

Analysis of Biology Text-Book Prescribed By NCERT for Eleventh Class

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Abstract

Text-books are most widely used as teaching instrument in the whole world. These are the basic tools which plays important role in the teaching-learning process. A good text-book is one which is the source of knowledge arranged systematically and it enables the reader to acquire the needed information quickly. Present research study was conducted on 100eleventh class Biology students of Government schools of Chandigarh along with Biology teachers and experts. The questionnaire for analyzing the Biology textbook of eleventh class was constructed and validated by the investigator. evaluate the NCERT Biology text book for eleventh class in terms of format, availability, price, realization of curriculum objectives, language, content suitability and presentation of subject matter, examples and illustrations and learning exercises and assignments.

KEYWORDS: Analysis, Biology, Text-book, Biology text-book, NCERT

INTRODUCTION

Text books are standard works or manuals of instructions in a subject study. They are written on the basis of prescribed syllabus in which major ideals of the subject matter are selected and summarized judiciously. A text book is never failing friend of the students as well as teachers. In the developing countries like India, text book is the most important tool for teaching and learning process.

Dr. D.S. Kothari, “The question of textbooks is the most important and urgent one for our country. Energetic action on State and National basis is required to progress the preparation of high quality school textbooks.”

Some are of the opinion that the textbook is only one of the many ideas through which teacher and pupil communicate with one another in an effort to carry forward the learning process (**Yadav, 1993**)

From the above definitions it can be concluded that text book is manual of instruction with a definite subject of study, revealing of national ideas, ideals and values, systematically arranged for a specific level of study. So it is an important instrument of teaching learning process.

Analysis can be defined as the examination and evaluation of the relevant information to select the best course of action from among various alternatives. The content analysis is useful for examining trends and patterns in documents. Stemler and Bebell (1998) conducted a content analysis of school mission statements to make some inferences about what schools hold as their primary reasons for existence. Textbook analysis is the systematic analysis of the text materials including the structure, the focus, and special learning assists. Teachers may assume the text is “sacred” and follow it without thought or write it off as useless. Either approach is a disservice to students. Many textbook

publishers and writers have developed texts with useful elements. There are many ways to analyze a textbook, depending on the intent of the analysis. Purchasers may want to know reading levels, costs, ancillary costs, etc. After the text has been purchased, however, the analysis by the teacher, which can help instruction include the Structure of the Text, the Focus of the Author, and the usefulness of the learning assists.

Walavalkar (1971) attempted to critically evaluate the Mathematics textbooks for standard II , III and IV through perceptions of teachers , students and parents based on questionnaire and achievement test and found that the text books were generally suited to the capacity of the pupils, text material was related to the day to day life of the pupils and the material was appropriate for creating pupils interest in Mathematics.

Solanki (1977) conducted that the textbooks for Mathematics, Science, Crafts and other activities did not contain anything directly related to the tribals. In comparison to all other subjects more material related to the tribal could be found in Geography textbooks.

Sharma (1981) did comparative and analytical study of the text books of General Science as prescribed according to the old and new syllabus of the middle standard examination of H.P. Board of School Education. The major findings were: The old book scored over the new book, so far as its meeting the objectives of teaching General Science to middle standard is concerned. General plan of the typical science topics included in the old textbooks was better than new textbook of General Science. Presentation of old textbook of general Science was better as compared to the new one on the aspects of style, vocabulary and concreteness. The illustrations given in the old textbook were more accurate as compared to the illustrations in the new textbook. Charts and diagrams were appropriate in size, value and proportion in the old textbook as compared to the new one.

Shandil (1984) conducted study on the evaluation of prescribed science textbook for eighth class students of public schools in Shimla of Himachal Pradesh. The conclusions of the study were: The students, teachers and headmasters were of the opinion that style of writing the content is effective, contents are up-to-date, contents are not beyond the comprehension of the students and teachers are well trained to teach the content. The language of the book was understandable to the students. Exercises and assignments in the textbooks were not beyond the comprehension of the students. The book was available only with the prominent book sellers in Himachal Pradesh. The illustrations in the book were accurate, appealing to the students and are of good quality and are appropriately placed.

Bhatia (1987) conducted another important study regarding evaluation of Sindhi Textbook for standard VIII to X prescribed in secondary schools of Maharashtra state. The study employed descriptive research design and the method of purposive random sampling was used for the selection of the sample. The major findings were: Content selected for the textbook was helpful in achieving the instructional objectives of the Sindhi language and helped in achieving the national goals. Generally the content of the textbooks was based on psychological principles. The glossary of new word was given at the end of the lessons in the text book. Sometimes the difficult words were neglected. The number of prose lessons given in the textbook was less whereas the number of the poems

was more. There were spelling mistakes in the textbook, but errata were not given in the book. The cover page was not attractive enough to catch the eye of the students.

OBJECTIVES OF THE STUDY

The objectives of the study are:

To evaluate the NCERT Biology text book for eleventh class in terms of following:

1. Format
2. Availability
3. Price
4. Realization of curriculum objectives
5. Language
6. Content suitability and presentation of subject matter
7. Examples and illustrations
8. Learning exercises and assignments.

DELIMITATIONS OF THE STUDY

The study was limited to the NCERT Biology text-book prescribed for the eleventh standard on few selected variables as discussed in the objectives of the study.

SAMPLE AND SAMPLING TECHNIQUE

The target population in the present study comprised of eleventh class Biology students of Government schools of Chandigarh along with Biology teachers and experts. The data was collected on the basis of the random selection. For conducting the present study, firstly five Government schools were selected randomly and then the sample of 100 Biology students were selected at random.

TOOL EMPLOYED

In the present study, the questionnaire for analyzing the Biology textbook of eleventh class was constructed and validated by the investigator herself. Here this self-devised questionnaire was used as an instrument to analyze the textbook under study.

STATISTICAL TECHNIQUES USED

First of all the frequencies of the responses of the students, teachers and experts were scored, then these frequencies were converted into the percentages of the responses. Finally the 't' test technique was followed after converting the data into frequencies and percentages.

ANALYSIS OF DATA AND INTERPRETATION OF RESULTS

For the purpose of arriving at meaningful conclusions, data must be processed and analyzed to draw proper influences. In this study technique of 't' test for finding out the significance of the difference between the two percents was applied. For this the data were converted into percentages from frequencies of the responses obtained from students, teachers and experts on the items pertaining to the different aspects of evaluation of Biology textbook for eleventh class in Chandigarh.

OBJECTIVE: 1**Evaluation of the NCERT Biology text book for eleventh class in terms of Format**

The percentage of the responses of students, teachers and experts along with their CR values computed by comparing these groups among themselves for all the nine items under Format are given in the tables 1.1 and 1.2

Table – 1.1

**Percentages of Responses made by Students (S), Teachers (T) and Experts (E)
Regarding all the Nine Items Under (Format-A)**

S.No.	Items	Respondents	Agreed	Uncertain	Disagreed
A-1	The size of the book is handy.	S	90	05	05
		T	100	00	00
		E	100	00	00
2	The cover is artistically designed.	S	71	07	22
		T	60	20	20
		E	40	70	20
3	The cover is sufficiently strong.	S	75	10	15
		T	80	20	00
		E	60	20	20
4	The binding is good enough to last a year.	S	73	12	15
		T	100	00	00
		E	60	00	40
5	The quality of paper is good.	S	82	11	07
		T	60	20	20
		E	80	00	20
6	It is difficult to put the book in the school bag.	S	20	13	67
		T	00	20	80
		E	00	00	100
7	The stitching of the book has not been properly done.	S	29	17	54
		T	20	00	80
		E	20	00	80
8	The printing of the letters is appropriate.	S	70	15	15
		T	80	20	00
		E	100	00	00
9	The appearance of the book is effective.	S	68	15	17
		T	80	20	00
		E	80	20	00

Table-1.2**Critical Ratio values among Students and Teachers (S-T), Teachers and Experts (T-E) and Students and Experts (S-E) Under Format – A**

Item No.	(S – T)		(T – E)		(S – E)	
	Agree	Disagree	Agree	Disagree	Agree	Disagree
A-1	0.74	0.51	0.0	0.00	0.74	0.51
2	0.53	0.11	0.63	0.00	1.47	0.11
3	0.25	0.94	0.69	1.05	0.75	0.30
4	1.35	0.94	1.58	1.58	0.63	1.48
5	1.22	1.07	0.69	0.00	0.11	1.07
6	1.11	0.61	0.00	1.05	1.11	1.55
7	0.43	1.14	0.00	0.00	0.43	1.14
8	0.48	0.94	1.05	0.00	1.45	0.94
9	0.56	1.01	0.00	0.00	0.56	1.01

RESULTS

The students, teachers and experts are of the opinion that:

- The size of the book is handy.
- The cover is sufficiently strong.
- The binding is good enough to last a year.
- It is not difficult to put the book in the school bag.
- The stitching of the book has been done properly.
- The printing of the letters is appropriate.
- The appearance of the book is effective to some extent.

The students and experts are of the opinion that:

- The quality of the paper is good but teacher's opinion is divided, some are agreed with the statement that quality of the paper is good while some disagreed and few remained uncertain about the fact.

The students and teachers are of the opinion that:

- The cover of the book is artistically designed while the experts opinion is equally divided i.e. some experts agreed with this statement while some were uncertain and few were disagreed with this statement.

OBJECTIVE: 2**Evaluation of the NCERT Biology text book for eleventh class in terms of availability**

The percentage of the responses of students, teachers and experts along with their CR values computed by comparing these groups among themselves for all the five items under availability are given in the tables 2.1 and 2.2

Table 2.1
Percentages of Responses made by Students (S), Teachers (T) and Experts (E) for all the items under Availability – B

S.No.	Items	Respondents	Agreed	Uncertain	Disagreed
B-1	The book is available in the market throughout the year.	S	81	07	12
		T	100	00	00
		E	100	00	00
2	The book is available in the market in the beginning of the sessio	S	74	13	13
		T	80	00	20
		E	80	00	20
3	The book is available in the market in the middle of the session.	S	76	10	14
		T	80	20	00
		E	60	00	40
4	The book is available at a cost higher than its original cost.	S	11	18	71
		T	00	20	80
		E	00	00	100
5	The book is available only with prominent book sellers of Chandigarh.	S	47	15	38
		T	40	20	40
		E	00	00	100

Table – 2.2
Critical Ratio values among Students and Teachers (S-T), Teachers and Experts (T-E) and Students and Experts (S-E) under Availability – B

Item No.	(S – T)		(T – E)		(S – E)	
	Agree	Disagree	Agree	Disagree	Agree	Disagree
B-1	1.08	0.82	0.00	0.00	1.08	0.82
2	0.30	0.45	0.00	0.00	0.30	0.45
3	0.20	0.90	0.69	1.58	0.81	1.58
4	0.78	0.43	0.00	1.05	0.78	1.42
5	0.31	0.09	1.58	2.07	2.06	2.75

RESULTS

Most of the students, teachers and experts are of the opinion that:

- The book is available in the market throughout the year.
- The book is available in the market in the beginning of the session.
- The book is available in the market in the middle of the session.
- The book does not available at higher cost than its original cost.

The experts are of the opinion that:

- The book is available only with prominent book sellers of Chandigarh while the students and teachers have different opinions.

OBJECTIVE: 3

Evaluation of the NCERT Biology text book for eleventh class in terms of Price

The percentage of the responses of students, teachers and experts along with their CR values computed by comparing these groups for all the three items under price are given in the tables 3.1 and 3.2 respectively.

Table 3.1
Percentages of Responses made by Students (S), Teachers (T) and Experts (E) Regarding (Price – C)

S.No.	Items	Respondents	Agreed	Uncertain	Disagreed
C-1	The book is cheap in comparison to other books in the market.	S	58	13	29
		T	100	00	00
		E	100	00	00
2	The price of the book is moderate.	S	47	15	38
		T	100	00	00
		E	80	20	00
3	The students below poverty line cannot afford to buy this book.	S	33	15	52
		T	40	20	40
		E	20	40	40

Table 3.2
Critical Ratio values among Students and Teachers (S-T), Teachers and Experts (T-E) and Students and Experts (S-E) Under Price – C

Item No.	(S – T)		(T – E)		(S – E)	
	Agree	Disagree	Agree	Disagree	Agree	Disagree
C-1	1.87	1.42	0.00	0.00	1.87	1.42
2	2.31	1.73	1.05	0.00	1.44	1.73
3	0.32	0.52	0.69	1.58	0.61	0.52

RESULTS

Most of the students, teachers and experts are of the opinion that:

- The book is cheap in comparison to other books in the market.
- The students below poverty line can afford to buy this book, but many students, teachers and the experts are of the opinion that the students below poverty line cannot afford to buy this book.

Teachers and experts are of the opinion that:

- The price of the book is moderate, while students have different opinions for this statement.

OBJECTIVE: 4

Evaluation of the NCERT Biology text book for eleventh class in terms of realization of curriculum objectives

The percentage of the responses of students, teachers and experts along with their CR values computed by comparing these groups for all the six items under realization of curriculum objectives are given in the tables 4.1 and 4.2 respectively.

Table 4.1
Percentages of Responses made by Students (S), Teachers (T) and Experts (E) Regarding (Realisation of Curriculum Objectives – D)

S.No.	Items	Respondents	Agreed	Uncertain	Disagreed
D-1	There is a central theme, which correlates the whole textbook.	S	63	20	17
		T	80	00	20
		E	100	00	00
2	The text book is organized into units	S	82	13	05
		T	80	20	00
		E	100	00	00
3	The organization makes use to topics already taught in school.	S	64	19	17
		T	60	20	20
		E	100	00	00
4	The text-book contains all the topics necessary for student's purpose.	S	52	20	28
		T	60	20	20
		E	100	00	00
5	The historical development of Science is given some place.	S	68	24	08
		T	40	20	40
		E	100	00	00
6	The social significance of science is stressed.	S	60	15	25
		T	40	40	20
		E	60	20	20

Table 4.2
Critical Ratio values among Students and Teachers (S-T), Teachers and Experts (T-E) and Students and Experts (S-E) Under Realisation of Curriculum Objectives - D

Item No.	(S – T)		(T – E)		(S – E)	
	Agree	Disagree	Agree	Disagree	Agree	Disagree
D-1	0.77	0.17	1.05	1.05	1.69	1.01
2	0.11	0.51	1.05	0.00	1.04	0.51
3	0.18	0.17	1.58	1.05	1.66	1.01
4	0.35	0.39	1.58	1.05	2.10	1.38
5	1.30	2.38	2.07	1.58	1.52	0.66
6	0.89	0.25	0.63	0.00	0.00	0.25

RESULTS

The students, teachers and experts are of the opinion that:

- There is a central theme, which correlates the whole textbook.
- The text book is organized into units.
- The organization makes use of the topics already taught in school.
- The text-book contains all the topics necessary for student's purpose.

The experts and students are of the opinion that:

- The historical development of Science is given some place, while teachers have equally divided opinion about this statement.
- The social significance of science is stressed, while teachers have different opinions about this statement.

OBJECTIVE: 5

Evaluation of the NCERT Biology text book for eleventh class in terms of language

The percentage of the responses of students, teachers and experts along with their CR values computed by comparing these groups for all the four items under language are given in the tables 5.1 and 5.2 respectively.

Table 5.1
Percentages of Responses made by Students (S), Teachers (T) and Experts (E) Regarding (Language - E)

S.No.	Items	Respondents	Agreed	Uncertain	Disagreed
E-1	The language of the book is within the	S	88	07	05
		T	100	00	00

	Comprehension of the Students.	E	100	00	00
2	The technical words are fully explained before using them.	S	62	14	24
		T	60	20	20
		E	100	00	00
3	The language used is simple and clear.	S	58	28	14
		T	80	00	20
		E	80	20	00
4	The headings of the sub topics are not written.	S	18	19	63
		T	20	20	60
		E	00	20	80

Table 5.2
Critical Ratio values among Students and Teachers (S-T), Teachers and Experts (T-E) and Students and Experts (S-E) under Language - E

Item No.	(S - T)		(T - E)		(S - E)	
	Agree	Disagree	Agree	Disagree	Agree	Disagree
E-1	0.82	0.51	0.00	0.00	0.82	0.51
2	0.09	0.20	1.58	1.05	1.73	1.25
3	0.98	0.37	0.00	1.05	0.98	0.90
4	0.11	0.14	1.05	0.69	1.04	0.77

RESULTS

Most of the students, teachers and experts are of the opinion that:

- The language of the book is within the Comprehension of the Students.
- The technical words are fully explained before using them.
- The language used is simple and clear.
- The headings of the sub topics are written in the book.

OBJECTIVE: 6

Evaluation of the NCERT Biology text book for eleventh class in terms of content suitability and presentation of subject matter

The percentage of the responses of students, teachers and experts along with their CR values computed by comparing these groups for all the eighteen items under content suitability and presentation of subject matter are given in the tables 6.1 and 6.2 respectively.

Table 6.1
Percentages of Responses Made By Students (S), Teachers (T) and Experts (E) Regarding (Content Suitability and Presentation of Subject Matter-F)

S.No.	Items	Respondents	Agreed	Uncertain	Disagreed
F-1	The content is organized systematically.	S	52	18	30
		T	100	00	00
		E	100	00	00
2	The content covers the whole syllabus prescribed by the CBSE.	S	47	07	46
		T	100	00	00
		E	100	00	00
3	The contents are up-to-date.	S	73	12	15
		T	80	00	20
		E	100	00	00
4	The style of writing the contents is effective.	S	65	15	20
		T	40	20	40
		E	60	00	40
5	The contents are beyond the reach of the students.	S	49	25	26
		T	40	20	40
		E	00	00	100
6	The teachers are well trained to reach the contents.	S	73	19	08
		T	40	20	40
		E	60	00	40
7	The contents are arrangement in the logical sequence.	S	77	13	10
		T	60	20	20
		E	100	00	00
8	The whole subject matter is divided into units.	S	57	12	31
		T	100	00	00
		E	60	40	00
9	Each unit opens with an introduction.	S	64	09	27
		T	100	00	00
		E	100	00	00
10	Subject matter is organized from simple to complex.	S	72	14	14
		T	80	00	20
		E	100	00	00
11	Subject matter is up to the age and grade level of students.	S	79	11	10
		T	100	00	00
		E	100	00	00
12	The content arouses interest in the students.	S	63	17	20
		T	80	00	20
		E	100	00	00
13	Graphs and diagrams in the books are helpful in understanding the concepts.	S	64	23	13
		T	100	00	00
		E	100	00	00

14	There is continuity in the subject matter.	S	62	29	09
		T	80	20	00
		E	100	00	00
15	The contribution of Biology to society is beautifully stressed.	S	68	18	14
		T	80	00	20
		E	80	20	00
16	The content develops the observation and experimental skills in the students.	S	52	16	32
		T	60	20	20
		E	80	00	20
17	Each unit concludes with a summary.	S	57	20	23
		T	100	00	00
		E	100	00	00
18	Dates given in the book are in revised form.	S	63	09	28
		T	80	00	20
		E	100	00	00

Table 6.2
Critical Ratio values among Students and Teachers (S-T), Teachers and Experts (T-E) and Students and Experts (S-E) under Realisation of Curriculum Objectives - D

Item No.	(S – T)		(T – E)		(S – E)	
	Agree	Disagree	Agree	Disagree	Agree	Disagree
F-1	2.10	1.45	0.00	0.00	2.10	1.45
2	2.31	2.02	0.00	0.00	2.31	2.02
3	0.35	0.30	1.05	1.05	1.35	0.94
4	1.14	1.07	0.63	0.00	0.23	1.07
5	0.39	0.69	1.58	-2.07	2.14	3.54
6	1.59	2.38	0.63	0.00	0.63	2.38
7	0.87	0.71	1.58	1.05	1.21	0.74
8	1.91	1.48	1.58	0.00	0.13	1.48
9	1.66	1.35	0.00	0.00	1.66	1.35
10	0.39	0.37	1.05	1.05	1.38	0.90
11	1.15	0.74	0.00	0.00	1.15	0.74
12	0.77	0.00	1.05	1.05	1.69	1.11
13	1.66	0.86	0.00	0.00	1.66	0.86
14	0.81	0.70	1.05	0.00	1.73	0.70
15	0.56	0.37	0.00	1.05	0.56	0.90
16	0.35	0.56	0.69	0.00	1.22	0.56
17	1.91	1.21	0.00	0.00	1.91	1.21
18	0.77	0.39	1.05	1.05	1.69	1.38

RESULTS

The students, teachers and experts are of the opinion that:

- The content is organized systematically.
- The content covers the whole syllabus prescribed by the CBSE.
- The contents are up-to-date.
- The contents are arrangement in the Logical sequence.
- The whole subject matter is divided into units.
- Each unit opens with an introduction.
- Subject matter is organized from simple to complex.
- Subject matter is up to the age and grade level of students.
- The content arouses interest in the students.
- Graphs and diagrams in the books are helpful in understanding the concepts.
- There is continuity in the subject matter.
- The contribution of Biology to society is beautifully stressed.
- The content develops the observation and experimental skills in the students.
- Each unit concludes with a summary.
- Dates given in the book are in revised form.

Most of the experts and students are of the opinion that:

- The style of writing the contents is effective.
- The teachers are well trained to reach the contents.

Teachers and students are of the opinion that:

- The contents are beyond the reach of the students, while the experts strongly agreed that the contents are within the reach of the students.

OBJECTIVE: 7

Evaluation of the NCERT Biology text book for eleventh class in terms of Examples / Illustrations

The percentage of the responses of students, teachers and experts along with their CR values computed by comparing these groups for all the seven items under examples / illustrations are given in the tables 7.1 and 7.2 respectively.

Table – 7.1
Percentages of Responses made by Students (S), Teachers (T) And Experts (E) Regarding (Examples / Illustrations - G)

S.No.	Items	Respondents	Agreed	Uncertain	Disagreed
G-1	There is sufficient number of illustrations.	S	75	06	19
		T	80	00	20
		E	100	00	00
2	Examples are properly placed.	S	65	15	20
		T	60	20	20
		E	100	00	00

3	Illustrations enhance the reasoning power among students.	S	74	12	14
		T	100	00	00
		E	100	00	00
4	Diagrams are not self-explanatory.	S	36	10	54
		T	40	00	60
		E	00	00	100
5	Illustrations are of correct size & accurate.	S	74	07	19
		T	100	00	00
		E	100	00	00
6	Quality of illustrations is remarkable.	S	55	17	28
		T	60	20	20
		E	60	40	00
7	The photographs are large & clear.	S	46	20	34
		T	100	00	00
		E	80	20	00

Table 7.2

Critical Ratio values among Students and Teachers (S-T), Teachers and Experts (T-E) as well as Students and Experts (S-E) Under Examples / Illustrations - G

Item No.	(S – T)		(T – E)		(S – E)	
	Agree	Disagree	Agree	Disagree	Agree	Disagree
G-1	0.25	0.06	1.05	1.05	1.28	1.08
2	0.23	0.00	1.58	1.05	1.62	1.11
3	1.31	0.90	0.00	0.00	1.31	0.90
4	0.18	0.26	1.58	1.58	1.66	2.02
5	1.31	1.08	0.00	0.00	1.31	1.08
6	0.22	0.39	0.00	1.05	0.22	1.38
7	2.36	1.59	1.05	0.00	1.49	1.59

RESULTS

The students, teachers and experts are of the opinion that:

- There is sufficient number of illustrations.
- Examples are properly placed.
- Illustrations enhance the reasoning power among students.
- Illustrations are of correct size & accurate.
- Illustrations are of correct size & accurate.
- Quality of illustrations is remarkable.

Teachers and experts are of the opinion that:

- The photographs are large & clear, while students have varied opinions about this statement.

Experts are of the opinion that:

- Diagrams are self-explanatory, while some teachers and students are of the opinion that the diagrams are not self-explanatory.

OBJECTIVE: 8

Evaluation of the NCERT Biology text book for eleventh class in terms of Learning Exercises And Assignments

The percentage of the responses of students, teachers and experts along with their CR values computed by comparing these groups for all the eight items under learning exercises and assignments are given in the tables 8.1 and 8.2 respectively.

Table 8.1
Percentages of Responses made by Students (S), Teachers (T) and Experts (E) Regarding (Learning Exercises and Assignments - H)

S.No.	Items	Respondents	Agreed	Uncertain	Disagreed
H-1	Exercises and assignments in the book are beyond the comprehension of the students.	S	48	18	34
		T	40	00	60
		E	00	20	80
2	Conceptual learning is the main focus of Learning exercises and assignments.	S	66	13	21
		T	80	20	00
		E	100	00	00
3	Assignments do not cover the whole lesson.	S	32	15	53
		T	20	00	80
		E	00	20	80
4	Assignments are not related to the subject matter.	S	52	12	36
		T	00	20	80
		E	00	00	100
5	Exercises in the text-book do not motivate the Student.	S	39	25	36
		T	20	20	60
		E	00	00	100
6	Further readings suggested in the exercises are available in the school library.	S	65	16	19
		T	80	20	00
		E	100	00	00
7	Exercise helps the students for applying knowledge and Skills in practical situations.	S	68	14	18
		T	100	00	00
		E	100	00	00
8	Sample question papers of CBSE pattern are given at the end.	S	17	30	53
		T	00	20	80
		E	20	40	40

Table 8.2
Critical Ratio values among Students and Teachers (S-T), Teachers and Experts (T-E) as well as Students and Experts (S-E) under Learning Exercises and Assignments - H

Item No.	(S – T)		(T – E)		(S – E)	
	Agree	Disagree	Agree	Disagree	Agree	Disagree
H-1	0.35	1.19	1.58	0.69	2.10	2.09
2	0.65	1.15	1.05	0.00	1.59	1.15
3	0.56	1.18	1.05	0.00	1.52	1.18
4	2.27	1.98	0.00	1.05	2.27	2.86
5	0.85	1.08	1.05	1.58	1.76	2.86
6	0.69	1.08	1.05	0.00	1.62	1.08
7	1.52	1.04	0.00	0.00	1.52	1.04
8	1.01	1.18	1.05	1.29	0.17	0.57

RESULTS

The students, teachers and experts are of the opinion that:

- Conceptual learning is the main focus of Learning exercises and assignments.
- Assignments do not cover the whole lesson.
- Further readings suggested in the exercises are available in the school library.
- Exercise helps the students for applying knowledge and Skills in practical situations.

Teachers and students are of the opinion that:

- Sample question papers of CBSE pattern are not given at the end, while experts have equally divided opinions i.e. some of the experts believed that the Sample question papers of CBSE pattern are not given at the end and few agreed that sample papers are given while some remained uncertain about this statement.

Teachers and experts are of the opinion that:

- Exercises and assignments in the book are not beyond the comprehension of the students.
- Assignments are related to the subject matter.
- Exercises in the text-book motivate the student.
- All these three opinions stand true on the ground that the teachers and experts being more experienced and know better about the level of understanding and skills required for the students at certain age level.

EDUCATIONAL IMPLICATIONS

In the light of the findings of the present study, the following educational implications are laid down to improve the prescribed NCERT Biology textbook for the students of eleventh class.

1. The students believe that the book is available only with the prominent book sellers of Chandigarh. Hence it is suggested that Board of School Education should ensure the availability of the book throughout the Chandigarh.
2. Some of the students believe that the students below poverty line cannot afford to buy this book. Hence, it is suggested that price of this book should be less than the present day price or there should be discount on this book for the students below poverty line.
3. The teachers and students are of the view that the contents of this book are beyond the comprehension of the students. Hence, it is suggested that the refresher courses may be organized for the in-service teachers before introducing the new books for the different subject courses, so that the teachers may be well equipped with the pre-requisite skills to teach the students effectively.
4. Teachers believe that historical development of science is not given any place and importance in the book. Hence it is suggested that to include the historical and social significance of the science in the revised edition of the book.
5. Teachers and students are of the view that some assignments in the book are not related to the subject matter. So, it is suggested to add assignments related to the subject matter and these assignments should be more effective, interesting and helpful to the students to enhance their skills and knowledge of the subject matter.
6. The teachers and experts are of the opinion that all the teachers are not well trained to teach the students. Hence, it is suggested that required training and refreshers courses should be conducted for the teachers from time to time so that they can develop an required teaching competences and skills for effective and successful teaching.
7. Teachers and students are of the opinion that the sample question papers of CBSE pattern are not given in the book. Hence, it is suggested that the sample papers of the CBSE exam pattern should be added to the book so that the students can get acquainted with the final exam pattern conducted by the CBSE. Also, the students can prepare themselves well for their next higher board class.

SUGGESTIONS FOR FURTHER STUDY

Following suggestions are made for the future researchers to conduct studies on the following aspects in relation to the evaluation of the textbook:

- 1) Impact of the NCERT textbooks on attitude of the students of Government and private schools.
- 2) The evaluation of the training programs conducted by the State Institute of Education for teaching NCERT textbooks in the schools.
- 3) Evaluation of a textbook prescribed by the CBSE, ICSE and State Board of Education at primary, middle, secondary and senior secondary levels in different school subjects can be undertaken.
- 4) The comparative study about the changes in the curriculum and the relevance of the prescribed textbooks to these changes can be studied.
- 5) The effect of in-service training courses on the teachers and views regarding the evaluation of textbooks can be studied.

- 6) Attitude of students, parents, teachers and administrators towards NCERT textbooks of various subjects in various Government and private students can be studied.

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