CHAPTER - IV

ANALYSIS AND INTERPRETATION

CONTENTS:

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ANALYSIS AND INTERPRETATION OF DATA

This chapter deals with the analysis and interpretation of data collected in the third and fourth phase of the study. The data thus collected were analysed and interpreted in three phases. The phase-wise analysis are presented in this chapter.

PHASE - I

The data were collected with the help of the three rating scales in the following manner.

1. From the science teachers by Teacher Self-Evaluation sheet (TSES)
2. From the head-masters by Teacher Evaluation Sheet (TES-H)
3. From the students by Teacher Evaluation Sheet (TES-P).

Data thus collected were subjected to different statistical analysis and results are reported here competency-wise.

4.1 ANALYSIS AND INTERPRETATION OF DATA FOR THIRTY COMPETENCIES

4.1 COMPETENCY OF SELECTION OF CONTENT (C_1):

This competency is comprised of four sub-competencies, namely, the content is;

a. Appropriate to achieve the objectives

b. Relevant to achieve the objectives

c. Adequate to achieve the objectives

d. Helping to develop desirable attitude.

The Means and SDs of each sub-competency possessed by the science teachers as well as Mean and SD of aggregate scores for C_1 were also calculated on the basis of the self-rating scale.

The Means and SDs for competency C_1 rated by the headmasters and the students for the science teachers were also calculated.

TABLE 4.1 (a) Means and SDs of the Scores of the Three rating Scales for C_1.

Rating by		Competencies	Mean	SD
Science Teachers (Self)	C_1	Selection of Content:		
		a. appropriate to achieve the objectives.	4.25	0.78
		b. relevant to achieve the objectives	4.05	0.83
		c. adequate to achieve the objectives	3.81	0.86
		d. helps to develop desirable attitude	3.82	0.88
		Aggregate - C_1	3.98	0.86
Headmasters	C_1	Selection of Content	4.01	0.76
Students	C_1	Selection of Content	4.04	0.92

From the Means it is found that the Mean Scores of all the sub-competencies are quite nearer to the score 'often' in the rating scale and valued as 4. Thus, it is inferred that the science teachers use these sub-competencies 'often' in selecting the content to achieve the objectives of C_1. The SD values indicate that the teachers are homogeneous in respect of the compatency C_1.

To compare the rating of science teachers-selves with head-masters and science teachers with students, t-values were calculated as shown in Table 4.1 (b).

TABLE 4.1 (b) Significance of the Mean Differences of Ratings by the Three Groups of Respondents for C_1.

Categories of Response	Mean	t-Value
Science Teachers and Head-masters	3.98 4.01	0.32 *
Science Teachers and Students	3.98 4.04	0.70 *

* Not Significant at 0.05 level.

These t-Values are not significant. It means that there is no different of opinion between head-masters and science teachers and between the science teachers and the students in

respect of teachers' competency C_1. In other words it can be said that both head-masters and students rated high for the science teachers for competency C_1 i.e. competency of selection of content.

4.2 COMPETENCY OF ORGANIZING CONTENT (C_2):

This competency is comprised of three sub-competencies. The Means and SDs of each sub-competency possessed by the science teachers as well as the Mean and SD of the aggregate scores were calculated on the basis of the TSES. The Means and SDs for competency C_2 rated by the head-masters and students for the science teachers were also calculated. The results are presented in Table 4.2 (a).

TABLE 4.2 (a) Means and SDs of the Scores of the Three Rating Scales for C_2.

Rating by		Competencies	Mean	S.D.
	C_2	Organizing Content:		
Science Teachers (Self)		a. Logically (linked with previous units)	3.81	0.88
		b. Psychologically organised	3.07	1.10
		c. Systematically organised	3.79	1.08
		Aggregate (C_2)	3.56	1.08
Head-masters	C_2	Organizing content	3.59	0.91
Students	C_2	Organizing content	3.72	0.96

From the table it is found that the Mean values of sub-competency 'a' and 'e' respectively are quite closer to the category 'often'. Which indicates that the science teachers 'often' organise content logically and systematically but the Mean value of sub-competency 'b' indicates that the teacher 'sometimes' organize content psychologically. The SD values indicate that the teachers are heterogeneous in respect of the competency C_2.

To compare the rating of science teachers (self) with head-masters; and science teachers (self) with students, t-values were calculated as shown in Table 4.2 (b).

TABLE 4.2 (b) Significance of the Mean Differences of Ratings by the Three Groups of Respondents for C_2.

Categories of Response	Mean	t-Value
Science Teachers	3.56	0.26 *
and		
Head-masters	3.59	
Science Teachers	3.56	
and		1.71 *
Students	3.72	

* Not-Significant at 0.05 level.

The t-values 0.26 and 1.71 respectively are not signi-

ficant. This result shows that there is no difference of opinion between head-masters and science teachers; between science teacher and students in respect of science teachers' competency C_2, i.e. competency of organizing content.

4.3 COMPETENCY OF IDENTIFYING AND STATING OBJECTIVES (C_3):

This competency is comprised of six sub-competencies. The Means and SDs of each sub-competency possessed by the science teachers as well as the Mean and SD of aggregate scores were calculated on the basis of the TSES. The Means and SDs for competency C_3 rated by the head-masters and the students for the science teachers were also calculated. The results are presented in Table 4.3 (a).

TABLE 4.3 (a) Means and SDs of the Scores of the Three Rating Scales for C_3.

Rating by	Competencies		Mean	S.D.
	C_3	Identifying and Stating Objectives		
Science Teachers (Self)		a. Represent the need of the secondary school science students.	3.79	0.83
		b. Build on the students' previous experience	3.61	0.92
		c. Lead to what they will study later in science	3.43	1.04
		d. Are clearly stated	3.42	1.08
		e. Are adequate	3.25	1.11
		f. Are attainable	3.39	1.06

Rating by	Competencies		Mean	S.D.
		Aggregate (C_3)	3.48	1.03
Head-masters	C_3	Identifying and Stating objectives	3.71	0.91
Students	C_3	Identifying and Stating objectives	3.75	0.89

Looking to the Mean Values in the table 4.3 (a), it is found that science teachers 'often' select objectives which based on, (a) the need of science students. (b) students previous experience. and [illegible]. The Mean values of the sub-competency 'c', 'd', 'e' and 'f' are quite closer to the score 'sometimes' and valued as 3, which indicates that the science teachers 'sometimes' State objectives clearly and adequately. The aggregate Mean value and the SD value indicate that the science teachers perform this competency 'sometimes' and the teachers are heterogeneous in respect of the competency C_3.

To compare the ratings of science teachers (self) with head-masters, and science teacher (self) with students, t-values were calculated as shown in Table 4.3 (b).

TABLE 4.3 (b) Significance of the Mean Differences of Ratings by the Three Groups of Respondents for C_3.

Categories of Response	Mean	t-Value
Science Teachers and Head-masters	3.48 3.71	2.04 **
Science Teachers and Students	3.48 3.75	3.08 **

** Significant at 0.05 level.

These t-Values 2.04 and 3.08 respectively are significant at 0.05 level. This result shows significant difference of opinion between head-masters and science teachers; between the science teachers and the students, in respect of science teachers' competency C_3, i.e. competency of identifying and stating objectives.

4.4 COMPETENCY OF CLASSIFYING OBJECTIVES ACCORDING TO DOMAINS (C_4):

This competency is comprised of three sub-competencies. The Means and SDs of each sub-competency possessed by the science teachers as well as the Mean and SD of the aggregate scores were calculated on the basis of the TSES. The Means and SDs for competency C_4 rated by the head-masters and students for the science teachers were also calculated. The results are presented in Table 4.4 (a).

4.4 (a) Means and SDs of the Scores of the Three Rating Scales for C_4.

Rating by		Competencies	Mean	S.D.
	C_4	Classify Objectives into Domain		
Science Teachers (Self)		a. Cognitive domain (involving intellectual process)	3.97	0.97
		b. Affective domain (involving feeling, attitude, interest)	3.40	1.11
		c. Psychomotor domain (involving manual skill)	2.96	1.18
		Aggregate (C_4)	3.44	1.17
Head-masters	C_4	Classifying objectives into Domain	3.03	1.05
Students	C_4	Classifying objectives into Domain	3.64	1.00

From the Mean value it is found that the science teachers can identify objectives related to cognitive domain 'often' and the SD computed against this sub-competency is 0.97, which indicates that the teachers are homogenious in respect of this sub-competency. The Mean value of sub-competency 'b' & 'c' are closer to the 3rd column of the rating scale which means that the science teachers 'sometimes' able to identify the affective and psychomotor type of objectives. The SD value indicates that the teachers are heterogeneous in respect of the competency C_4.

To find out the difference between the ratings of science teachers (self) and the head-masters; and science teachers (self) and students the t-value were calculated as shown in Table 4.4 (b).

TABLE 4.4 (b) Significance of the Mean Differences of Ratings by the Three Groups of Respondents for C_4.

Category of Response	Mean	t-Value
Science Teachers and Head-masters	3.44 3.03	3.18 **
Science Teachers and Students	3.44 3.64	2.03 **

** Significant at 0.05 level

These t-values 3.18 and 2.03 respectively are significant at 0.05 level. This result shows a significant difference of opinion between head-masters and science teachers; between the science teachers and the students, in respect of science teachers' competency C_4, i.e. competency of classifying objectives according to domain.

4.5 COMPETENCY OF SELECTING THE TEACHING METHODS (C_5):

This competency is comprised of three sub-competencies.

The Means and SDs of each sub-competency, and the Mean and SD of aggregate scores were calculated on the basis of the TSES. The Means and SDs for competency C_5 rated by the head-masters and the students for the competency of the science teachers were also calculated. The results are presented in Table 4.5 (a).

TABLE 4.5 (a) Means and SDs of the Scores of the Three Rating Scales for C_5.

Rating by		Competencies	Mean	S.D.
Science Teachers (Self)	C_5	Selecting the Teaching Methods:		
		a. Appropriate to the students being instructed.	3.99	0.87
		b. Most appropriate for handling the topic	3.46	0.91
		c. Suitable to learn facts, concepts and principles.	3.44	1.04
		Aggregate (C_5)	3.65	0.96
Head-masters	C_5	Selecting the Teaching Methods	3.45	1.16
Students	C_5	Selecting the Teaching Methods	3.67	0.93

The Mean value of sub-competency 'a' is 3.99, indicates that the science teachers 'often' select the methods which are appropriate for the students being instructed. The Mean values

of sub-competency 'b' and 'c' respectively indicate that the methods selected by the science teachers are 'sometimes' appropriate for teaching the topic and suitable to inform facts and principles. The SD values indicate that the teachers are homogenous in respect of the competency C_5.

To find out the difference between the ratings of science teachers (self) and the head-masters; and science teachers (self) and students the t-values were calculated as shown in Table 4.5 (b).

TABLE 4.5 (b) Significance of the Mean Difference of Ratings by the Three Groups of Respondents for C_5.

Category of Response	Mean	t-Value
Science Teachers and Head-masters	3.65 3.45	1.62 *
Science Teachers and Students	3.65 3.67	0.23 *

* Not Significant at 0.05 level.

The t-Values 1.62 and 0.23 respectively are not significant. These results indicate the unanimous agreement of all the categories of raters in respect of science teachers' competancy C_5, i.e. competency of selecting the teaching methods.

4.6 COMPETENCY OF CHOOSING TEACHING-AIDS (C_6):

This competency is comprised of four sub-competencies. The means and SDs of each sub-competency; and the Mean and SD of aggregate scores were calculated on the basis of the TSES.

The Means and SDs for competency C_6 rated by the head-masters and the students for the competency of the science teachers were also calculated. The results are shown in the Table 4.6 (a) hereunder.

TABLE 4.6 (a) Means and SDs of the Scores of the Three Rating Scales for C_6.

Rating by		Competencies	Mean	S.D.
	C_6	Choosing the Teaching-aids		
Science Teacher (Self)		a. suited to the pupils	4.10	0.88
		b. related to the content	4.03	0.83
		c. adequate for attaining the objectives	3.96	0.85
		d. Easily available and less expensive	3.93	0.92
		Aggregate (C_6)	4.00	0.87
Head-masters	C_6	Choosing the Teaching-aids	3.49	0.90
Students	C_6	Choosing the Teaching-aids	3.44	0.99

From the above table it is found that the Mean scores are quite nearer to the score 'often' in the rating scale and valued as 4. Thus, it is inferred that the science teachers choose the teaching aids 'often' which are related to the content, adequate in number, less expensive and easily available. The SD Values indicates that the science teachers are homogeneous in respect of the competency C_6.

To find out the difference between the ratings of science teachers (self) and the head-masters; and science teachers (self) and students the t-values were calculated as shown in Table 4.6 (b).

TABLE 4.6 (b) Significance of the Mean Differences of Ratings by the Three Groups of Respondents for C_6.

Category of Response	Mean	t-Value
Science Teachers and Head-masters	4.00 3.49	4.97 **
Science Teachers and Students	4.00 3.44	6.17 **

** Significant at 0.05 level.

The t-values 4.97 and 6.17 respectively are significant at 0.05 level. This result shows a significant difference of

opinion between head-masters and science teachers; between science teachers and the students in respect of science teachers' competency C_6, i.e. competency of choosing teaching-aids.

4.7 COMPETENCY OF STRUCTURING WAYS OF EVALUATION (C_7):

This competency is comprised of three sub-competencies. The Means and SDs of each sub-competency, and the Mean and SD of aggregate scores were calculated on the basis of the TSES.

The Means and SDs for competency C_7 rated by the head-masters and by the students were also calculated. The results are presented in the Table 4.7 (a).

TABLE 4.7 (a) Means and SDs of the Scores of the Three Rating Scales for C_7.

Rating by		Competencies	Mean	S.D.
	C_7	Structuring ways of Evaluation:		
Science Teachers (Self)		a. Written test	4.43	0.83
		b. Oral test	3.62	0.85
		c. Observing the laboratory report, home-work, individual projects,	3.11	1.04
		Aggregate (C_7)	3.72	1.05
Head-masters	C_7	Structuring ways of Evaluation	3.75	0.97
Students	C_7	Structuring ways of Evalu.	3.56	1.07

From the table it is found that the Mean score of the sub-competency 'a' and 'b' are closer to the score 'often' in the rating scale and valued as 4. Thus, it is deduced that the science teachers 'often' take written test and oral test to evaluate the students. The Mean value of sub-competency 'c' is nearer to the score 'sometimes' in the rating scale and valued as 3.

Thus, it is inferred that the science teachers 'sometimes' use the technique of evaluation as mentioned in sub-competency 'c' under the competency C_7. The SD value indicates that the teachers are heterogeneous in respect of competency C_7.

To find out the difference between the ratings of science teachers (self) and the head-masters; and science teachers (self) and students the t-values were calculated as shown in Table 4.7(b).

TABLE 4.7 (b) Significante of the Mean Differences of Ratings by the Three Groups of Respondents for C_7.

Category of Response	Mean	t-Value
Science Teachers and Head-masters	3.72 3.75	0.25 *
Science Teachers and Students	3.72 3.56	1.65 *

* Not significant at 0.05 level

The t-values are not significant. These results show that there is no difference of opinion between head-masters and science teachers; and between science teachers and students in respect of science teachers' competency C_7, i.e. competency of structuring ways of evaluation.

4.8 COMPETENCY OF INTRODUCING LESSON AND SUSTAINING ATTENTION (C_8):

This competency is comprised of six sub-competencies. The Means and SDs of each sub-competency; and Mean and SD of aggregate scores were calculated on the basis of TSES.

The Means and SDs for the competency C_8 rated by the head-masters and the students for the competency of science teachers were also calculated. The results are presented in Table 4.8 (a).

TABLE 4.8 (a) Means and SDs of the Scores of the Three Rating Scales for C_8.

Rating by		Competencies	Mean	S.D.
	C_8	Introducing Lesson Creating interest and sustaining attention:		
Science Teachers (Self)		a. Introducing lesson by using students previous knowledge.	3.91	0.93
		b. Using appropriate device like, questioning, role playing etc.	3.20	0.94

Rating by		Competencies	Mean	S.D.
		c. Moving purposefully in the class	4.58	0.77
		d. Using facial cues and gesture	3.59	0.98
		e. Pausing meaningfully	3.33	1.04
		f. Oral-visual switching	2.75	0.92
		Aggregate (C_8)	3.56	1.09
Head-masters	C_8	Introducing lesson, creating interest and sustaining attention	3.58	0.93
Students	C_8	Introducing lesson, creating interest and sustaining attention.	3.45	1.06

From the Table 4.3 (a) it is found that the Mean value of sub-competencies 'a' and 'd' are quite nearer to the score 'often' in the rating scale and valued as 4. Thus, it is inferred that the science teachers 'often' perform these activities of the sub-competencies a, and d. The Mean score of sub-competencies 'c' is closer to the score 'always' in the rating scale and valued as 5. Thus, it is inferred that the science teachers 'always' perform this activity mentioned in sub-competency 'c'. The Mean scores of the sub-competency 'b' and 'f' are closer to the score 'sometimes' in the rating scale and valued as 3. This means that the science teachers 'sometimes' perform these activities of sub-competency 'e' and 'f'. The SD value indicates that the science teachers are heterogeneous in respect of the competency C_8.

To find out the difference between rating of science teachers (self) and the head-masters; and science teachers (self) and students the t-values were calculated as shown in Table 4.8 (b).

TABLE 4.8 (b) Significance of the Mean Differences of Ratings by the Three Groups of Respondents for C_8.

Categories of Response	Mean	t-Value
Science Teachers and Head-masters	3.56 3.58	0.17 *
Science Teachers and Students	3.58 3.45	1.09 *

* Not Significant at 0.05 level.

The t-values 0.17 and 1.09 respectively are not significant. This result indicates that there is no difference of opinion between science teachers and head-masters; and between science teachers and students in respect of science teachers' competency of introducing lesson and sustaining attention of students.

4.9 COMPETENCY OF USING APPROPRIATE METHODS IN TEACHING OF SCIENCE (C_9):

This competency is comprised of five sub-competencies.

The Means and SDs of each sub-competency; and the Mean and SD of aggregate scores were calculated on the basis of TSES.

The Means and SDs for the competency C_9 rated by the head-masters and by the students, were also calculated. The results are presented in Table 4.9 (a) hereunder.

TABLE 4.9 (a) Means and SDs of the Scores of the Three Rating Scales for C_9.

Rating by		Competencies	Mean	S.D.
	C_9	Using appropriate methods in Teaching science:		
Science Teachers (Self)		a. Lecture	4.40	1.02
		b. Demonstration	3.63	0.88
		c. Programmed instruction	2.01	1.03
		d. Project	2.10	1.23
		e. Laboratory	3.42	1.30
		Aggregate (C_9)	3.14	1.44
Head-masters	C_9	Using appropriate methods in Teaching science	2.71	1.31
Students	C_9	Using appropriate methods in Teaching science	2.30	1.02

The Mean scores of the sub-competency 'a' and 'b' are nearer to the score 'often' in the rating scale and valued as 4.

Thus, it is inferred that the science teachers 'often' use 'Lecture' and 'demonstration' methods in teaching science subjects. The Mean value for sub-competency 'e' indicates that the science teachers 'sometimes' use laboratory technique in teaching science. It can be mentioned that from the mean values of sub-competency 'e' and 'd', the science teachers 'rarely' use programmed instruction and project method in teaching of science. The SD value indicates that the teachers are heterogeneous in respect of the competency C_9.

To compare the rating of science teachers (self) with head-masters, and science teachers (self) with students t-values were calculated as shown in Table 4.9 (b).

TABLE 4.9 (b) Significance of the Mean Differences of Rating by the Three Groups of Respondents for C_9.

Categories of Response	Mean	t-Value
Science teachers	3.14	
and		2.70 **
Head-masters	2.71	
Science teachers	3.14	
and		8.25 **
Students	2.30	

** Significant at 0.05 level.

The t-values are significant at 0.05 level. This result indicates that there is a significant difference of opinion between science teachers and head-masters; and between science teachers and student in respect of science teachers' competency C_9, i.e. Competency of using appropriate methods in teaching of science.

4.10 COMPETENCY OF EXPLAINING CONCEPTS AND PRINCIPLES (C10):

This competency is comprised of five sub-competencies. The Means and SDs of each sub-competency; and the Mean and SD of aggregate scores were calculated on the basis of TSES.

The Means and SDs for the competency C_{10} rated by the head-masters and by the students for the science teachers were also calculated. The results are presented in Table 4.10 (a).

TABLE 4.10 (a) Means and SDs of the Scores of the Three Rating Scales for C_{10}.

Rating by	Competencies	Mean	S.D.
	C_{10} Explaining concepts and Principles by:		
Science Teachers (self)	a. Using appropriate vocabulary	3.63	1.01
	b. Speaking fluently and correctly	3.69	0.92
	c. Using appropriate examples	3.75	0.92

Rating by		Competencies	Mean	S.D.
		d. Maintaining continuity in the sequence of ideas	3.57	0.94
		e. Using teaching-aids	3.63	1.02
		Aggregate (C_{10})	3.67	0.95
Head-masters	C_{10}	Explaining concepts and principles	3.74	1.04
Students	C_{10}	Explaining concepts and principles.	3.66	0.99

From the table it is found that the mean values of all the sub-competencies respectively; and the mean value of aggregate scores are quite closer to the score 'often' in the rating scale and valued as 4. Thus, it is inferred that the science teachers 'often' perform the activities mentioned in the sub-competencies in teaching science. The SD value 0.95 indicates that the science teachers are homogeneous in respect of the competency C_{10}.

To compare the rating of science teachers (self) with head-masters; and science teachers (self) with students the t-values were calculated as shown in Table 4.10 (b).

TABLE 4.10 (b) Significance of the Mean Differences of Rating by Three Groups of Respondents for C_{10}.

Categories of Response	Mean	t-Value
Science Teachers	3.67	0.61 *
and Head-masters	3.74	
Science Teachers	3.67	0.11 *
and Students	3.66	

* Not significant at 0.05 level.

The t-values 0.61 and 0.11 respectively are not significant. This results show that there is no difference of opinion between head-masters and science teachers; and between science teachers and students in respect of science teachers' competency C_{10}, i.e. competency of explaining concepts and principles.

4.11 COMPETENCY OF ASKING QUESTIONS (C_{11}):

This competency is comprised of six sub-competencies. The Means and SDs of each sub-competency; and the Mean and SD of aggregate scores were calculated on the basis of TSES.

The Means and SDs for the competency C_{11} rated by the head-masters and the students for the competency of the science teachers were also calculated. The results are presented in Table 4.11 (a).

TABLE 4.11 (a) Means and SDs of the Scores of the Three Rating Scales for C_{11}.

Rating by		Competencies	Mean	S.D.
	C_{11}	Asking questions:		
Science teachers (Self)		a. Well structured	3.90	0.79
		b. Relevant to the topic	3.93	0.79
		c. Specific and concise	3.63	0.84
		d. Sufficient in number	3.42	1.02
		e. Seeking further information questions	3.11	0.87
		f. Increasing critical awareness question	3.17	0.93
		Aggregate (C_{11})	3.52	0.93
Head-masters	C_{11}	Asking Questions	3.55	1.01
Students	C_{11}	Asking Questions	3.78	1.06

From the Mean values it is found that the mean value of the sub-competencies 'a', 'b' and 'c' are quite closer to the score 'often' in the rating scale and valued as 4. Thus, it is inferred that the science teachers 'often' use questions ~~well~~ in the classroom which are well structured, relevent, specific and concise. The means of sub-competency 'd', 'e' and 'f' are quite nearer to the score 'sometimes' in the rating scale and valued as 3. Thus, it can be concluded that the science teachers 'often' perform the activities of sub-competency 'd', 'e' and 'f' in

in teaching of science. The SD value indicates that the science teachers are homogeneous in respect of the competency C_{11}.

To find the difference between the ratings of science teachers (self) and head-masters; and science teachers (self) and students the t-values were calculated as shown in Table 4.11(b).

TABLE 4.11 (b) Significance of the Mean Differences of Rating by the Three Groups of Respondents for C_{11}.

Categories of Response	Mean	t-Value
Science teachers and Head-masters	3.52 3.55	0.27 *
Science teachers and Students	3.52 3.78	2.82 **

* Not significant at 0.05 level

** Significant at 0.05 level.

From the table 4.11 (b), it is found that the t-value 0.27 is not significant. This shows that there is no difference of opinion between science teachers and head-masters. On the other hand the t-value 2.82 is significant. This means that there is a significant difference between science teachers and the pupils in respect of science teachers' competency C_{11}, i.e. competency of asking question.

4.12 COMPETENCY OF INCREASING PUPILS PARTICIPATION (C_{12}):

This competency is comprised of four sub-competencies. The Means and SDs of each sub-competency; and the Mean and SD of aggregate scores were calculated on the basis of TSES.

The Means and SDs for the competency C_{12} rated by the head-masters and the students for the competency of the science teachers were also calculated. The results are presented in Table 4.12 (a).

TABLE 4.12 (a) Means and SDs of the Scores of the Three Rating Scores for C_{12}.

Rating by		Competencies	Mean	S.D.
	C_{12}	Increasing Students Participation by using:		
Science Teachers (self)		a. Students' lead discussion	2.42	1.17
		b. Students' lead demonstration	2.34	1.15
		c. Questions	3.82	0.95
		d. Laboratory exercise	3.63	0.96
		Aggregate (C_{12})	3.05	1.25
Head-masters	C_{12}	Increasing students participation by	3.08	1.10
Students	C_{12}	Increasing students participation	3.17	1.04

From the table it is found that the mean scores of the sub-competencies 'a' and 'b' are quite closer to the score 'rarely' are in the rating scale and valued as 2. Thus, it is inferred that science teachers 'rarely' allow students to lead discussion and demonstration in the class. The Means of sub-competencies 'c' and 'd' is quite nearer to the score 'often' in the rating scale and valued as 4. Which indicates that the science teachers 'often' use questioning technique and laboratory technique for increasing the students participation in the teaching learning activities. The SD value 1.25 indicates that the teachers are heterogeneous in respect of the competency C_{12}.

To compare the ratings of science teachers' (self) with head-masters; and science teachers' (self) with students the t-values were calculated as shown in Table 4.12 (b).

TABLE 4.12 (b) Significance of the Mean Differences of Rating by the Three Groups of Respondents for C_{12}.

Categories of Response	Mean	t-Value
Science Teachers and Head-masters	3.05 3.08	0.22 *
Science Teachers and Students	3.05 3.17	1.22 *

* Not Significant at 0.05 level.

The t-values 0.22 and 1.22 are not significant. This shows that there is no difference of opinion between science teachers and head-masters; and between science teachers and students in respect of science teachers' competency C_{12}, i.e. Competency of increasing pupils participation.

4.13 COMPETENCY OF MAKING LECTURE EFFECTIVE (C_{13}):

This competency is comprised of three sub-competencies. The Means and SDs of each sub-competencies; and Mean and SD of aggregate scores were calculated on the basis of TSES.

The Means and SDs for the Competency C_{13} rated by the head-masters and the students for the competency of science teachers were also calculated. The results are presented in Table 4.13 (a).

TABLE 4.13 (a) Means and SDs of the Scores of the Three Rating Scales for C_{13}.

Rating by	Competencies	Mean	S.D.
	C_{13} Making lecture effective:		
Science Teachers (Self)	a. Using short well-organised lecture that lead to classroom discussion.	3.84	0.87
	b. Using short demonstration	3.47	1.01
	c. Using media such as charts, models, etc.	3.54	0.98
	Aggregate (C_{13})	3.61	0.97

Rating by		Competencies	Mean	S.D.
Head-masters	C_{13}	Making lecture effective	3.72	0.95
Students	C_{13}	Making lecture effective	3.56	1.01

From the Means it is found that the mean scores of sub-competencies 'a' and 'c' are nearer to the score 'often' in the rating scale and valued as 4. Thus, it is concluded that the science teachers 'often' perform those activities for making lecture effective. The Mean score of sub-competency 'b' is closer to the rating scale value of 3. Which indicates the science teachers 'sometimes' use short demonstration to strengthen his lecture. The SD value 0.95 indicates that the science teachers are homogeneous in respect of the competency C_{13}.

To find out the difference of the ratings of science teachers with head-masters and the science teachers with students, the t-values were calculated as shown in Table 4.13 (b).

TABLE 4.13 (b) Significance of the Mean Difference of Ratings Given by the Three Groups of Respondents for C_{13}.

Categories of Response	Mean	t-Value
Science teachers and Head-masters	3.61 3.72	0.99 *

Categories of Response	Mean	t-Value
Science Teachers	3.61	
and		0.56 *
Students	3.56	

* Not significant at 0.05 level.

The t-values are not significant. These results show that there is no difference of opinion between the science teachers and head-masters; and science teachers and students in respect of science teachers competency C_{13}, i.e. competency of making lecture effective.

4.14 COMPETENCY IN USING CHALK-BOARD (C_{14});

This competency is comprised of three sub-competencies. The Means and SDs of each sub-competency; and the Mean and SD of aggregate scores were calculated on the basis of TSES.

The Means and SDs for the competency C_{14} rated by the head-masters and students for the competency of science teachers were also calculated. The results are presented in Table 4.14 (a).

TABLE 4.14 (a) Means and SDs of Scores of the Three Ratings Scale for C_{14}.

Rating by		Competencies	Mean	S.D.
	C_{14}	Using Chalk-Board:		
Science Teachers (Self)		a. Writing legibly & neatly	4.25	0.84
		b. Writing adequately by maintaining continuity	3.57	0.91
		c. Sketching simple diagram	3.56	0.93
		Aggregate (C_{14})	3.79	0.95
Head-masters	C_{14}	Using Chalk-Board	3.72	0.95
Students	C_{14}	Using Chalk-Baord	3.78	1.16

From the Means it is found that the mean scores of all the sub-competencies are quite closer to the score 'often' respy. in the rating scale and valued as 4. Thus, it is inferred that the science teachers 'often' perform the activities like writing legibly, neatly and adequately and sketching simple diagram on the black-board in the class. The SD values indicate that the science teachers are homogenous in respect of the competency C_{14}.

To find out the difference of ratings between science teachers (self) and head-masters; and science teachers(Self) and students, the t-values were calculated as shown in table 4.14 (b), hereunder.

TABLE 4.14 (b) Significance of the Mean Differences of Ratings by the Three Groups of Respondents for C_{14}.

Categories of Response	Mean	t-Value
Science Teachers	3.79	
and		0.64 *
Head-masters	3.72	
Science Teachers	3.79	
and		0.10 *
Students	3.78	

* Not significant at 0.05 level.

The t-values are not significant. These results indicates that there is no difference of opinion between the science teachers and head-masters and between the science teachers and students in respect of science teachers' competency C_{14}, i.e. competency in using chalk-board.

4.15 COMPETENCY IN CONDUCTING DEMONSTRATION (C_{15}):

This competency is comprised of four sub-competencies. The Means and SDs of each sub-competencies; and Mean and SD of aggregate scores were calculated on the basis of TSES.

The Means and SDs for the competency C_{15} rated by the head-masters and students for the competency of science teachers were also calculated. The results are presented in Table 4.15 (a).

TABLE 4.15 (a) Means and SDs of the Scores of the Three Rating Scales for C_{15}.

Rating by		Competencies	Mean	S.D.
	C_{15}	Conducting Demonstration:		
Science Teachers (Self)		a. Showing the methods and techniques of using instruments (micro-scope, balance etc.)	3.19	1.15
		b. Displaying the object/ specimen related to science subjects	3.08	0.98
		c. Verifying facts and showing the techniques of solving problems	1.81	0.95
		d. Using simple equipment as possible.	3.45	1.10
		Aggregate (C_{15})	3.15	1.08
Head-masters	C_{15}	Conducting Demonstration	3.06	1.02
Students	C_{15}	Conducting Demonstration	3.16	1.09

From the Means it is found that the Means scores of sub-competencies 'a', 'b' and 'd' are quite nearer to the score 'sometimes' in the rating scale and valued as 3. Thus, it is inferred that the science teachers 'sometimes' perform these activities mentioned in the sub-competencies above. The Mean score of sub-competency 'c' is found to be closer to the scale value of 2 in the rating scale, which indicates that the science

teachers 'rarely' verify the facts and show problem solving technique to their students. The SD value 1.06 indicates that the science teachers are heterogeneous in respect of the competency C_{15}.

To find out the difference between ratings of science teachers and head-masters; and science teacher (self)and students rating the t-value were calculated as shown in Table 4.15 (b).

TABLE 4.15 (b) Significance of the Mean Differences of Rating by the Three Groups of Respondents for C_{15}.

Categories of Response	Mean	t-Value
Science teachers and Head-masters	3.15 3.06	0.74 *
Science teachers and Students	3.15 3.16	0.10 *

* Not significant at 0.05 level.

The t-values are not significant. This result indicates that there is no difference of opinion between science teachers and head-masters; and between science teachers and students in respect of science teachers' competency C_{15}, i.e. competency in conducting demonstration.

4.16 COMPETENCY OF ORGANIZING AND SUPERVISING FIELD TRIPS (C_{16}):

This competency is comprised of three sub-competencies. The Means and SDs of each sub-competency; and the Mean and SD of aggregate scores were calculated on the basis of TSES.

The Means and SDs for the competency C_{16} rated by the head-masters and students for the competency of science teachers were also calculated. The results are presented in Table 4.16 (a).

TABLE 4.16 (a) Means and SDs of the Scores of the Three Rating Scales for C_{16}.

Rating by		Competencies	Mean	S.D.
Science Teachers (Self)	C_{16}	Organizing and supervising Field Trips:		
		a. Selecting the Objectives of the field studies	2.50	1.22
		b. Selecting the suitable and appropriate sites.	2.53	1.20
		c. Briefing the students how they are to act, what they are to bring and what they are to accomplish	2.55	1.45
		Aggregate (C_{16})	2.52	1.29
Head-masters	C_{16}	Organizing and supervising field trips.	2.39	1.09
Students	C_{16}	Organizing and supervising field trips.	1.95	1.37

From the table it is found that the Mean Scores of all the sub-competencies respectively are closer to the score 'sometimes' in the rating scale and valued as 3. Thus, it is inferred that the science teachers 'sometimes' perform the activities mentioned under the competency of organizing and supervising field trip. The SD value indicated that the science teachers are heterogeneous in respect of the competencies, C_{16}.

To find out the difference between the ratings of science teacher (self) and head-masters; and science teachers (self) and students, the t-value were calculated as shown in Table 4.16 (b).

TABLE 4.16 (b) Significance of the Mean Differences of Rating by the Three Groups of Respondents for C_{16}.

Categories of Response	Mean	t-Value
Science Teachers and Head-masters	2.52 2.39	0.94 *
Science Teachers and Students	2.52 1.95	4.71 * *

* Not significant at 0.05 level.
** Significant at 0.05 level.

The t-value o.94 is not significant. This indicates that there is no difference of opinion between science teachers

and the head-masters in respect of competency C_{16}. But the t-value of 4.71 is significant at 0.05 level. This result shows a significant difference of opinion between science teachers and students in respect of science teachers' competency C_{16}, i.e. competency of organising and supervising field trips.

4.17 COMPETENCY OF GIVING HOME-WORK AND ASSIGNMENTS (C_{17}):

This competency is comprised of five sub-competencies. The Means and SDs of each sub-competency; and the Mean and SD of aggregate scores were calculated on the basis of TSES.

The Means and SDs for the Competency C_{17} rated by the head-masters and the students for the competency of science teachers were also calculated. The results are presented in Table 4.17 (a).

TABLE 4.17 (a) Means and SDs of the Scores of the Three Rating Scales for C_{17}.

Rating by	Competencies	Mean	S.D.
	C_{17} Giving Home-Work and Assignments :		
Science Teachers (Self)	a. Defining the objectives of the assignment	3.21	1.06
	b. Considering the individual differences of students	2.77	1.03

Ratingby		Competencies	Mean	S.D.
		c. Giving assignment at the proper stages of the lesson	3.61	0.90
		d. Setting appropriate time limit for the assignment	3.51	1.02
		e. Correcting the home-work properly	3.34	0.90
		Aggregate (C_{17})	3.29	1.03
Head-masters	C_{17}	Giving Home-work and assignment	3.10	1.12
Students	C_{17}	Giving Home-work and assignment	3.24	1.19

From the mean it is found that the Mean scores of the sub-competencies 'a', 'b' and 'e' are quite nearer to the score 'sometimes' in the rating scale and valued as 3. Thus, it is inferred that the science teachers 'sometimes' define the objectives of the assignment in the class, and consider the individual differences, and correcting the home-work. The Means of sub-competencies 'c' and 'd' respectively are quite closer to the rating scale value of 4. This indicates that the science teachers 'often' give assignment at the proper stages of lesson and allow appropriate time limit for the same. The SD value of 1.03 indicates that the science teachers are heterogenious in respect of the competency C_{17}.

To compare the ratings of science teachers (self) with head-masters; and science teachers (self) with students rating t-values were calculated as shown in the Table 4.17 (b) hereunder.

TABLE 4.17 (b) Significance of the Mean Differences of Ratings by the Three Groups of Respondents for C_{17}.

Categories of Response	Mean	t-Value
Science teachers and Head-masters	3.29 3.10	1.52 *
Science teachers and Students	3.29 3.24	0.46 *

* Not significant at 0.05 level

The t-values are not significant. This shows that there is no difference of opinion between science teachers and head-masters; and between science teachers and students in respect of science teachers' competency C_{17}, i.e. competency of giving home-work and assignments.

4.18 COMPETENCY OF MAINTAINING CLASSROOM DISCIPLINE (C_{18}):

This competency is comprised of five sub-competencies. The Means and SDs of each sub-competency; and the Mean and SD of aggregate scores were calculated on the basis of TSES.

The means and SDs for the competency C_{18} rated by the head-masters and the students for the competency of the science teachers were also calculated. The results are provided in Table 4.18 (a).

TABLE 4.18 (a) Means and SDs of the Scores of the Three Rating Scales for C_{18}.

Rating by		Competencies	Mean	S.D.
	C_{18}	Maintaining classroom Discipline:		
Science Teachers (Self)		a. Making attractive beginning to set the mind of the pupils.	3.82	1.20
		b. Planning for the days' lesson before hand	3.51	1.03
		c. Changing the teaching method when required	3.29	0.94
		d. Giving chance to asks questions and clarify doubts	3.35	1.05
		e. Giving threats and punishment	3.36	1.03
		Aggregate (C_{18})	3.46	1.07
Head-masters	C_{18}	Maintaining classroom Discipline	3.53	1.07
Students	C_{18}	Maintaining Classroom Discipline	3.64	1.09

From the table 4.18 (a) it is found that the Mean Scores of the sub-competency 'a' and 'b' is nearer to the scale value of 4. Which indicates that the science teachers perform these activities 'often' in the class. The Mean values of sub-competencies 'c', 'd' and 'e' are quite closer to the score 'sometimes' in the rating scale and valued as 3. This result shows that the science teachers 'sometimes' perform these activities in maintaining the classroom discipline. The SD values indicates that the teachers are heterogenous in respect of the competency C_{18}.

To compare the ratings of science teachers (self)with head-masters; and science teachers (self) with students, t-value were calculated as shown in Table 4.18 (b).

TABLE 4.18 (b) Significance of the Mean Differences of Rating by the Three Groups of Respondents for C_{18}.

Categories of Response	Mean	t-Value
Science Teachers and Head-masters	3.46 3.53	1.56 *
Science Teachers and Students	3.46 3.64	1.85 *

* Not Significant at 0.05 level.

The t-values are not significant. This shows that

there is no difference of opinion between science teachers and head-masters regarding the teachers' competency and between science teachers and the students in respect of science teachers' competency C_{18}, i.e. competency of maintaining classroom discipline.

4.19 COMPETENCY OF CLOSING THE LESSON (C_{19}):

This competency is comprised of three sub-competencies. The Means and SDs of each sub-competency; and the Mean and SD of aggregate scores were calculated on the basis of TSES.

The Means and SDs for the competency C_{19} rated by the head-masters and students for the competency of science teachers were also calculated. The results are presented in Table 4.19 (a).

TABLE 4.19 (a) Means and SDs of the Scores of the Three Rating Scales for C_{19}.

Rating by	Competencies	Mean	S.D.
	C_{19} Closing the lesson by:		
Science Teachers (self)	a. Consolidating the main points.	3.90	0.87
	b. Application of the present knowledge in new or different situation	3.47	0.89
	c. Linking the past knowledge with the present knowledge	3.37	0.98
	Aggregate (C_{19}	3.58	0.93

Rating by		Competencies	Mean	S.D.
Head-masters	C_{19}	Closing the lesson	3.27	0.97
Students	C_{19}	Closing the lesson	3.75	1.01

From the table it is found that the Mean value of sub-competency 'a' is quite closer to the score 'often' in the rating scale and valued as 4. Thus, it is concluded that the science teachers 'often' consolidate the main points at the end of the lesson. The Mean values of the sub-competencies 'b' and 'c' respectively are quite closer to the score 'sometimes' in the rating scale and valued as 3. Thus, it is inferred that the science teachers 'sometimes' show the application of the knowledge in a different situation and link the past knowledge with the present knowledge. The SD Value indicates that the teachers are homogenous in respect of the competency C_{19}.

To compare the ratings of science teachers (self) with head-masters; and science teachers (self) with students, the t-values were calculated as shown in the Table 4.19 (b).

TABLE 4.19 (b) Significance of the Mean Differences of Ratings by the Three Groups of Respondents for C_{19}.

Categories of Response	Mean	t-Value
Science Teachers and Head-masters	3.53 3.27	2.82 **
Science Teachers and Students	3.53 3.75	1.91 *

** Significant at 0.05 level.

* Not significant at 0.05 level.

The t-value 2.82 is significant. This shows a significant difference of opinion between science teachers and head-masters; in respect of teachers competency C_{19}, on the other hand the t-value 1.91 is not significant. It means that there is no difference of opinion between science teachers and the students in respect of science teachers competency C_{19}, i.e. competency of closing the lesson.

4.20 COMPETENCY IN DEVELOPING STUDENTS' INTEREST TOWARDS SCIENCE (C_{20}):

This competency is comprised of three sub-competencies. The Means and SDs of each sub-competency; and the Mean and SD of aggregate scores were calculated on the basis of TSES.

The Means and SDs for the competency C_{20} rated by the head-masters and the students for the competency of science teachers

were also calculated. The results are presented in Table 4.20 (a).

TABLE 4.20 (a) Means and SDs of the Scores of the Three Rating Scales for C_{20}.

Rating by		Competencies	Mean	S.D.
	C_{20}	Developing Students' interest towards science:		
Science Teachers (self)		a. Allow students to suggest teaching methods, materials and other resources for their science class	2.93	1.07
		b. Engage students in a group while solving problems	3.11	0.81
		c. Provide students opportunities to discuss ideas and feelings in a smaller group	2.99	0.96
		Aggregate (C_{20})	3.00	0.95
Head-masters	C_{20}	Developing students' interest towards science	3.03	1.10
Students	C_{20}	Developing students' interest towards science	3.47	1.14

From the Mean value it is found that the Mean scores of all the sub-competencies are quite nearer to the score 'sometimes' in the rating scale and valued as 3. Thus, it is inferred that the science teachers 'sometimes' perform those activities mentioned in the table under the competency C_{20}. The SD value

1.02 indicates that the science teachers are heterogeneous in respect of the competency C_{20}.

To find out the difference between the ratings of science teachers (self) and head-masters; and science teachers (self) and students the t-values were calculated as shown in Table 4.20 (b).

TABLE 4.20 (b) Significance of the Mean Differences of Ratings by the Three Groups of Respondents for C_{20}.

Categories of Response	Mean	t-Value
Science Teachers	3.00	
and		0.25 *
Head-masters	3.03	
Science Teachers	3.00	
and		4.78 **
Students	3.47	

* Not Significant at 0.05 level.

** Significant at 0.05 level.

The t-value 0.25 is not significant. This shows that there is no difference of opinion between science teachers and head-masters in respect of the science teachers competency C_{20}. On the other hand the t-value 4.78 is significant, which shows a significant difference between the opinion of science teachers and the opinion of students in respect of science teachers'

competency C_{20}, i.e. competency of developing students interest towards science.

4.21 COMPETENCY IN DEVELOPING STUDENTS ATTITUDE TOWARDS SCIENCE (C_{21}):

This competency is comprised of four sub-competencies. The Means and SDs of each sub-competency; and the Mean and SD of aggregate scores were calculated on the basis of TSES.

The Means and SDs for the competency C_{21} rated by the head-masters and by the students for the competency of science teachers were also calculated. The results are presented in Table 4.21 (a).

TABLE 4.21 (a) Means and SDs of the scores of the Three Rating Scales for C_{21}.

Rating by	Competencies	Mean	S.D.
	C_{21} Developing students Attitude towards science:		
Science Teachers (Self)	a. Encourage students reading science books, watching T.V.programme related to science visiting public display and museum etc.	4.15	0.97
	b. Encourage students to compare scientific explanation of a given event to non-scientific explanation for the same event or things.	3.43	0.84

Rating by		Competencies	Mean	S.D.
		c. Encourage students to persue hobbis related to science (shell collection, photography etc.)	3.26	0.91
		d. Encourage science based responses when questioned about events and things in an informal situation.	3.33	1.00
		Aggregate (C_{21})	3.54	1.00
Head-masters	C_{21}	Developing students' attitude towards science	3.20	0.97
Students	C_{21}	Developing student's attitude towards science	3.22	1.20

From the Means it is found that the Mean score of the sub-competency 'a' is closer to the score 'often' in the rating scale and valued as 4. Thus, it is inferred that the science teachers 'often' encourage students to read science books, watching science related programmes on T.V., and visit museum. The Means of sub-competencies 'b', 'c' and 'd' are quite nearer to the score 'sometimes' in the rating scale and valued as 3. Thus, it is inferred that the science teachers 'sometimes' perform the sub-competencies 'b', 'c' and 'd' for developing students'attitude towards science. The SD value of aggregate scores indicates that the teachers are homogenous in respect of the competency C_{21}.

To find out the difference between the ratings of science teachers (self) and head-masters; and science teachers (self and students the t-values were calculated as shown in Table 4.21 (b).

TABLE 4.21 (b) Significance of the Mean Differences of Ratings by the Three Groups of Respondents for C_{21}.

Categories of Response	Mean	t-Value
Science Teachers and Head-masters	3.54 3.20	2.94 **
Science Teachers and Students	3.54 3.22	4.83 **

** Significant at 0.05 level.

The t-values are significant. It means that there is a significant difference of opinion between the science teachers and head-masters; and between science teachers and students in respect of science teachers' competency C_{21}, i.e. competency of developing students attitude towards science.

4.22 COMPETENCY OF DEVELOPING STUDENTS' VALUES TOWARDS SCIENCE (C_{22}):

This competency is comprised of four sub-competencies.

The Means and SDs of each sub-competency; and the Mean and SD of aggregate scores for this competency were calculated on the basis of TSE3.

The Means and SDs for the competency C_{22} rated by the head-masters and by the students for the competency of science teachers were also calculated. The results are presented in Table 4.22 (a).

TABLE 4.22 (a) Means and SDs of the Scores of the Three Rating Scales for C_{22}.

Rating by		Competencies	Mean	S.D.
	C_{22}	Developing Students' Value towards Science:		
Science Teachers (Self)		a. Using enquiry method to teach science	3.41	0.95
		b. Allow students questioning of all things to seek out truths	3.50	0.96
		c. Encourage students search for data & their meaning	3.38	1.00
		d. Varification of findings	2.94	1.15
		Aggregate (C_{22})	3.30	1.06
Head-masters	C_{22}	Developing Students' Value towards science	3.47	0.98
Students	C_{22}	Developing students' values towards science	3.08	1.26

From the Mean it is found that the Mean value of all the four sub-competencies respectively are quite closer to the score 'sometimes' in the rating scale and valued as 3. Thus, it is inferred that the science teachers 'sometimes' perform those activities mentioned in the sub-competencies 'a', 'b' and 'd', 'c' under competency C_{22} for developing students' values towards science. The SD value of aggregate scores indicates that the teachers are heterogeneous in respect of the competency C_{22}.

To find out the difference between the ratings of science teachers (self) and head-masters; and the science teachers (self) and the students', the t-values were calculated as shown in Table 4.22 (b).

TABLE 4.22 (b) Significance of the Mean Difference of Ratings by the Three Groups of Respondents for C_{22}.

Categories of Response	Mean	t-Value
Science teachers	3.30	
and		1.44 *
Head-masters	3.47	
Science teachers	3.30	
and		1.92 *
Students	3.08	

* Not Significant at 0.05 level.

From the table 4.22 (b) it is found that the t-values are not significant. It means that there is not difference of opinion between science teachers (self and head-masters and science teachers (self) and students in respect of science teachers' competency C_{22}, i.e. competency of developing students' value towards science.

4.23 COMPETENCY OF USING EQUIPMENT, INSTRUMENTS AND CHEMICALS (C_{23}):

This competency is comprised of four sub-competencies. The Means and the SDs of each sub-competency; and the Mean and SDs of aggregate scores for this competency were calculated on the basis of TSES.

The Means and SDs for C_{23} rated by the head-masters and the students were also calculated. The results are presented in Table 4.23 (a).

TABLE 4.23 (a) Means and SDs of the Scores of the Three Rating Scales for C_{23}.

Rated by		Competencies	Mean	S.D.
	C_{23}	Using of Equipment, Instrument and Chemicals:		
Science Teachers (self)		a. I operate scientific equipment and instruments appropriately.	4.11	0.90

Rating by		Competencies	Mean	S.D.
		b. I keep the apparatus and chemicals in order	4.17	0.73
		c. I use all types of chemicals required for conducting experiment in the laboratory	4.15	0.82
		d. I make simple solution in the laboratory.	3.19	1.19
		Aggregate (C_{23})	3.90	1.01
Head-masters	C_{23}	Using equipment, instruments and chemicals	3.58	0.86
Students	C_{23}	Using equipment, instrument and chemicals	3.39	1.23

From the Means it is found that the Mean value of the sub-competencies 'a', 'b' and 'c' respectively are quite closer to the score 'often' in the rating scale and valued as 4. This indicates that the science teacher 'often' perform these activities mentioned in the sub-competencies 'a', 'b' and 'c' in using equipment, instruments, and chemicals. The Mean value for the sub-competency 'c' is nearer to the score 'sometimes' in the rating scale and valued as 3. From this it is inferred that the science teachers 'sometimes' make simple solution in the laboratory The SD value of aggregate score shows that the teachers are homogenous in respect of the competency C_{23}.

To find the difference between the ratings of science teachers (self) and head-masters; and science teachers (self) and students the t-values were calculated and presented in Table 4.23 (b).

TABLE 4.23 (b) Significance of the Mean Differences of Ratings by the Three Groups of Respondents for C_{23}.

Categories of Response	Mean	t-value
Science Teachers and Head-masters	4.14 3.58	5.75 **
Science Teachers and Students	4.14 3.39	6.96 **

** Significant at 0.05 level.

From the above table it is found that the t-values are significant at 0.05 level. It means that there is a significant difference between the opinion of science teachers and the head-masters; and between the science teachers and the students in respect of science teachers' competency C_{23}, i.e. the competency of using equipment, instruments and chemicals.

4.24 COMPETENCY OF USING TEACHING - AIDS (C_{24}):

This competency is comprised of three sub-competencies.

The Means and SDs of each sub-competency; and the Mean and SD of aggregate scores were calculated on the basis of TSES.

The Means and SDs for the C_{24} rated by the head-masters and by the students were also calculated. The results are presented in Table 4.24 (a).

TABLE 4.24 (a) Means and SDs of the Scores of the Three Rating Scales for C_{24}.

Rating by		Competencies	Mean	S.D.
Science Teachers (Self)	C_{24}	Using Teaching-aids:		
		a. I procure the teaching aids for classroom use	3.80	0.96
		b. I use the teaching aids in the classroom	3.95	0.87
		c. I use the indigenous materials in teaching science	3.31	0.99
		Aggregate	3.68	0.98
Head-masters	C_{24}	Using teaching-aids	3.19	1.19
Students	C_{24}	Using teaching-aids	3.06	1.33

From the Means it is found that the Mean value of the sub-competencies 'a' and 'b' are quite closer to the score 'often' in the rating scale and valued as 4. Thus, it is inferred that science teachers procure the teaching materials

and use the teaching materials 'often' in the class. The Mean value of sub-competency 'c' is nearer to the score 'sometimes' in the rating scale and valued as 3. This indicates that the science teachers use the indigenous materials 'sometimes' in teaching science. The SD value indicates that the teachers are homogenéous in respect of the competency 24.

To find out the difference between the ratings between science teachers and head-masters; and science teachers and students, the t-value were calculated and presented in Table 4.24 (b).

TABLE 4.24 (b) Significance of the Mean and Differences of Rating by the Three groups of Respondents for C_{24}.

Categories of Response	Mean	t-value
Science Teachers and Head-Masters	3.68 3.19	3.88 **
Science Teachers and Students	3.68 3.06	5.53 **

** Significant at 0.05 level.

The t-values are significant. It means that there is a significant difference between the opinion of science teachers

and head-masters and science teachers and students in respect of science teachers' competency C_{24}, i.e. competency of using teaching-aids.

4.25 COMPETENCY OF CONDUCTING LABORATORY WORKS (C_{25}):

This competency is comprised of five sub-competencies. The Means and the SDs of each sub-competency; and Mean and SD of aggregate scores were calculated on the basis of TSES.

The Means and SDs for C_{25} rated by the head-masters and students were also calculated. The results are shown in Table 4.25 (a).

TABLE 4.25 (a) Means and SDs of the Scores of the Three Rating Scales for C_{25}.

Rating by	Competencies	Mean	S.D.
	C_{25} Conducting Laboratory Works:		
Science Teachers (Self)	a. Preparing the list of apparatus of and materials required in the experiements	3.35	0.97
	b. Orienting the students regarding procedure of the experiment.	3.65	0.90
	c. Notifying the students of their responsibilities	3.42	0.98
	d. Directing follow-up studies such as discussion and writing up laboratory report.	3.29	1.10

TABLE 4.25 (b) Significance of the Mean Differences of Rating by the Three Groups of Respondents for C_{25}.

Categories of Response	Mean	t-Value
Science Teachers and Head-masters	3.46 3.27	1.68 *
Science Teachers and Students	3.46 3.25	1.79 *

* Not significant at 0.05 level.

From the above table it is found that the t-values are not significant. Which means that there is no difference of opinion between the raters in respect of science teachers' competency C_{25}, i.e. competency of conducting laboratory works.

4.26 COMPETENCY OF MAINTAINING SAFETY IN THE LABORATORY (C_{26}):

This competency is comprised of four sub-competencies. The Means and SDs of each sub-competency; and the Mean and SD of aggregate scores were calculated on the basis of TSES.

The Means and SDs for C_{26} rated by the head-masters and the students were also calculated. The results are shown in Table 4.26 (a).

TABLE 4.26 (a) Means and SDs of the Scores of the Three Rating Scales for C_{26}.

Rating by		Competencies	Mean	S.D.
	C_{26}	Maintaining Safety in the Laboratory:		
Science Teachers (Self)		a. By informing the general safety precautions performing in the laboratory.	3.95	0.84
		b. By practising the safety precautions with students	3.57	0.93
		c. In using the equipment and instruments safely	3.71	1.19
		d. By demonstrating the use of first-aids	3.74	1.07
		Aggregate (C_{26})	3.74	1.00
Head-masters	C_{26}	Maintaining Safety in the laboratory.	3.67	1.02
Students	C_{26}	Maintaining safety in the laboratory	3.48	0.99

From the Mean it is found that the Mean value of sub-competencies 'a', 'b' and 'c' is quite closer to the score 'often' in the rating scale and valued as 4. This indicates that the science teachers 'often' perform these activities mentioned in the sub-competencies 'a', 'b' and 'c'. The Mean value for the sub-competency 'd' is nearer to the score 'sometimes' in the rating scale and valued as 3. This inferred

that the science teachers 'sometimes' demonstrate the use of first-aid. The SD values of aggregate score indicates that teachers are heterogeneous in respect of the competency C_{26}.

To find the differences between the ratings of science teachers (self) and head-masters; and science teachers (self) and students the t-values were calculated as shown in Table 4.26 (b).

TABLE 4.26 (b) Significance of the Mean Differences of Ratings by the Three Groups of Respondents for C_{26}.

Categories of Response	Mean	t-value
Science Teachers and Head-masters	3.74 3.67	0.60 *
Science Teachers and Students	3.74 3.48	2.77 **

* Not Significant at 0.05 level.
** Significant at 0.05 level.

The t-value 0.60 is not significant. It means that there is no difference of opinion between science teachers and the head-masters in respect of competency C_{26}. The t-value 2.77 is significant. This shows that there is a significant difference of opinion between science teachers and the students regarding

science teachers' competency in respect of science teachers' competency C_{26}, i.e. competency of maintaining safety in the laboratory.

4.27 COMPETENCY OF DEVELOPING DIFFERENT TYPES OF TEST ITEMS C_{27}:

This competency is comprised of five sub-competencies. The Means and SDs of each sub-competency; and the Mean and SD of aggregate scores were calculated on the basis of TSES.

The Means and SDs for C_{27} rated by the head-masters and the students were also calculated. The results are shown in Table 4.27 (a).

TABLE 4.27 (a) Means and SDs of the Scores of the Three Rating Scales for C_{27}.

Rating by	Competencies	Mean	S.D.
	C_{27} Developing Test Items:		
Science Teachers (Self)	a. Closed ended items	3.01	1.07
	b. Multiple choice items	3.67	1.08
	c. True-false items	2.86	1.10
	d. Completion items	2.68	1.05
	e. Essay type items	4.40	0.71
	Aggregate (C_{27})	3.32	1.19

Rating by		Competencies	Mean	S.D.
Head-masters	C_{27}	Developing different types of test items	3.57	0.96
Students	C_{27}	Developing different types of test items	3.78	1.06

From the Means it is found that the mean value of the sub-competencies 'a', 'c' and 'd' respectively are quite closer to the score 'sometimes' in the rating scale and valued as 3. This means that the science teachers 'sometimes' develop test item mentioned in the sub-competencies. The Mean value of the sub-competencies 'b' and 'e' is quite closer to the score 'often' in the rating scale and valued as 4. This indicates that the science teachers 'often' develop multiple choice and essay type test items. The SD value of aggregate scores indicates that the science teachers are heterogeneous in respect of the competency C_{27}.

To find the difference between the ratings of science teachers (self) and head-masters; and science teachers (self) and students, the t-values were calculated as shown in Table 4.27 (b).

TABLE 27 (b) Significance of the Mean Differences of Rating by the Three Groups of Respondents for C_{27}.

Categories of Response	Mean	t-Value
Science Teachers and Head-masters	3.32 3.57	2.00 **
Science Teachers and Students	3.32 3.78	4.45 **

** Significant at 0.05 level

The t-values are significant at 0.05 level. It means that there is a significant difference of opinion between science teachers and head-masters; and between science teachers and students in respect of science teachers' competency C_{27}, i.e. competency of developing test items.

4.28 COMPETENCY OF DEVELOPING TEST ITEMS RELATED TO DOMAINS (C_{28}):

This competency is comprised of three sub-competencies. The Means and SDs of each sub-competency; and the Mean and SD of aggregate scores were calculated on the basis of TSES.

The Means and SDs for C_{28} rated by the head-masters and the students respectively for the science teachers were also calculated. The results are shown in Table 4.28 (a).

4.28 (a) Means and SDs of the scores of the Three Rating Scales for C_{28}.

Rating by		Competencies	Mean	S.D.
	C_{28}	Developing Test items related to Domains:		
Science Teachers (Self)		a. Cognitive objectives (measuring students' knowledge)	3.77	1.10
		b. Affective objectives (measuring feeling, attitude, interest)	3.11	0.96
		c. Psychomotor objectives (measuring students' manual skill)	2.47	1.02
		Aggregate (C_{28})	3.12	1.16
Head-masters	C_{28}	Developing test items related to in terms of domains	2.87	1.17
Students	C_{28}	Developing test items in terms of domains	3.07	1.06

From the Means it is found that the Mean value of sub-competency 'a' is quite closer to the score 'often' in the rating scale and valued as 4. Which means that the science teachers 'often' develop tests which could measure the cognitive level of achievement, of the students. The Mean value of sub-competency 'b' is quite closer to the score 'sometimes' in the rating scale and valued as 3. It means that the science teachers 'sometimes' develop tests which could measure the affective level of students' achievement. The Mean value of sub-competency 'c' is quite closer to the score 'rarely' in the rating scale and

valued as 2. This means that the science teacher 'rarely' develop tests which could measure the psychomotor level of students' achievement. The SD value of aggregate score indicates that the science teachers are heterogenous in respect of the competency C_{28}.

To find out the difference between the ratings of science teachers (self) and head-masters; and science teachers and students the t-values were calculated as shown in Table 4.28 (b).

TABLE 4.28 (b) Significance of the Mean Differences of Ratings by the Three Groups of Respondents for C_{28}.

Categories of Response	Mean	t-Value
Science teachers and Head-masters	3.12 2.87	1.85 *
Science teachers and Students	3.12 3.07	0.49 *

* Not significant at 0.05 level.

The t-Values are not significant. It means that there is no difference of opinion between science teachers and head-masters; and science teachers and students in respect of

science teachers' competency C_{28}, i.e. competency of developing test items related to domains.

4.29 COMPETENCY OF PREPARING TEST RESULTS (C_{29}):

This competency is comprised of four sub-competencies. The Means and SDs of each sub-competency; and the Mean and SD of aggregate scores were calculated on the basis of TSES.

The Means and SDs for C_{29} rated by the head-masters and the students for science teachers were also calculated. The results are shown in Table 4.29 (a).

TABLE 4.29 (a) Means and SDs of Scores of the Three Rating Scales for C_{29}.

Rating by		Competencies	Mean	S.D.
	C_{29}	Preparing tests results by:		
Science Teachers (Self)		a. Scoring tests	4.67	0.54
		b. Compiting test results (written,oral, lab-report,home-work and assignments)	3.45	0.91
		c. Analysing results	3.45	0.91
		d. Making rank order	4.07	1.00
		Aggregate (C_{29})	4.10	0.93
Head-masters	C_{29}	Preparing tests results	4.03	0.75
Students	C_{29}	Preparing tests results	4.13	0.96

From the Means it is found that the Mean value of the sub-competency 'a' is quite nearer to the score 'Always' in the rating scale and valued as 5. It means that the science teachers 'always' score tests for preparing results. The Mean value of sub-competencies 'b' and 'c' is quite closer to the score 'sometimes' in the rating scale and valued as 3. Which indicates that the science teachers 'sometimes' perform those activities mentioned in the sub-competency 'b' and 'c' for preparing tests result. The Mean value of sub-competency 'd' is closer to the score 'often' in the rating scale and valued as 4. It means that the science teachers 'often' making rank order of students for reporting the result. The SD value of aggregate score indicates that the science teachers are homogenous in respect of the competency C_{29}.

To find out the difference between the ratings of science teachers (self) and head-masters; and science teachers (self) and students, the t-values were calculated and presented in Table 4.29 (b).

TABLE 4.29 (b) Significance of the Mean Differences of Rating by the Three Groups of Respondents for C_{29}.

Categories of Response	Mean	t-value
Science Teachers and Head-masters	4.10 4.03	0.72 *

Categories of Response	Mean	t-Value
Science Teachers and Students	4.10 4.13	0.33 *

* Not significant at 0.05 level.

The t-values are not significant. It means that there is no difference of opinion between science teachers and head-masters; and between science teachers and students in respect of science teachers' competency C_{29} i.e. competency of preparing test results by the science teachers.

4.30 COMPETENCY OF USING RESULTS FOR GUIDENCE (C_{30}):

This competency is comprised of three sub-competencies. The Mean and SDs of each sub-competency; and the Mean and SDs of aggregate scores were calculated on the basis of TSES.

The Means and SDs for C_{30}, rated by the head-masters and the students for science teachers' competency were also calculated. The results are shown in Table 4.30 (a).

TABLE 4.30 (a) Means and SDs of the Scores of the Three Rating Scales for C_{30}.

Rating by		Competencies	Mean	S.D.
	C_{30}	Using Results:		
Science Teachers (Self)		a) Using test results for guiding students	4.01	0.86
		b. Diagnosing the student difficulties	3.57	0.98
		c. Taking appropriate steps to remove the students' difficulties	2.97	1.05
		Aggregate (C_{30})	3.50	1.05
Head-masters	C_{30}	Using results	2.91	1.12
Students	C_{30}	Using results	3.00	1.08

From the Means it is found that the Mean value of the sub-competencies 'a' and 'b' is quite closer to the score 'often' in the rating scale and valued as 4. This inferred that the science teachers 'often' use test results for guiding students and diagonising students difficulties. The Mean value of the sub-competency 'c' is quite closer to the score 'sometimes' in the rating scale and valued as 3. It means that the science teachers 'sometimes' take steps to remove the students difficulties. The SD value of aggregate scores indicates that the teachers are heterogen&ous in respect of the competency C_{30}.

To find out the difference between the ratings of science teachers (self)and head-masters;and science teachers and

students the t-values were calculated and presented in Table 4.30 (b).

TABLE 4.30 (b) Significance of the Mean Differences of Rating by the Three Groups of Respondents for C_{30}.

Categories of Response	Mean	t-Value
Science Teachers and Head-masters	3.50 2.91	4.77 **
Science-teachers and Students	3.50 3.00	5.03 **

** Significant at 0.05 level.

From the table 4.30 (b), it is found that the t-values are significant at 0.05 level. It means that there is difference of opinion between science teachers and head-masters; and between science teachers and students in respect of science teachers' competency C_{30}, i.e. competency of using results for guidence.

PHASE - II

4.2 SELECTION OF 30 TOP MOST SCIENCE TEACHERS

The Scores obtained by the three rating scales, namely TSES, TES (H) and TES (P) were subjected to different computation and analysis in order to establish whether there is any relationship amongst these scores.

The scores of the total sample (N=150) and the selected topmost competent science teachers (N=30) were taken into consideration to find out the differences if any in-between the two groups of teachers. The selection procedure of clubbing of the topmost competent science teachers has been described in the Chaper-III.

The scores of average teachers and the most competent teachers were subjected to different statistical analysis and the results are presented hereunder :

TABLE 4.31 Means, SDs and t-ratios of Different Ratings between Total Sample (N=150) and Topmost Teachers (N=30).

	MEAN		SD		t-Ratio
	Total Sample N=150	Topmost Sample N=30	Total Sample N=150	Topmost Sample N=30	
Self Rating	405	450	40.23	40.74	5.55 **
Head-masters' Rating	102.3	118	21.5	9.86	3.90 **
Pupils' Rating	100	116.8	14.42	8.74	6.12 **

** Significant at 0.05 level.

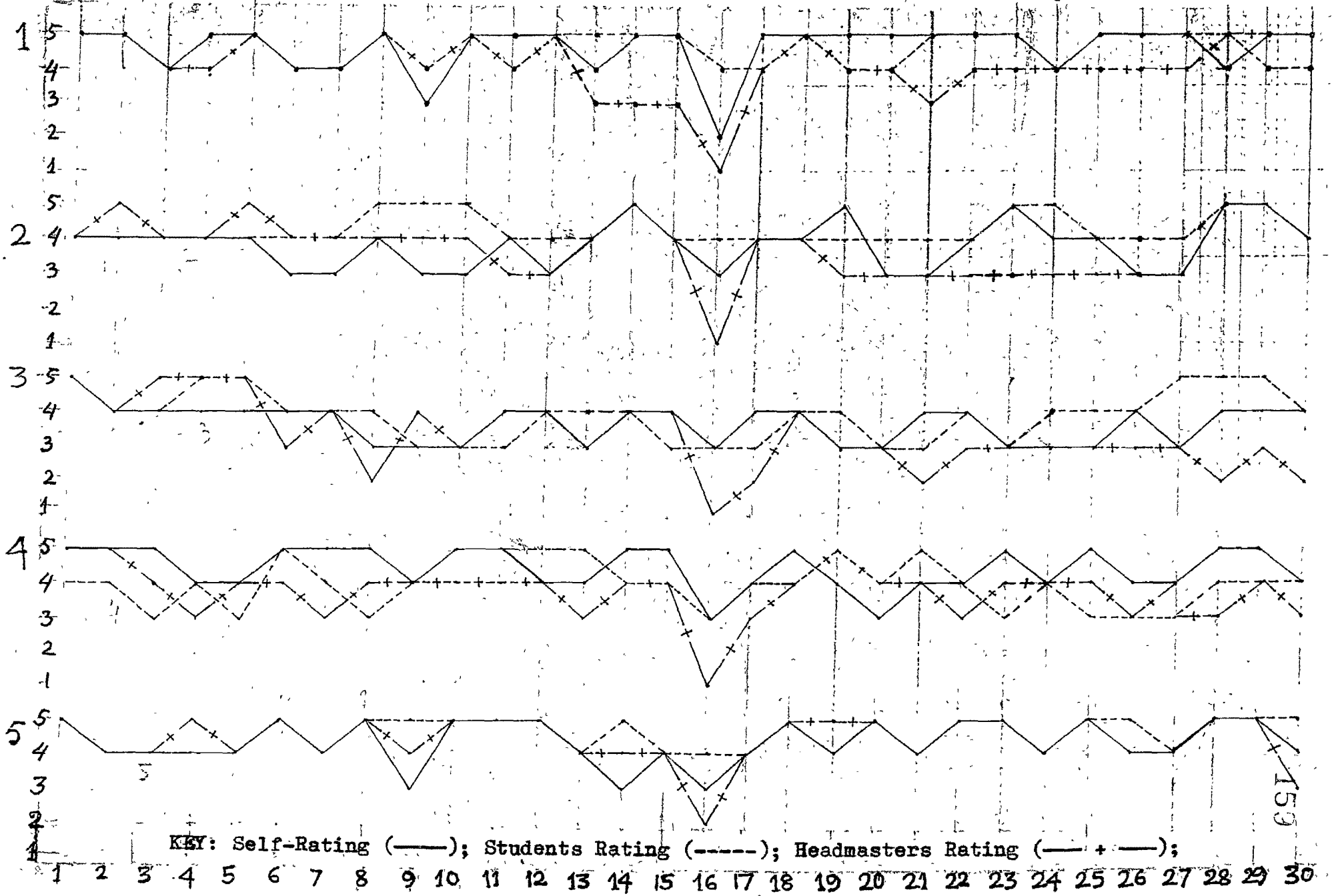
Means and SDs for the ratings of scores for total sample (N=150) and those of the topmost competent science teachers (N=30) were calculated with respect to self-rating; rating by head-masters' and rating by students. These are reported in Table No.4.31.from the Mean values, it is found that the competent science teachers are rated quite high by all types of raters. These values distinguished the topmost teachers from the average teachers in respect of their competency in teaching of science.

In order to know the differences between these two groups of science teachers in respect of their competency the t-ratios were calculated for different ratings, viz. science teachers' self-rating; head-masters' rating, and students' rating; taking into consideration the Means and SDs of the scores. From the t-values it is found that there is significant difference between the mean scores of 150 teachers and 30 topmost teachers. The t-values of different ratings are given in the table 4.31. These significant differences between the group of 150 science teachers and topmost 30 science teachers confirms the earlier finding described in proceeding paragraph.

4.3 INDIVIDUAL PROFILE OF TEACHING COMPETENCY OF 30 TOPMOST SCIENCE TEACHERS IN GRAPHIC FORM

The individual profile of 30 topmost science teachers' teaching competency is presented in graphic form (Fig. 4.1). This graph is drawn on the basis of science teacher's competency scores against thirty competencies. Three different lines are used for three different rating scores, viz., science teacher's self-rating score; for head-masters' rating scores; and for students' rating scores. In this graph the X axis indicates the number of 30 competencies i.e., competency 1 to 30. and Y axis indicates the level of scoring i.e., 1 to 5 (1-never; 2-rarely; 3-sometimes; 4-often; and 5-always). Each Sheet of the Fig. No.4.1 consists of 5 graphs of individual teacher. The teacher identification number is indicated along the Y axis. Each presentation indicates three different rating scores given by three different raters. Of those graphs, the graph of science teacher indicated by the number 48 is discussed as an example.

Fig. 4.1 Profile of Teaching Competency of Science Teachers in Graphic Form



KEY: Self-Rating (——); Students Rating (-----); Headmasters Rating (—— + ——);

Fig. 4.1 Profile of Teaching Competency of Science Teachers in Graphic Form

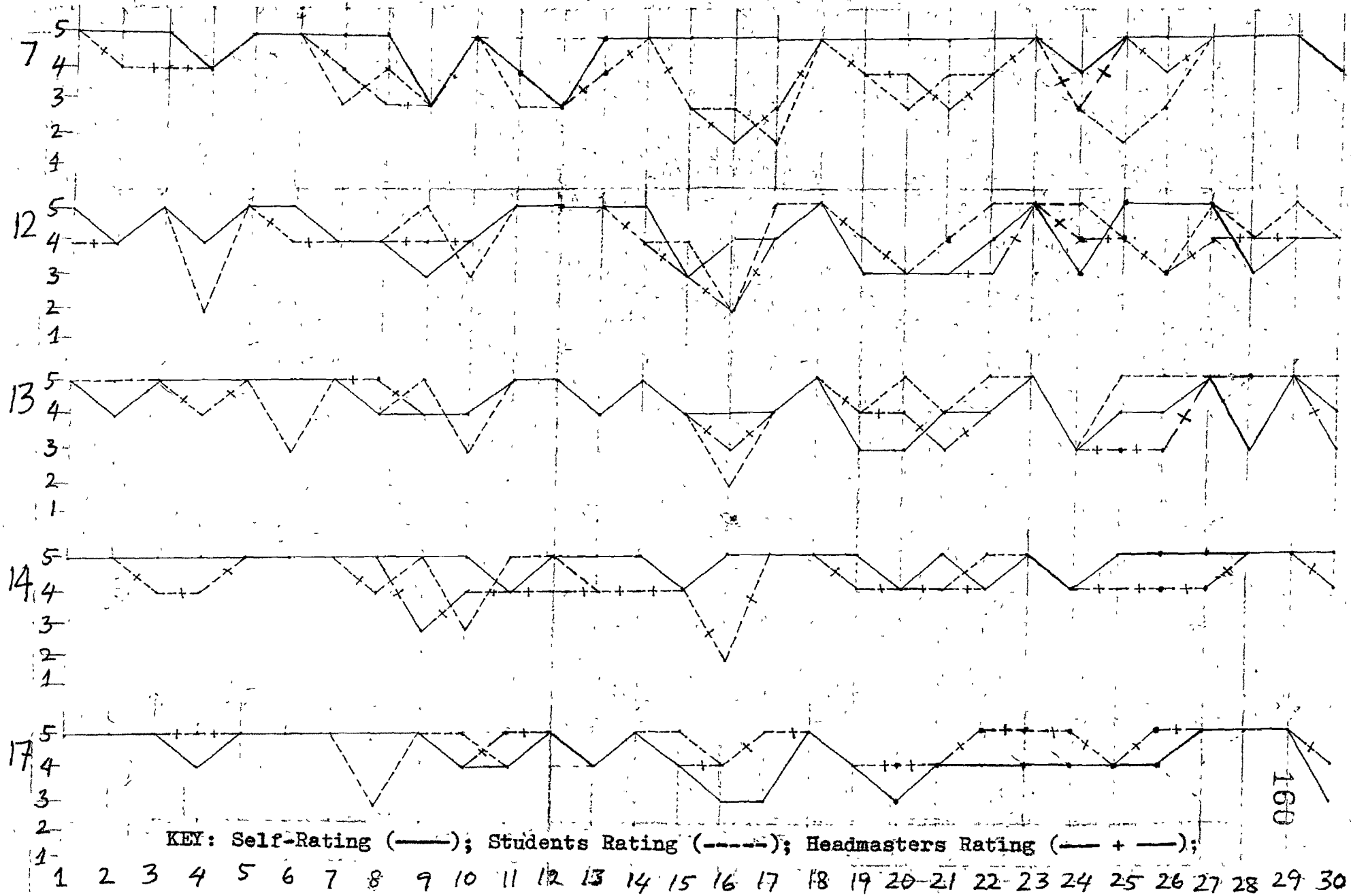
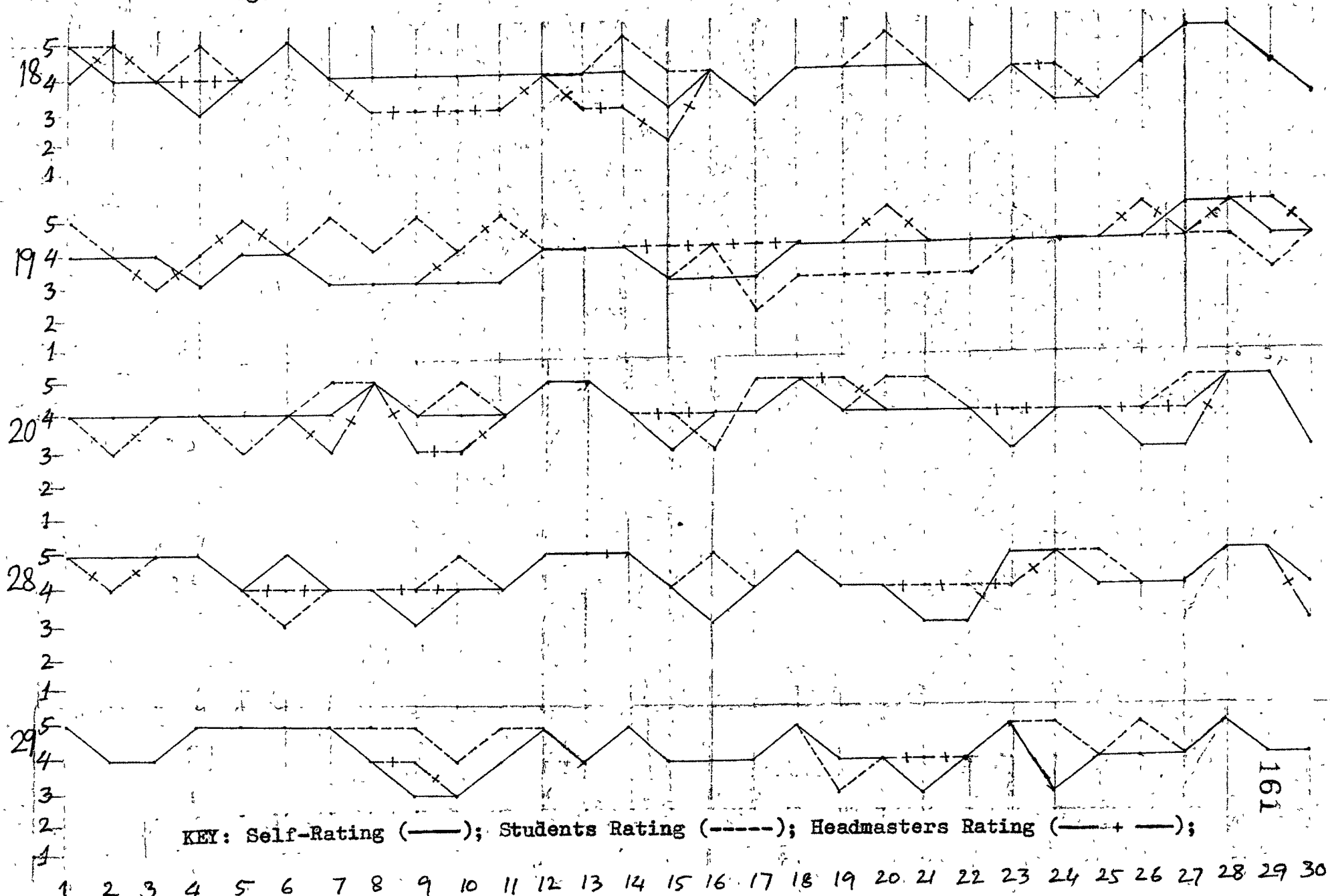


Fig. 4.1 Profile of Teaching Competency of Science Teachers in Graphic Form



KEY: Self-Rating (——); Students Rating (-----); Headmasters Rating (——+——);

Fig. 4.1 Profile of Teaching Competency of Science Teachers in Graphic Form

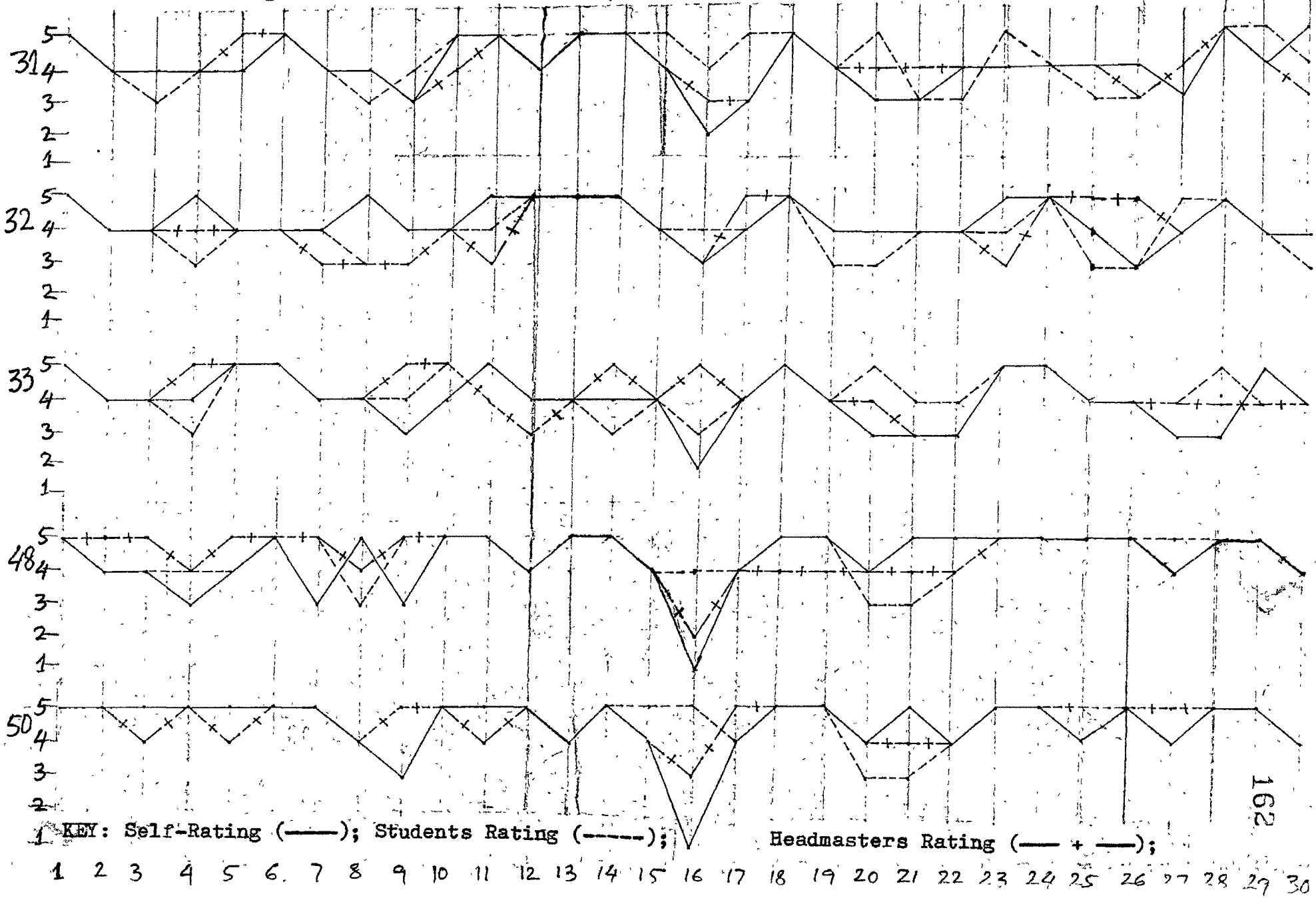


Fig. 4.1 Profile of Teaching Competency of Science Teachers in Graphic Form

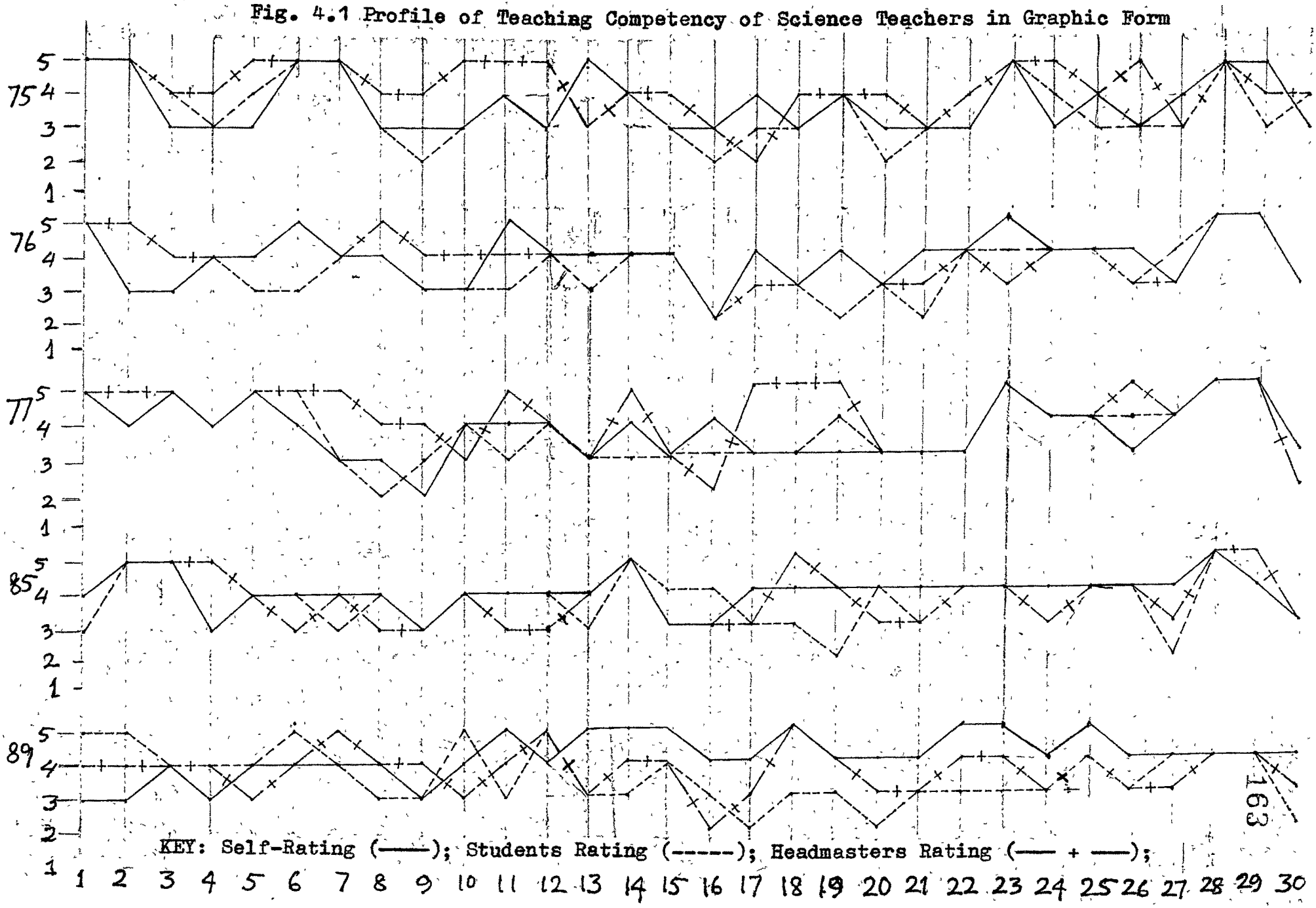
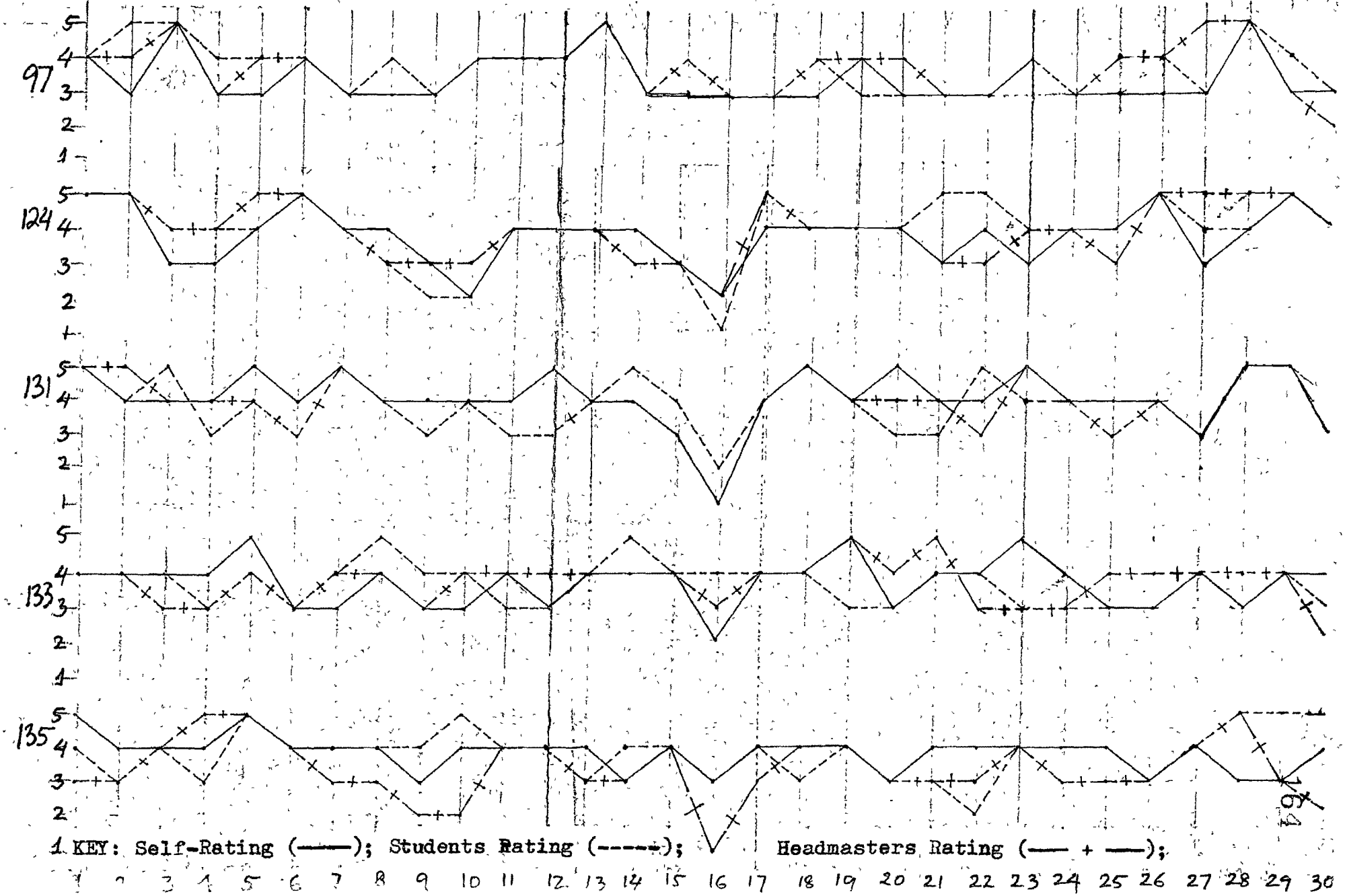


Fig. 4.1 Profile of Teaching Competency of Science Teachers in Graphic Form



4.4 PRESENTATION OF GRAPH ON TEACHING COMPETENCY OF A SCIENCE TEACHER - TEACHER 48

Background Information:

This is a gentleman teaching in a private secondary school in Dhaka City. Age 42 years, he has extra qualifications like M.Sc., M.Ed., apart from his B.Sc. and B.Ed. He has passed his B.Sc. and M.Sc. both in II division and B.Ed. and M.Ed. both in I division. He has a teaching experience of 18 years. He has been teaching physics in the institute at the standards IX and X.

Teaching Competencies:

In respect of competency C_1, i.e. competency of selecting content by the science teacher, the self-rating, the head-masters' rating and the students' rating coincide at always category in the rating scale and valued at 5. Which means that the science teacher always selects content which is appropriate, relevant and adequate to achieve the objectives of the topic, and this has been confirmed by the head-master and the students. So, it can be concluded that this science teachers perfectly and precizely select content to achieve the objectives of competency C_1.

In respect of competency C_2, i.e. competency of organizing content, the self-rating and the students' rating coincide at 'often' category in the rating scale and valued as 4. It

means that the science teacher performs this set of activities 'often'. But it is interesting to note that the students' rating in this respect ~~of~~ is higher, indicates that this teacher performs those activities 'always'. Here, the students perception is higher than the science teacher's self perception and head-masters perception. It is natural for the teacher himself as well as the students to become slightly sceptical about the ability of science teacher in this respect. Because, it is really difficult to organise content logically and making it psychologically sound.

In respect of competency C_3, the self-rating and head-masters rating coincide at often category in the rating scale and valued as 4. It means that the teacher performs this set of activities under competency C_3 'often'. The students rating is higher. Since the head-master and the science teachers are more experienced than the students, their judgement are based upon deeper reasoning. They know clearly the difficulty of attaining such competency.

In respect of competency C_4 the head-masters and students' ratings coincide at 'often' category. But the science teachers self-rating is lower i.e. 3, which indicates that the science teacher perform these activities 'sometimes'. It may be indicated that the teacher is most modest in his claim of possessing this competency. Although the teacher in practice

do not actually classify the curriculum objectives accordingly. Yet in their teaching performance, the teacher set up teaching learning activities which fall in each of this three domains.

In respect of competency C_5, the self-rating and the head-masters rating coincide at 'often' category in the rating scale and valued as 4. It indicates that the teacher performs these set of activities 'often'. But the students rating is higher, which indicates that the science teacher 'always', selects methods which are appropriate to teach the lesson properly.

In respect of competency C_6, i.e.competency of choosing teaching materials, the ratings of three categories of raters coincide at 'always' category in the rating scales and valued as 5. This means that the science teacher performs this set of activities 'always'. Thus, the teacher is quite successful in choosing the teaching materials.

On the competency C_7, the head-masters and the students rating coincide at 'always' category. It means that the teacher perform these set of activities 'always' while the self-rating indicates that the teacher uses the different evaluative techniques mentioned under this competency 'sometimes'. The teacher mostly uses written test for evaluation of the students, other techniques such as oral test, classroom observation, observing

the laboratory report, home-work, assignment and individual project use either 'rarely' or 'sometimes'.

In respect of competency C_8, the ratings by three categories of raters vary widely. The self-rating is in the fifth column indicating that he performs this set of activities 'always', the students rating indicate that the teacher perform these activities 'often' while the head-masters' rating indicates that the science teacher performs these activities 'sometimes'. It may be mentioned that the head-master rarely observe the classroom activities of teachers.

In respect of competency C_9, the head-masters' rating and the students' rating coincide at 5, indicating that the science teacher performs these set of activities 'always'. While the self-rating indicates that the science teacher uses different methods in teaching of science 'sometimes'.

In respect of competency C_{10}, all the three ratings coincide at 'always' category in the rating scale and valued as 5. This indicates that the science teacher performs the set of activities mentioned under the competency C_{10}, and the teacher is quite successful to make the lesson clear to the students.

In respect of competency C_{11}, all the three ratings coincide at 'always' category in the rating scale and valued

as 4. This indicates that the science teachers 'often' allow students to lead the class, to lead the demonstration as the part of their participation in the class.

In respect of competency C_{13}, the self-rating the students rating and the head-masters' rating coincide at 5. This shows that this teacher performs the set of activities under competency C_{13} always. So it can be concluded that this teacher is quite successful in using lecture as a method of teaching.

In respect of competency C_{14}, all the three ratings coincide at the 'always' category in the rating scale and valued as 5. This means that the teacher perfectly uses the chalkboard in the class.

In respect of competency C_{15}, all the three ratings coincide at 'often' category in the rating scale and valued as 4. This means that this teacher often perform this set of activities mentioned under competency C_{15} to make the demonstration effective.

In respect of competency C_{16} the ratings of three raters appear to be varied widely. The rating of science teacher self, the students and the head-masters are at never, rarely and often category respectively in the rating scale and valued as 1, 2, and 4. The science teachers rating shows that he never conducts any field trip, the students indicate that the science

teacher rarely perform these activities. On the other hand the head-masters opined that the science teachers 'often' do it.

On the competency C_{17} regarding home-work and assignment, the self-rating, the head-masters' rating and the students' rating coincide at often category in the rating scale and valued as 4. It confirms that the science teachers often perform this set of activities to make the home-work and assignment effective to his students.

In respect of the competency C_{18} regarding classroom discipline the self-rating and the head-masters' rating coincide at 5, which means that the science teacher 'always' performs the set of activities mentioned under the competency C_{18} to maintain the classroom discipline. From the students' rating it is found that the science teacher performs this activities often.

In respect of the competency C_{19}, i.e. competency of closing lesson the self-rating and the head-masters' rating coincide at 5, which means that this science teacher performs the activities mentioned under competency C_{19} 'always'. While the students' rating is at the 'often' category in the rating scale and valued as 4. So the students' rating is lower than the self and head-masters' rating indicating that the science teacher performs those activities 'often' in closing the lesson.

In respect of competency C_{20} i.e. developing students' interest towards science. The students' rating and science teachers' self-rating coincide at 4, which indicates that the science teacher 'often' perform this set of activities to create students' interest towards science. The head-masters' rating is lower and it is of the 'sometimes' category in the rating scale. That means the science teacher 'sometimes' perform these activities to develop students interest towards science.

In respect of competency C_{21}, the rating of three categories of raters varied widely. The science teacher rate himself in 'always' category the student 'often' category and the head-masters 'sometimes' category respectively. It may be mentioned that the head-master finds little oppourtunity to observe his science teachers how he helps his students to develop scientific attitude among them.

In respect of competency C_{22}, i.e. developing students values towards science the ratings of three categories of raters vary slightly. The self-rating is at the 'always' category while the head-master and students ratings are at the 'often' category in the rating scale and valued as 5 and 4 respectively. The variation of rating is very slight and in all cases the ratings are high enough. Thus, it indicates that this science teacher is sincere to help his students in developing values towards science.

In respect of competency C_{23} i.e. using of apparatus and chemicals, the self-rating, the head-masters rating and the students rating coincide at 'always' category in the rating scale and valued as 5. This means that this teacher performs this set of activities under competency C_{23} 'always'. So the teacher is quite successful in performing these activities.

In respect of competency C_{24}, i.e. using teaching aids by the science teacher, the self-rating, the head-master rating and the student rating coincide at the 'always' category in the rating scale and valued as 5. This is confirmed by all the raters that this science teacher uses teaching aids always in the classroom.

In respect of competency C_{25} i.e. helping students in laboratory work, all the three ratings coincide at 'always' category in the rating scale and is valued as 5. This indicates that this teacher 'always' perform the set of activities mentioned in competency C_{25}. The highest rating indicates that the teacher perfectly does these activities in conducting laboratory work.

In respect of competency C_{26} i.e. in maintaining safety in the laboratory, the rating by three categories of raters coincide at 'always' category in the rating scale and valued as 5. This means that the teacher performs this set of activities 'always' and this highest rating indicates that this teacher successfully does this set of activities.

In respect of the competency C_{27}, i.e. preparing the test items, the head-master rating is at the top indicating that this science teacher 'always', perform the activities mentioned in this competency. The self rating and the students rating coincide at the 'often' category in the rating scales and valued as 4. This shows that the teacher often prepared the different types of test items mentioned under competency C_{27} for students evaluation.

In respect of the competency C_{28} i.e.development of test items by the teacher, all the three ratings coincide at 5. Which indicates that the teacher develop test items related to cognitive objectives, affective objectives and psychomotor objectives.

In respect of competency C_{29} i.e. preparation of results. The self-rating, the head-masters rating and the students rating coincide at 'always' category in the rating scale and valued as 5. This indicates that this science teacher 'always perform this set of activities and this has been confirmed by the head-master and students.

In respect of competency C_{30} i.e. using results for guidence. The self-rating, the head-masters rating and the students rating coincide at 'often' category in the rating scale and valued as 4. This indicates that this science teacher 'often' performs the set of activities mentioned in competency C_{30}. This has been confirmed by the head-master and the students.

PHASE - III

4.5 ANALYSIS AND INTERPRETATION OF 30 TOPMOST SCIENCE TEACHERS' DATA

In order to investigate the factors that influence the science teachers' teaching competency , the researcher administered a semi-structured interview schedule (Appendix - G) over the thirty topmost competent science teachers selected from the sample. The aggregate scores of three rating scales viz. TSES, TEJ (H) and TES (P), are taken into consideration for analysing the data gathered by the said manner.

The different items of this semi-structured interview schedule were clubbed together in the following manner considering different factors that may facilitate teacher competency such as:

1.	Academic qualifications	-	Item No.4
2.	Professional qualifications	-	Item No.5
3.	Teaching experiences	-	Item No.6
4.	Career Advancement Programmes	-	Item No.7,8,9, 10 and 11.
5.	School environment	-	Item No.12
6.	Interest in profession	-	Item No.13
7.	Job satisfaction	-	Item No.14
8.	Socio-economic status and home environment	-	Item No.15,16, 17 and 18.

The responses to these items in different factors were quantified in order to compute them for establishment of the relationship if any with the competency of the science teachers. The score obtained by each science teacher is given in details in the appendix - I.

TABLE 4.32 Means and SDs of Different Factors influencing competencies of the science teachers.

Factors	Mean	S.D.
Academic qualifications	8.96	1.51
Professional qualifications	7.13	0.68
Teaching experiences	16.26	1.69
Career advancement programme	31.96	1.65
School environment	30.13	2.60
Interest in profession	11.60	2.88
Job satisfaction	56.40	3.09
Socio-Economic status and Home envioronment	12.33	3.03

These Means and SDs are interpreted in the following paragraphs factor-wise, alongwith the relationship of these factors with the competencies of the thirty topmost competent science teachers.

In order to establish the relationship between the factor which influences competency and the competency of the science teachers, the quantified scores of different factors and the aggregate scores in rating scales were taken into consideration. The product moment co-efficient of correlations were calculated and were reported in Table No.4.33.

In order to establish the relationship of competency with different attributes i.e. science teachers' academic qualifications, experiences, home and school environment etc. the quantified scores of different factors and the aggregate scores of each science teachers (self-rating score + head-masters' rating scores + students' rating scores) were taken into consideration. The product moment co-efficient of correlations were calculated and reported in Table 4.33 followed by interpretation and discussion.

TABLE 4.33 Co-efficient of Correlation Between Scores obtained in the factors and aggregate scores in Competency obtained by Thirty Competent Science Teachers.

Scores Between	Correlation Value (r)	Corresponding Interpretation
Competency and Academic Qualifications	0.63	Substantial relationship
Competency and Professional Qualifications	0.77	High Relationship.
Competency and Teaching Experiences	0.57	Moderate Relationship
Competency and Career Advancement Programme	0.58	Moderate Relationship
Competency and School Environment	0.40	Low or slight relationship
Competency and interest in Profession	0.56	Moderate Relationship
Competency and Job satisfaction	0.81	High or very High Relationship
Competency and Home Environment and Socio-Economic Status	0.23	Low or Slight Relationship.

4.5.1 Academic Qualifications and Competency:-

Item No.4 of the interview schedule constitutes the academic qualifications of the teachers, starting from S.S.C. examination to M.Sc. Examination. The results are quantified on the basis of class or division obtained by the teachers in the above examinations, points were distributed class or division-wise from S.S.C. to M.Sc. in the following manner. The highest possible points for academic qualifications are 12. The points are distributed as :

For	First	Division /	Class	3 Points
For	Second	Division /	Class	2 Points
For	Third	Division /	Class	1 Point

All the thirty topmost competent science teachers possess Bachelor degree in science and 33% of them have their Master's degree in science subject. The classes and divisions of these teachers were given weightage from their S.S.C. examinations to M.Sc. examination. The Mean and SD of these scores happen to be 8.96 and 1.51 respectively (Table 4.32). Thus, it is revealed that these teachers have better divisions, first and second classes upto graduation or post-graduation level.

Co-efficient of correlation of the scores in educational qualification versus aggregate scores in the measure of competency in rating scales was found to be 0.63 (Table 4.33). This, reveales that there is a significant correlation between competency and academic achievement. In other words it can be said that competency of the science teachers substantially depends on the academic achievement. This competency to a great extent is influenced by the content specialisation of the teachers. In order to acquire competency the science teachers should nave a mastery over the subject matter specialisation.

4.5.2 Professional Qualifications and Competency:-

Item No.5 in the interview schedule gives information

about the professional qualifications of the science teachers. Generally, the interviewed teachers are having B.Ed. or M.Ed. degrees. As it is the professional degree for teaching, in calculating the points it has given more weightage for its division. The highest possible points for professional qualification is 8. The professional qualifications are quantified as follows :

Degrees	For Ist Division	IInd Division	IIIrd Division
B.Ed.	5	4	3
M.Ed.	3	2	1

All the thirty topmost competent science teachers had B.Ed. or M.Ed. degrees or both. Considering the measure of central tendency of the scores of this factor it was found that the Mean and SDs were 7.13 and 0.68 respectively. (Table 4.32). This reveals that these teachers had first class and/or second class in both of their professional degrees. They had sufficient training in professional education and pedagogic courses and had high achievements in professional preparation.

To establish a relationship between professional education and competency the product moment co-efficient of correlation was calculated and found to be 0.77 (Table-4.33). This clearly reveales that there is a significant relationship between professional preparation and competency of these thirty science teachers. Thus, it could be said that not only the

academic achievement but professional preparation also has a direct effect on the competency of these science teachers. The professional preparation of teachers has a significant bearing on the competent teaching.

4.5.3 Teaching Experience and Competency:-

It is found that there are some teachers among the 30 topmost teachers who possess maximum of 20 years of teaching experience. In order to quantify the year of experience one point is given to each year of experience. So, the highest points for teaching experience is 20.

In order to find out the relation between teaching experience and competency of the science teachers the teaching experiences of those thirty teachers were quantified. Mean and SDs were then calculated and found to be 16.26 and 1.69 respy. (Table 4.32). This shows that the teaching experience of these teachers is upto 16 years in average. Thus, these competent science teachers have good number of years of teaching experience.

The researcher was egar to know whether the teaching experience had even direct bearing on the competency of those teachers. So, the co-efficient of correlation was calculated and shown to be 0.57 (Table 4.33). This result shows that there is a significant relationship between competency of the teachers with the teaching experience. In other words it can be said that teaching experience of science teachers are proportional to the

competency. Therefore, more is the years of experience, the teacher becomes more competent.

4.5.4 Career Advancement Activities and Competency:-

It consists of item No.7, 8, 9, 10 and 11 in the interview schedule. Item No.7 is quantified for 11 points out of which one point is made for responding Yes/No in the question. Rest 10 points are divided into different short-term in-service training programmes, attending Seminars, work-shops, symposiums organised for the purpose. In other items one point is awarded to each response either in Yes/No response or response in the sub-items. The total points in this factor comes to 40.

To keep the science teachers up-dated with the recent development in courses and curricula, newer concepts in teaching science, novel strategies to be adopted in teaching science and to use modern technologies in teaching science, the Government of Bangladesh through its department of Education organises different in-service courses, Seminars, work-shops for the science teachers. This serves the purposes of -

a. Career advancement programme for the science teachers.
b. To keep the science teachers update with the development of science.
c. to acquaint these science teachers with the new policies and concepts of teaching science in secondary schools.

Such programmes are frequently organised for the teachers. In order to investigate whether such career advancement programme influenced the competency of science teacher, a few questions were asked to those science teachers. Their responses were computed and Means and SDs were calculated shown in Table 4.32. The Mean and SD is found to be 31.96 and 1.65 respectively. This high Mean value indicate that most of the respondent teachers have got the advantages from such programme.

From the Table 4.33 it is found that the co-efficient of correlation is 0.58 which is significant. It is revealed that there is a relationship between these sets of scores. Thus, the programmes of careers development is shown a direct relationship for fostering competency of the teachers.

4.5.5 School Environment and Competency:-

Item No.12 in the interview schedule gives the information about school environment. This item has got 14 sub-items. Each sub-item required answer on different degrees. These degrees are quantified as sufficient-3; Moderate-2; and insufficient-1. The highest possible score for this item is 43.

The school environment and classroom climate have their importance in the entire teaching-learning process. Learning is to large extent influenced by school environment. Question arises whether the school environment has anything to do with the competency of the teacher. The researcher was inquisitive to

investigate whether there was any relationship of school environment with the competency of the teachers.

From the Table 4.33, it reveals that there is no significant co-efficient of correlation between scores on school environment with that of competency of the science teachers. Thus, it is revealed that school environment does not have any direct relationship with the competency. In other words it can be said that the school environment does not influence the competency of the science teachers.

4.5.6 Interest in Profession and Competency:-

The item No.13, gives information about the teachers' interest in the profession. It has ten isub-items. Each sub-item carries two points to quantify the responses. So the highest points for this item is 20.

Interest in profession plays a crucial role in any profession. Unless somebody is interested and motivated for some profession he may not find it easy for him to affects both the individual and the organisation. If the teacher does not find any interest in the teaching profession the teaching and learning will be decelerate and the process of teaching learning will come to a stand still. Therefore, the researcher tried to find out the influence of the interest of the science teacher in achieving the teacher competency.

It is found in the Table 4.32 that the Mean and SD of interest of the teachers in teaching profession are 11.6 and 2.88 respectively. Thus, it is revealed that the science teachers are moderately interested in the teaching profession.

In order to find out the relationship between interests of the science teachers and their competency, co-efficient of correlation was computed and found to be 0.56 which is significant. (Table 4.33). Thus, interest of science teachers to their profession has a direct impact on the competency of the teacher. The result shows that the competent science teachers have greater interest in the teaching profession.

4.5.7 Job Satisfaction and Competency:-

The item No.14 in the interview schedule gives the information about job satisfaction of the science teachers selected for the study. It has got 16 sub-factors, each sub-factor has two types of responses i.e. Yes/No and different degrees of dissatisfaction. These degrees are quantified as follows:

Extream-1; Much-2; Little-3; Very little-4. One point is given for Yes/No answer. Thus, the total highest possible score for this factor is 65.

The Mean and SD of the scores for job satisfaction of these science teachers were 56.4 and 3.09 respectively, Table

4.32. This value shows that these science teachers are highly job satisfied.

In order to establish a relationship between job satisfaction and competency the coefficient of correlation was calculated and was found to be 0.81 (Table 4.33). The high significant correlation between two sets of scores showed that high job satisfaction had a high positive relationship with teacher competency. Thus, in order to inculcate competency in teaching, the teacher should be satisfied with his/her job. Therefore, steps should be taken to reinforce the teachers with several kinds of incentive schemes in order to keep the teachers in good humour and satisfied with the job because high job satisfaction can yeild high competency in teaching.

4.5.8 Home Environment and Socio-Economic Status and Competency:-

This item constitutes of item No.15, 16, 17, and 18. In item No.15, three points has given for education and profession of each i.e. father, mother and wife/husband. In item No.16, points were distributed as 5, 4, 3, 2, and 1 for sub-item No.(1), (2), (3), (4) and (5) respectively. In item No.17 and 18 for Yes/No answer, one point is awarded for each item. For sub-items of item No.18 the points are distributed as 5, 4, 3, 2 and 1 for sub-item No.(1), (2), (3), (4), and (5) respectively. Thus, the total possible scores for this items is 30.

Since, home environment and socio-economic status of the teachers have a direct influence of personal adjustment, the researcher intended to see whether it has any influence on competency.

The Mean and SD of 12.33 and 3.03 respectively out of total scores 30 presented in Table 4.32 shows that these teachers have a moderate home environement and came from medium socio-economic status.

A non-significant co-efficient of correlation to the tune of 0.23 confirms that home environement and socio-economic status has no direct relationship with the competency of the science teachers (Table 4.33). Thus, it is revealed thatthis factor does not influence the competency or the teachor effectiveness of the thirty topmost competent science teachers.

To summerise, the above results showed that the teacher competency or teacher effectiveness has a direct and positive relationship with content knowledge of the teachers, the professional training, teaching experiences, interest of the teachers in their profession and job satisfaction. Where as factors like school environment, home environment and socio-economic status of the science teachers do not have any direct influence on the competency of the science teachers.

4.6 DISCUSSION OF RESULTS

It was pointed out that the competency in teaching is related to teachers knowledge, teaching activities in the class room. Thus, to rate the teachers' competency the researcher developed a competency list which comprised of thirty competencies related to teaching, named as science teachers teaching competency list. These thirty competencies were grouped into six major areas i.e.

I. Planning of Teaching;
II. Presentation of Lesson;
III. Developing students' interest, attitude and values towards science;
IV. Regarding Equipment, Chemicals and Teaching Aids;
V. Regarding Laboratory Procedure and Technique; and
VI. Evaluation.

Under these six groups the thirty competencies were then sub-divided into 120 components/sub-competencies. These thirty competencies and 120 sub-competencies were used to develop rating scale for science teachers self-rating. The details about tools has been given in Chapter-III.

As the present investigation has been taken to study and analyse the competency of science teachers in Dhaka City the investigator has selected 50 secondary schools from Dhaka City and all the science teachers of those schools were the sample of

the study. The five point rating scales were provided to the science teachers for self-rating, to head-masters for rating the science teachers and to the students for rating the science teachers. The data of 150 science teachers were gathered from three angles as per the objectives of the study and hence analysis was done by using the statistical treatment like Mean and SD. The t-values were also calculated to see the differences amongst three ratings.

In this chapter the analysis of data is done in three phases. In the first phase the science teachers' competency scores rated by the three categories of raters were analysed and interpreted. In the second phase of the analysis the individual teachers' competency rated by three raters is shown in graphic form, (Fig-4.1). From those graph a typical science teacher's graph is presented as a model. In the third phase of analysis the relation between science teachers competency scores and their different attributes such as qualifications, job interest and job satisfaction, home and school environment were interpreted for drawing major conclusion.

Data collected through three different angles i.e. science teachers rating, head-masters' rating and students' rating on the competency of science teachers in teaching of science were calculated. From the analysis of science teachers self-rating it was found that the mean value of competency

C1, C2, C5, C6, C7, C8, C10, C11, C13, C14, C19, C21, C23, C24, C26, and C29 are closer to the category 'often' in the rating scale. From these it may be inferred that the science teachers of Dhaka City perform those competencies 'often' or on the other way it can be said that the science teachers frequently perform the activities under those competencies mentioned above.

The Mean value of competency C3, C4, C9, C12, C15, C17, C18, C20, C22, C25, C27, C28 and C30 are closer to the category 'sometimes' in the rating scale and valued as 3. From this it may be inferred that the science teachers of Dhaka City perform those competencies 'sometimes' or on the other way it can be said that the science teachers occationally perform the activities under those competencies mentioned above in the paragraph.

The Mean value of competency C16 is closer to the category 'rarely' in the rating scale and valued as 2. This indicates that the science teachers perform the activities under this competency 'rarely or on the other way it can be concluded that the science teachers rarely perform the activities under competency C16.

From the Mean value of three different ratings i.e., science teachers self-ratings, head-masters' ratings and students' ratings it is found that the Mean value of seventeen competencies out of thirty competencies ~~were~~ coincide and closer to the category 'often' in the rating scale and valued as 4.

For the remaining 13 competencies the raters opined differently. Thus, it is inferred that the science teachers 'often' perform these competencies mentioned in the competency list i.e. C1, C2, C7, C10, C11, C13, C14, C29 and perform the following competencies 'sometimes' i.e. C12, C15, C17, C20, C22, C25, C28 and C30, and 'rarely' perform competency C16. Regarding competencies like C3, C4, C5, C6, C8, C9, C18, C19, C21, C23, C24, C26 and C27 the categories of raters i.e. head-masters and students do not agree with the science teachers self-rating scores.

Thus, from the analysis it can be concluded that the 'often' used competencies of science teachers of Dhaka City are: competency of selection of content; organizing content; using technique of evaluation; explaining lesson; asking questions; using lecture in the class; using chalk-board and preparing results. The 'sometimes' used competencies are increasing students' participation; using demonstration; giving home-work and assignment; developing students' interest; developing students' values; helping students in the laboratory; developing test items and using results for guiding the students. And the rarely used competency is conducting field trips. In respect of remaining 13 competencies it can not be possible to draw any conclusion because either the head-masters or the students or both the head-masters and students did not agree with the science teachers self-rating.

SCIENCE TEACHERS ACADEMIC AND PROFESSIONAL QUALIFICATION AND COMPETENCY

Most of the topmost science teachers (20 out of 30) have the minimum required qualification i.e. B.Sc. with Ist class or second class B.Ed. or M.Ed. degrees. This would lead to the conclusion that the teachers need not have many extra qualifications to be a competent one, but sound academic background and professional qualification is needed to be a competent teacher.

From the analysis of co-efficient of correlation it is found that the relation between competency and academic qualification is significant i.e. r=0.63. This positive significant correlation indicates that the teaching competency of science teachers substantially depends on the academic achievement of teachers. In other way it can be said that the competent teacher must have the mastery over the subject matter.

All the 30 science teachers have passed their B.Ed.or M.Ed. degrees in first or second division. The Mean value of 7.13 out of 8, shows that the professional training is essential for better performance in the class. The correlation result 0.77 shows the significant relationship between teaching competency and professional qualifications. This result is high, and thus, it can be concluded that the professional qualifications have ~~the~~ direct influence on teaching competency.

As regards to the experience of science teachers, it is found that the teaching experience of top 30 science teachers ranges from 8-20 years and their age is 30 to 51 years. These findings show that there may be a certain amount of maturity required with respect to both age and experience to become more effective teacher. The co-efficient of correlation 0.57 between competency and experience have shown the positive relationship between the two. Though it is not highly correlated but the moderate relationship also, indicates that the teaching experience enhance the teaching competency of science teachers.

CAREER ADVANCEMENT PROGRAMME AND COMPETENCY

This includes teachers' short-term training; influence of professional degrees on teaching activities; participation in academic development programme; discussion of academic problems with collegues and utilisation of leisure time.

The number of short-term courses attended by the top-most science teachers are from 1 to 5. This shows perhaps that the number of in-service courses attended does not have much to do with the competency of teachers. But one can not deny the possibility that well designed programmes of in-service training would further enhance the effectiveness of teachers. The topmost teachers make effort to update their knowledge of science through reading journals, magazines and science books. Apart from other sources of knowledge most of the topmost teacher hold discussion

with their colleagues and a small portion of the teachers participate in science related programme such as, Seminar, work-shop etc. A very few teachers utilise their leisure time by writing books and articles. The teachers generally listen to discussions on science problems on radio and television, visit science museum and share their knowledge with other colleagues. The co-efficient of correlation between competency scores and career advancement programme scores is 0.58 which is moderately significant. Hence, it can be concluded that the career advancement programmes help the teachers to develop their competency in teaching of science.

SCHOOL ENVIRONMENT AND COMPETENCY

In respect of classroom size, light and ~~air~~ ventilation, sitting arrangement and facilities for chalk-board most of the schools of Dhaka City are well developed. The arrangement for classroom demonstration is not good. Supply of equipment in the laboratory is not sufficient. Due to the shortage of chemicals and apparatus the students mostly do not get chance to use the instruments and chemicals for practical work. The science teachers do the experiment in the laboratory and the students observe it. In most cases the science teachers use lecture method in teaching science instead of practical work. Competent teachers use teaching aids in the class but the intensity of use depends on the supply of teaching aids by the authority. The teacher do not prepare any teaching-aid. A few teachers use

Adigenous materials for teaching in the class. The co-efficient of correlation value (r=0.40) revealed that there is low positive correlation is found with the teachers' competency and the school environment. It may be mentioned that improved school environment. It may be mentioned that improved school environment may help the teacher to show better performance in the classroom but not significantly.

INTEREST IN PROFESSION AND COMPETENCY

Professional interest makes a teacher competent. It has direct influence on teaching. From the data it is shown that the first reason shown by the teachers for selecting this job is that it is a noble and honest profession. The next reason for selecting this job as there is the opportunity for improving knowledge. The third reason is that this job is prestigious and respected in the society. A small portion of teachers have selected this profession, due to some compelling circumstances. It is also seen that there are a few teachers who have selected the profession by choice and the reasons are, less physical strain, less working hours and more holidays and vacations. The Mean score of 11.6 out of total possible scores of 20, indicates that the teachers have moderate positive interest towards the teaching profession. The co-efficient of correlation is also significant. So it is a need to allow only genuinely interested person to join the profession. It also shows the need for better selection procedures in teacher training institutions.

JOB SATISFACTION AND COMPETENCY

The Mean Score of 56.4 out of total possible score of 65, indicates that the teachers are either satisfied or very much satisfied in their job. The co-efficient of correlation 0.81 is found to be very high which inferred that the competency of science teachers are highly positively correlated with teachers' satisfaction in job.

HOME ENVIRONMENT AND SOCIO-ECONOMIC STATUS AND COMPETENCY

This item includes teachers Socio-Economic Status, education of parents and husband/wife and the living conditions of teachers. The Mean value 12.3 out of total possible score 30 indicates that the science teachers come from a moderate family. The correlation result is not significant (r=0.23). It is positive but low. So the factor home environment and socio-economic status has no direct influence on the teaching competency of science teacher.