <br> response |
| Physics | 316 | 52.667 | 256 | 42.667 | 28 | 4.667 |
| Chemistry | 270 | 45.000 | 233 | 38.833 | 97 | 16.167 |
| Biology | 439 | 73.167 | 141 | 23.500 | 20 | 3.333 |
| Total | 1025 | 56.944 | 630 | 35.000 | 145 | 08.055 |

(3) Textbooks are

| Students, <br> response <br> towards | Lengthy |  | Short |  | Appropriate |  |
| :--- | :---: | :---: | :---: | :---: | :---: | :---: |
|  | Frequency <br> of response | \%age of <br> response | Frequency <br> of response | \%age of <br> response | Frequency <br> of response | \%age of <br> response |
| Physics | 216 | 36.000 | 66 | 11.000 | 318 | 53.000 |
| Chemistry | 217 | 36.167 | 76 | 12.667 | 307 | 51.167 |
| Biology | 423 | 70.500 | 18 | 3.000 | 159 | 26.500 |
| Total | 856 | 47.555 | 160 | 08.888 | 784 | 43.555 |

(4) Curriculum is

| Students, <br> response <br> towards |  <br> comprehensive |  | Narrow and limited |  | Heavy and <br> burdensome |  |
| :--- | :---: | :---: | :---: | :---: | :---: | :---: |
|  | Frequency <br> of response | \%age of <br> response | Frequency <br> of response | \%age of <br> response | Frequency <br> of response | \%age of <br> response |
| Physics | 301 | 50.167 | 106 | 17.667 | 193 | 32.167 |
| Chemistry | 349 | 58.167 | 58 | 9.667 | 193 | 32.167 |
| Biology | 396 | 66.000 | 28 | 4.667 | 176 | 29.333 |
| Total | 1046 | 58.111 | 192 | 10.666 | 562 | 31.222 |

(5) Textbooks are

| Students, <br> response <br> towards | Cheap |  | Affordable |  | Costly |  |
| :--- | :---: | :---: | :---: | :---: | :---: | :---: |
|  | Frequency <br> of response | \%age of <br> response | Frequency <br> of response | \%age of <br> response | Frequency <br> of response | \%age of <br> response |
| Physics | 93 | 15.500 | 378 | 63.000 | 129 | 21.500 |
| Chemistry | 186 | 31.000 | 301 | 50.167 | 113 | 18.833 |
| Biology | 210 | 35.000 | 312 | 52.000 | 78 | 13.000 |
| Total | 489 | 27.166 | 991 | 55.055 | 320 | 17.777 |

(6) Division of science course into semesters classes XI and XII is

| Students, <br> response <br> towards | Beneficial |  | Not very beneficial |  | Semester pattern and <br> annual pattern of <br> studies are equally <br> good |  |
| :--- | :---: | :---: | :---: | :---: | :---: | :---: |
|  | Frequency <br> of response | \%age of <br> response | Frequency <br> of response | \%age of <br> response | Frequency <br> of response | \%age of <br> response |
| Physics | 312 | 52.000 | 82 | 13.667 | 206 | 34.333 |
| Chemistry | 263 | 43.833 | 178 | 29.667 | 159 | 26.500 |
| Biology | 251 | 41.833 | 246 | 41.000 | 103 | 17.167 |
| Total | 826 | 45.888 | 506 | 28.111 | 468 | 26.000 |

(7) Your syllabus is integrated with Information Technology

| Students, <br> response <br> towards | Yes |  | No |  | Can't say |  |
| :--- | :---: | :---: | :---: | :---: | :---: | :---: |
|  | Frequency <br> of response | \%age of <br> response | Frequency <br> of response | \%age of <br> response | Frequency <br> of response | \%age of <br> response |
| Physics | 122 | 20.333 | 406 | 67.667 | 72 | 12.000 |
| Chemistry | 231 | 38.500 | 273 | 45.500 | 96 | 16.000 |
| Biology | 196 | 32.667 | 369 | 61.500 | 35 | 5.833 |
| Total | 549 | 30.500 | 1048 | 58.222 | 203 | 11.277 |

(8) Physics, Chemistry and Biology curriculum is mutually correlated

| Students, <br> response <br> towards | Yes |  | No |  | Can't say |  |
| :--- | :---: | :---: | :---: | :---: | :---: | :---: |
|  | Frequency <br> of response | \%age of <br> response | Frequency <br> of response | \%age of <br> response | Frequency <br> of response | \%age of <br> response |
| Physics | 312 | 52.000 | 225 | 37.500 | 63 | 10.500 |
| Chemistry | 347 | 57.833 | 194 | 32.333 | 59 | 9.833 |
| Biology | 176 | 29.333 | 373 | 62.167 | 51 | 8.500 |
| Total | 835 | 46.388 | 792 | 44.000 | 173 | 9.611 |

(9) Textbooks provide you with sufficient material on the subject

| Students' <br> response <br> towards | Yes |  | No |  | Can't say |  |
| :--- | :---: | :---: | :---: | :---: | :---: | :---: |
|  | Frequency <br> of response | \%age of <br> response | Frequency <br> of response | \%age of <br> response | Frequency <br> of response | \%age of <br> response |
| Physics | 401 | 66.833 | 170 | 28.333 | 29 | 4.833 |
| Chemistry | 401 | 66.833 | 176 | 29.333 | 23 | 3.833 |
| Biology | 273 | 45.500 | 283 | 47.167 | 44 | 7.333 |
| Total | 1075 | 59.722 | 629 | 34.944 | 96 | 05.333 |

(10) Time frame of the school is sufficient enough to cover the course content of the textbooks.

| Students' <br> response <br> towards | Yes |  | No |  | Can't say |  |
| :--- | :---: | :---: | :---: | :---: | :---: | :---: |
|  | Frequency <br> of response | \%age of <br> response | Frequency <br> of response | \%age of <br> response | Frequency <br> of response | \%age of <br> response |
| Physics | 321 | 53.500 | 252 | 42.000 | 27 | 4.500 |
| Chemistry | 311 | 51.833 | 272 | 45.333 | 17 | 2.833 |
| Biology | 398 | 66.333 | 175 | 29.167 | 27 | 4.500 |
| Total | 1030 | 57.222 | 699 | 38.833 | 71 | 03.944 |

(11) Curriculum is sufficient enough to develop scientific attitude and skills required at senior secondary school level

| Students, <br> response <br> towards | Yes |  | No |  | Can't say |  |
| :--- | :---: | :---: | :---: | :---: | :---: | :---: |
|  | Frequency <br> of response | \%age of <br> response | Frequency <br> of response | \%age of <br> response | Frequency <br> of response | \%age of <br> response |
| Physics | 328 | 54.667 | 243 | 40.500 | 29 | 04.833 |
| Chemistry | 423 | 70.500 | 128 | 21.333 | 49 | 08.167 |
| Biology | 297 | 49.500 | 285 | 47.500 | 18 | 03.000 |
| Total | 1048 | 58.222 | 656 | 36.444 | 96 | 05.333 |

(12) Curriculum is complete in itself

| Students, <br> response <br> towards | Yes |  | No |  | Can't say |  |
| :--- | :---: | :---: | :---: | :---: | :---: | :---: |
|  | Frequency <br> of response | \%age of <br> response | Frequency <br> of response | \%age of <br> response | Frequency <br> of response | \%age of <br> response |
| Physics | 350 | 58.333 | 191 | 31.833 | 59 | 09.833 |
| Chemistry | 482 | 80.333 | 107 | 17.833 | 11 | 01.833 |
| Biology | 432 | 72.000 | 129 | 21.500 | 39 | 06.500 |
| Total | 1264 | 70.222 | 427 | 23.722 | 109 | 06.055 |

(13) Curriculum is community based

| Students, <br> response <br> towards | Yes |  | No |  | Can't say |  |
| :--- | :---: | :---: | :---: | :---: | :---: | :---: |
|  | Frequency <br> of response | \%age of <br> response | Frequency <br> of response | \%age of <br> response | Frequency <br> of response | \%age of <br> response |
| Physics | 268 | 44.667 | 305 | 50.833 | 27 | 4.500 |
| Chemistry | 206 | 34.333 | 317 | 52.833 | 77 | 12.833 |
| Biology | 251 | 41.833 | 271 | 45.167 | 78 | 13.000 |
| Total | 725 | 40.277 | 893 | 49.611 | 182 | 10.111 |

(14) Curriculum encourages learning by doing

| Students' <br> response <br> towards | Yes |  | No |  | Can't say |  |
| :--- | :---: | :---: | :---: | :---: | :---: | :---: |
|  | Frequency <br> of response | \%age of <br> response | Frequency <br> of response | \%age of <br> response | Frequency <br> of response | \%age of <br> response |
| Physics | 572 | 95.333 | 15 | 2.500 | 13 | 2.167 |
| Chemistry | 317 | 52.833 | 227 | 37.833 | 56 | 9.333 |
| Biology | 287 | 47.833 | 251 | 41.833 | 62 | 10.333 |
| Total | 1176 | 65.333 | 493 | 27.388 | 131 | 07.277 |

(15) The language of textbook is lucid, simple and precise

| Students' <br> response <br> towards | Yes |  | No |  | Can't say |  |
| :--- | :---: | :---: | :---: | :---: | :---: | :---: |
|  | Frequency <br> of response | \%age of <br> response | Frequency <br> of response | \%age of <br> response | Frequency <br> of response | \%age of <br> response |
| Physics | 498 | 83.000 | 91 | 15.167 | 11 | 01.833 |
| Chemistry | 450 | 75.000 | 123 | 20.500 | 27 | 04.500 |
| Biology | 423 | 70.500 | 164 | 27.333 | 13 | 02.167 |
| Total | 1371 | 76.166 | 378 | 21.000 | 51 | 02.833 |

(16) The textbooks contain necessary examples, figures, graphs, etc.

| Students' <br> response <br> towards | Yes |  | No |  | Can't say |  |
| :--- | :---: | :---: | :---: | :---: | :---: | :---: |
|  | Frequency <br> of response | \%age of <br> response | Frequency <br> of response | \%age of <br> response | Frequency <br> of response | \%age of <br> response |
| Physics | 217 | 36.167 | 360 | 60.000 | 23 | 3.833 |
| Chemistry | 271 | 45.167 | 277 | 46.167 | 52 | 8.667 |
| Biology | 404 | 67.333 | 164 | 27.333 | 32 | 5.333 |
| Total | 892 | 49.555 | 801 | 44.500 | 107 | 05.944 |

(17) Prescribed curriculum increases curiosity and power of reasoning and observation

| Students' <br> response <br> towards | Yes |  | No |  | Can't say |  |
| :--- | :---: | :---: | :---: | :---: | :---: | :---: |
|  | Frequency <br> of response | \%age of <br> response | Frequency <br> of response | \%age of <br> response | Frequency <br> of response | \%age of <br> response |
| Physics | 328 | 54.667 | 207 | 34.500 | 65 | 10.833 |
| Chemistry | 308 | 51.333 | 260 | 43.33 | 32 | 05.333 |
| Biology | 286 | 47.667 | 254 | 42.333 | 60 | 10.000 |
| Total | 922 | 51.222 | 721 | 40.055 | 157 | 08.722 |

(18) Experiments given in the textbooks are feasible to be performed in your school laboratory

| Students, <br> response <br> towards | Yes |  | No |  | Can't say |  |
| :--- | :---: | :---: | :---: | :---: | :---: | :---: |
|  | Frequency <br> of response | \%age of <br> response | Frequency <br> of response | \%age of <br> response | Frequency <br> of response | \%age of <br> response |
| Physics | 345 | 57.500 | 227 | 37.833 | 28 | 04.667 |
| Chemistry | 301 | 50.167 | 285 | 47.500 | 14 | 02.333 |
| Biology | 448 | 74.667 | 129 | 21.500 | 23 | 03.833 |
| Total | 1094 | 60.777 | 641 | 35.611 | 65 | 03.611 |

## VII. Findings of the Majority of Students of class XI and XII about their NCERT Science textbooks and Science curriculum

## Opinion about Physics textbooks and Curriculum:

1. Class XI students had an opinion that content of Physics textbook is difficult. Whereas class XII students found the Physics textbooks apt i.e. according to their mental level.
2. Class XI students found the subject matter in the textbook not very interesting. Whereas, class XII students found it to be interesting.
3. They found the textbooks neither lengthy nor short but appropriate.
4. They found the curriculum to be wide and comprehensive.
5. Textbooks were found to be neither cheap nor costly but affordable.
6. Division of course into semesters for classes XI and XII is beneficial for the students.
7. Their syllabus was not integrated with Information Technology, that is no use of IT was made for the study of Physics.
8. The curricula of Physics, Chemistry and Biology are mutually correlated.
9. Physics textbooks provided them with sufficient material on the subject.
10. Class XI students felt that course content in the books is too much and it cannot be covered within the school hours. Whereas, class XII students felt that course content of Physics textbook was sufficient enough to be covered within the timeframe of the school hours.
11. They also felt that Physics curriculum is sufficient enough to develop scientific attitude and skills required at senior secondary school level.
12. Curriculum was found to be complete in itself. This is a requirement for a good curriculum.
13. According to them curriculum was community based i.e. it is related to the needs of the community and related to community life.
14. They also had an opinion that Physics curriculum encouraged learning by doing.
15. They found the language of the textbook to be lucid, simple and precise.
16. Class XI students said that the textbooks contained necessary examples, figures, graphs etc. But class XII students felt that it did not have necessary examples, figures, graphs etc.
17. Both class XI and XII students felt that the prescribed curriculum increases curiosity and power of reasoning and observation.
18. They said that the experiments given in the textbooks were feasible to be performed in their school laboratory.
19. They also said that the new course was sufficient enough to help the students compete All India Medical, Engineering and other entrance examinations.

## VIII. Opinion about Chemistry and Biology textbooks and curriculum:

1. Both class XI \& XII students found the contents of the Chemistry and Biology textbooks to be neither easy nor difficult but apt. i. e. it was according to their mental level.
2. Class XI students found the subject matter in the Chemistry textbook not very interesting, whereas the class XII students found it to be interesting. But they found Biology textbooks quite interesting.
3. Class XI students found the Chemistry textbooks lengthy, whereas class XII students found them neither lengthy nor short but appropriate. Biology textbooks of class XI \& XII were found to be lengthy by them.
4. Both Chemistry and Biology curriculum was found to be wide and comprehensive.
5. Chemistry as well as Biology textbooks according to the students were neither cheap nor costly but affordable.
6. Division of Chemistry and Biology course into semesters for class XI and XII was found to be beneficial for them.
7. Their syllabus of Chemistry and Biology was not integrated with Information Technology, that is no use of IT was made for the study of Chemistry and Biology.
8. The curriculum of Chemistry is correlated with that of Physics and Biology. But the curriculum of Biology is not correlated with Physics and Chemistry.
9. Chemistry textbooks provided them sufficient material on the subject. Class XI students found that their Biology textbook provided sufficient material on the subject, but class XII students said that it did not provide sufficient material on the subject.
10. Course content in the Chemistry textbooks was sufficient enough to be covered within the timeframe of the school. Class XI students found that Biology course was too much and it couldn't be covered within the school hours, but class XII course was sufficient enough to be covered within the school hours.
11. Chemistry and Biology curriculum was found to be sufficient enough to develop scientific attitude and skills required at senior secondary school level.
12. Chemistry and Biology curriculum was found to be complete in itself.
13. Chemistry curriculum according to them was not community based i.e. it was not organically related to community life. Class XI students found the curriculum in Biology to be community based, but class XII students said that it was not community based i.e. it was not related to community life.
14. The Chemistry and Biology curriculum encouraged learning by doing.
15. The language of the Chemistry and Biology textbooks was found to be lucid, simple and precise.
16. Class XI students found that the Chemistry textbook contained necessary examples, figures, graphs etc. whereas, a majority of class XII students found that their book did not contain necessary examples, figures, graphs etc. But they found both Biology class XI and XII textbooks contained necessary examples, figures, graphs etc.
17. They found that the prescribed Chemistry curriculum increases curiosity and power of reasoning and observation. Whereas class XI students said that Biology syllabus did not increase curiosity and power of reasoning and observation, but class XII course increased curiosity and power of reasoning and observation.
18. They also said that the experiments given in the Chemistry and Biology textbooks were feasible to be performed in their school laboratory.
19. According to them new course in Chemistry and Biology was sufficient enough to help them compete Medical, Engineering and other entrance examinations.

## IX. Conclusion:

Based on the above findings, some changes can be brought about in the science textbooks that is physics, chemistry and biology textbooks prescribed for senior secondary classes in Uttar Pradesh.

## References:

Journal of Research in Science Teaching, Vol. 41, Issue 3, March 2004.
Karim, P.I.A. An Analysis of the Contents of the History textbooks followed in Kerala Schools with a view to Developing Models and Materials for National Integration, Dept. of Education, Kerala University, UGC Financed, 1982.

Kher, S.V. A Critical Evaluation of History Textbook for Standard VI, College of Education, Dhule, 1972 (MSBTPCR - Financed), 1972.

NCERT. Preparation and Evaluation of Textbooks in Biology, 1972.
NCERT. Preparation and Evaluation of Textbooks on General Science, New Delhi: NCERT, 1973

NCERT: Curriculum Load at the School level, Report of NCERT, New Delhi, 1984.
NCERT: National Curriculum Framework for School Education 2000 - A Discussion Document, pp. 2979.

Textbook of Biology for class XI, NCERT, New Delhi, 2015.

Textbook of Biology for class XII, NCERT, New Delhi, 2015.
Textbook of Chemistry for class XI, NCERT, New Delhi, 2015.

Textbook of Chemistry for class XII, NCERT, New Delhi, 2015.
Textbook of Physics for class XI, NCERT, New Delhi, 2015.

Textbook of Physics for class XII, NCERT, New Delhi, 2015.

