

# CHAPTER 3

RESEARCH METHODOLOGY

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### 3.1 INTRODUCTION

However complex a problem may be, the success depends upon the methodology adopted. This is the base of the entire research work. For choosing proper methodology the worker should be deeply acquainted with the various factors that influence the work. In the environment of music education in schools these factors become too numerous and it is not physically possible to maintain a controlled environment for conducting the test, unlike the test conditions in a laboratory experiment. In such conditions meaningful conclusions can only be drawn on a statistical basis. To establish any theory under these conditions as large a sample as possible should be taken and the experiment should be repeated under different conditions and from a statistical analysis of the results one can find the probability of the theory being true. The choice of the sample and the procedure adopted in the present work is described in the following sections.

### 3.2 Selection of the Sample.

The scope of the present work has been limited to the Agra Region ( the choice of place was prompted by the convenience of this worker and not due to any other reason) and to the syllabus prescribed by the U.P.Board of secondary education.

#### 3.2.1 Selection of schools

The following four schools were chosen to carry out

the innovative teaching and to compare its effect with the normal teaching. They were

1. Prem Vidyalaya
  2. Ratan Muni Jain Girls' Inter College
  3. Murari Lal Girls' Inter College
- and 4. Anglo Bengali Girls' Inter College.

A fifth school Kedar Nath Sakseria Girls' Higher secondary school was chosen to carry out the preliminary tests. All the schools limit their admissions to girls only. The selected four schools were situated in widely different regions of the Agra City and were also quite different from one another in terms of the atmosphere of the schools. This provided an opportunity to test the proposed technique in different conditions.

### 3.2.2 Selection of the Class

The classical music teaching starts in a systematic way in class IX only in the schools in U.P. and the syllabus prescribed by the U.P. Board is followed. For the present study, the students of class IX who had opted for Vocal Music in all the four above mentioned schools were selected as sample.

### 3.3 Important Arrangements

The course normally covered in class IX consisted of 10 Ragas. They were divided into two sets of 5 each, both sets having Ragas of equal complexity. The Ragas in the two sets are as follows.

The first set contained the Ragas: 1. Rag Yaman, 2. Bhopali, 3. Kaffee, 4. Khamaj and 5. Bageshree.

The second set contained the Ragas: 1. Bihag, 2. Des, 3. Bhairavi, 4. Aasavari and 5. Bilaval.

While dividing the ragas into the two sets care was taken to keep equal number of easy and difficult ragas in the two sets.

After the selection of the subject matter this worker approached the principals of the four schools and obtained permission for carrying out this experiment on their pupils for one academic year during the session 1986-87 and got assurance that they will make available all the facilities required. Later, the teachers teaching this subject in the four schools were contacted and got their assurance of their wholehearted cooperation for carrying out this experiment. They were requested to restrict the coverage of course strictly to the set of ragas allotted for the particular period.

The work had to be carried out within the framework of the school schedule in one academic session from July, 1986 to April, 1987. Hence the session has been divided into two equal halves of five months each viz. from July, 1986 to Nov., 1986 and from Dec., 1986 to April, 1987. One set of five ragas, dividing the two sets equally between the schools, was taught to students in each school by the normal teaching methods during the first half. The remaining set of five ragas were

taught during the second half of the session by the innovative teaching technique in all the four schools by their own staff but as per the strict guidelines given to them. In two of the above schools, viz., Prem Vidyalaya and Ratan Muni Jain the first set, comprising of Rag Yaman and others, was first taught using the normal teaching techniques. During the same period the other two schools, viz., Murari Lal and Anglo Bengali also carried out the normal teaching but covered the second set instead of the first. The remaining set of Ragas, in the respective schools, were covered using the innovative teaching techniques in the second half. This rotation was done so that the results of comparison may not be biased by the selection of Ragas.

### 3.4 Teaching by Normal methods.

During the first five months of the session, from July 1986 to November 1986, the teaching was carried out in all the chosen schools by the normal teaching methods. The teachers were requested to cover the specified portions of the syllabus only during this period. No other instructions regarding the teaching methods were given. A careful observation was however been made by this worker about the limitations of the normal teaching methods and are given below.

1. The ignorance of the concept of the basic swara 'Sa'. The students /were not making the note Sa as the base of their singing but were making any arbitrary note as their base. They were not

even able to differentiate between the Sa of the middle octave and the Sa of the higher octave.

2. They were ignorant of the Increasing (Aarohi) and the Decreasing (Avarohi) order of the notes. Some of them were singing Ga at a higher pitch compared to Pa of the same scale.

3. While singing higher notes, the students tended to reduce the voice level. This led to their reducing the pitch also simultaneously of these notes.

4. Ignorance of the difference between Komal swaras and Shudh Swaras and consequently, applying wrong notes in Ragas.

5. Students consider that singing Raga is important and do not give proper attention to Tal and Swara.

6. In all the four groups music teaching followed a mechanical pattern.

7. There was no effort on the part of the teacher or the authorities to create an atmosphere so that the students be mentally prepared to learn music.

8. In two of the schools, the teachers were expecting students to practice the Raga on their own which was taught in the class once or twice. In fact, the students were not even following the notes of the Raga and were singing the raga as if they were reciting a poem.

9. In all the schools group teaching was done and there was no effort to correct the students individually.

10. The students of all the schools were found to be very poor

in the rhythm practice. They were changing the rhythm while singing.

11. The students were not able to differentiate the Tali and a Khali in a Tal and were unable to count the Tal even with the Tabla.

12. Students were ignorant of some very important principles of swar sadhana - like importance of breathing in singing and correct pronunciation etc.

In formulating the objectives and the teaching methodology for the innovative teaching care was taken to cover the drawbacks observed in the normal teaching.

### 3.5 A-priori arrangements for Innovative teaching.

The period assigned for the innovative teaching was from December 1986 to April 1987. Before the start of the innovative teaching programme the teachers were made acquainted with the program of the new method thoroughly. The sets of ragas were interchanged as described above in all the schools. The concerned teachers were given complete understanding about the audio-visual aids and their usefulness was made clear to them. The teachers were told about the importance of the innovative teaching techniques and were made to understand clearly the general objectives of the innovative program and its specific objectives. Also, the teachers were given a set of general instructions and a set of specific instructions to be followed while teaching.

The set of general objectives of the innovative teaching method is given below.

### 3.6 General Objectives of the Innovative Teaching Method.

[1] (a) To develop a capacity of self appraisal in the student so that he may know how much music has he/she been able to grasp.

(b) The student may understand his limitations and not to get disheartened by that.

(c) To make the student understand that in the field of fine arts there will be certain inherent capabilities and weaknesses in each individual.

[2] To build up the self-confidence of the student and to make them psychologically optimistic in their approach. That is,

(a) The students should know what their aim is.

(b) To develop the capacity in the student to identify one's own errors and to repeatedly try to overcome them.

(c) The students should learn to appreciate their classmates achievements and should pleasantly help others in learning.

[3] To develop musical talents and creativity in each student.

[4] To learn to appreciate music by the following,

(a) To give the students an opportunity to hear the



classical music of various artistes.

(b) To develop their interest and capacity to appreciate music by exposing them to various types of music, especially the folk music.

[5] To improve general knowledge and also the specific knowledge of the students.

### 3.7 Specific Objectives of the Classical Music teaching.

[1] To teach the students the importance of the Base note 'Sa' and to develop the capacity to sing in accompaniment with the Tanpura all the seven notes.

[2] To make them recognize both Shudha and Komal Swaras and to practise singing each note individually.

[3] To make the students to practise Laya and Tal as per their Course.

[4] To acquaint the students with the correct methods of singing.

[5] To train the students and make them practise the Ragas prescribed in their syllabus.

The teachers were asked to keep the above objectives always in view while teaching. Some general and specific Instructions to be followed were given and are listed below.

### 3.8 General instructions to the Teachers.

[1] The basic principle of the innovative teaching is pleasantness. In the class the students should feel pleasant,

light and fresh.

[2] The teaching should be suggestive and not commanding. The teacher should not pose to be superior and should not be aloof from students.

[3] The students should be seated in a semicircle so that they are all equally close and get a feeling of closeness to their teacher.

[4] A student can learn perfectly, only when the teaching instructions are meaningful and they are made to realise the meaning. The following five points were explained to the teachers for this purpose.

(a) Demonstration-

The word Demonstration includes vocal and instrumental Musical performances and writing articles on Music and publishing in reputed journals and such other activities. Through these activities different meanings of Music can be expressed. This experience improves the understanding of Music. The listener or the reader experiences the same feelings as the person who is giving the demonstration. This creates an enthusiasm and an affection towards Music and fulfills the idea underlying the learning process of Music.

(b) Hearing-

The Hearing in the context of Music implies the development of the capacity to hear the Music with full con-

centration. This is the first step for success in Music. One has to develop the capacity to hear the music, even one's own, with minute observation. He should be able to recognise the various sounds, the Harmony, the contrast, the rhythm, the movement of notes of different sounds, the melody and should be able to recollect the music once heard. One should be able to identify the instruments used and the voices of singers.

(c) Understanding the difference

To understand the difference in the styles, form, expression, quality and other properties of music and differentiate the styles of one composition from the other. As one develops the capacity to understand these differences the more powerful will be his learning process.

(d) Depth of Feeling

There is a direct link between the appreciation of the beauty of the fineness of Musical Art and the depth of feeling. This is what makes the Music a fine Art. The music education is most effective only when it is taught with a depth of feeling. In this way, the effect of music is felt by the heart and mind of the student. At this stage the student becomes emotional for the Music and his interest gets awakened. His level of learning rises and his feeling gains depth.

(e) Knowledge

The student should be fed with more and more information about various aspects of Music in very clear and unam-

biguous form. Then only his grasping power develops. Then, as a result the student develops the proper Musical concepts and gets an insight into the Music.

Apart from the above general instructions some specific instructions were given to the teachers to be followed in the regular teaching. These instructions are given below.

### 3.9 Specific Instructions to be followed in regular teaching-

[1] Teachers must first inspect the sitting posture of the students and see that they sit in proper posture for singing. They should then make them perform the breathing exercises. First they should demonstrate and make the students follow. The exercises are as follows:

(a) Take deep breath and retain for as much time as possible, and to breathe out the air through wide open mouth. They should gradually improve the retention time.

(b) Breathe in through the right nostril and to breathe out through the left one closing the right one with thumb while breathing out. To repeat the same by breathing in from the left nostril and breathing out through the right one.

(c) Take a deep breath and retain. Exhale air in small puffs through mouth keeping the mouth in a shape as if whistling.

[2] Teachers should first get every student sing the 'Sa' note only, in accompaniment with tanpura and should check if

the capability of students in comprehending Swaras is improving or not. For the practice of all the 12 notes, they should teach the students the fineness of the quality of sound and the rise and fall of notes with the help of the audio-visual aids. The teachers were asked to make a comparison of the height of the students with the notes by giving them the names of these notes according to their heights in an interesting way and making them sing their respective notes and thus make the students grasp the differences in these notes.

The teacher should demonstrate by singing the komal and the shudha swara one after another repeatedly. Also forming two groups in the class, the teacher may make one group sing the Komal swara and the other the shudha form of the same swara and thus give them practice of their difference.

[3] The teachers have been instructed to give highest priority to the recognition of the Base swara and other swaras in the daily practice. Teachers should always try to make the students recognise their own fault and try to rectify it themselves. To improve the recognition capacity of the swaras the teachers were instructed to teach by the Quiz technique in which the teacher sings several swaras in Aakar and asks; the students to recognize the swaras of the sound uttered.

[4] After the practice of the Swara comprehension, the teachers were told to give practice of 'Sa-Pa-Sa' and 'Sa-Ma-Sa' etc. and to give practice of Alankar and Palte etc.

### Practice of Laya and Tal-

[1] For the practice of Laya, the teachers were instructed to get the entire group clap together in slow medium and fast rhythms. They were asked to keep a watch that they maintain a constant rate of clapping each time.

[2] Teachers were instructed that for the practice of Tal the teacher should first demonstrate the Tals prescribed in syllabus by their hands and later ask the students to do practice either in small groups or the entire class as per their convenience.

[3] For the recognition of the Tal, the teachers were asked to first demonstrate on Tabla and ask the students to give accompaniment with their hands and they should also speak out the words of Tal (Bol) once and the next time they should count the same as shown below.

First time : Dha Dhin Dhin Dha ! Dha Dhin Dhin Dha . . .

Second time: 1 2 3 4 ! 5 6 7 8 . . .

X

2

The teacher should give practice of counting Matras as per the speed of the rhythm.

[4] For teaching the recognition of the Tal the teacher while giving the Tal on Tabla should ask the students questions to recognise the words of Tal or to tell the Matra corresponding to the words of Tal, etc.

[5] While giving the practice of Alankar, apart from teach-

ing the various Tal bound Alankars, the teacher should get the students practice the corresponding Tal with their hands as well.

[6] Teachers were told that while teaching Bandish also they should make the students practise the singing of Bandish and simultaneously give accompaniment of the Tal with their hands.

Note:

The teachers were required to make the students realize the importance of Swara and Laya in music while giving the above noted practise.

### 3.10 Execution of the Innovative Teaching Program

In the first 25 to 30 days of the Innovative teaching program, the practice of Swara and Laya alone was given as instructed above. Later, in the daily routine, the students were asked to perform the breathing exercises in the beginning of each class after the instruments were properly tuned and the exercises done the students practised the swaras as per the instructions specified above. The teaching of Raga was taken up after these preliminary activities only.

After the group training of Ragas, the teachers were requested to compulsorily give individual attention to at least a few students of the class and get their mistakes corrected on the spot. If the class was large, the individual attention could be given by rotation so that each student is attended personally at least once in few days.

The various charts were hung on the walls of the class rooms during the innovative teaching period and the teachers were told to use the charts while teaching.

At the beginning of the innovative teaching program the students of all the four schools were given individually an audio cassette on the Bandishes based on their syllabus and were asked to hear the same repeatedly in their houses and practise them thoroughly.

As the innovative teaching program heavily relied on Audio-visual aids, one day in the week was allocated for exclusively teaching with the audio-visual aids, though the aids are otherwise used off and on as per the requirements of the topic being taught. When a new Raga was to be taught, the teachers always played the cassette on the Bandishes based on that raga. The Cassette on 'Yaman Raj' which has a story on Yaman Raj was played before teaching Rag Yaman and the Cassette on Sargam Katha was played before teaching the Ragas, Bihag and Kaffee.

On the day specifically allocated for teaching with Audio-visual aids, the teaching was carried out keeping the following two important objectives in view.-

- (1) To expose the students to topics of general knowledge related to Music.
- (2) To impart some specific knowledge to students.

While presenting the cassettes meant to impart



general knowledge, the teacher simply played the cassette and did not give any explanation as the aim was only to expose them to the diversity and beauty of the Music and not to teach the particular raga; however, an effort was made to clarify certain facts whenever necessary.

Some of the audio-visual aids had direct impact upon the music education. The cassettes made to help in vocal practice fell in this category. While playing this type of cassettes the teachers had been explaining the topic themselves thoroughly and getting the practice done accordingly. The cassettes meant for helping in vocal practice were played in the first few weeks of the innovative teaching period so that the students were motivated for practice in the proper way.

Due to the difficulty in making the audio-visual aids available in all the four schools simultaneously, different days of the week were fixed for each school to hold the audio-visual aids based teaching class. One tape recorder and relevant audio-cassettes were given to the teacher of each school on the day of this class and the teachers used this material in teaching on that particular day. The students some times used their vacant periods also for hearing these cassettes on that particular day.

The music picture books were left in the libraries of the four schools for 15 days each by rotation for the students to refer to. The students were advised to use their spare time

in the library to study these books.

To make the regular classes more interesting, a play method of teaching was introduced apart from the demonstration and imitation technique. In this the students were asked to identify the various notes in quiz type questions. The students get interested to answer the questions, if it is put forward like a quiz game. The teachers used to sing various swaras in Aakar and used to ask the students to find the swaras with a view to develop their capacity to identify swaras. The same quiz type play technique was used while teaching Ragas where the student was asked to identify the swaras of the ragas.

The questions asked in this quiz game included theoretical details of Ragas based on their course, singing the swaras of Ragas and singing the Sthayee and Antara of the Bhandishes that they had learnt. The teachers announced the competition of Music games one week in advance and asked the students to prepare both the theory and practical aspects of their course contents.

The entire class was divided into two sections equally and in some cases only the selected students played the game and the others observed. The first student of the first group used to ask the first student of the opposite group a question on a Raga. If the first student failed to get the answer the next in the same group was given a chance and so on. The next question was to be asked by the second student of the

first group and answers were to be given by the second student of the second group. This way all the students of first group asked questions and the second gave answers. Later, the process was reversed with the second group asking questions by turns on a different set of Ragas and the first group gave answers. The two groups were given two different sets of Ragas to ask questions. The questioning group of students had to prepare the questions themselves and took care not to repeat the questions. On the day of the competition the charts showing the important points on ragas of the syllabus were removed from the class room. The teacher of the class maintained the discipline of the class on the day of the competition and was also the referee. The marking scheme was as follows.

One mark was awarded to the group for the correct answer if the answer was given by the first person to whom the question was put and half mark was given if the first person failed to answer but any of the group gave the correct answer. If none of them gave the correct answer a zero was awarded.

Special precautions taken during the innovative teaching.

[1] Care was taken to keep the time duration for the normal and the innovative programs equal.

[2] The ten Ragas of the syllabus were distributed equally.

[3] The complexity of the Ragas was kept same for the two methods.

[4] The teachers of all the four schools were given full

knowledge of the innovative teaching method and also told about the advantages that could accrue by the new method of teaching very clearly much before the start of the innovative teaching. They were also given instructions about the teaching aids and the teaching methods from time to time. A close watch was kept by this worker to see that the instructions were correctly implemented.

[5] The time spent on tests was also kept equal in the two methods of teaching.

[6] The same experts conducted the tests during both periods.

### 3.11 Test Administration.

To determine the a-priori standard the two experts took the practical test on vocal singing of the students of all the four schools at the beginning of the session. After this the teaching was done by the normal methods for five months by their own teachers. At the end of about two months and at the end of five months of this normal teaching these experts conducted the practical test of vocal singing of all the students. The normal method of teaching concluded at the end of five months. Tests on Musical Interest and Comprehension were also held at the end of normal teaching.

During the Innovative teaching period also tests on vocal singing were held at the end of two months and at the end of five months by the same team of experts. The innovative teaching concluded at the end of five months and tests on Musi-

cal interest and comprehension were held at this time, just as in the case of normal teaching. The time spent on tests and other test conditions were kept identical in both cases as far as possible. The standard of tests conducted during the two methods of teaching were kept equal.

### 3.12 Scoring of Tests

All the tests had a definite scheme for marking which was strictly followed while evaluating the scripts. The marks obtained by each student in these tests were tabulated and are shown in the Appendix No.II. Special care was taken to avoid errors. For a meaningful comparison of the two methods, these results were statistically analysed and certain statistical functions were used for this purpose. In the following the meaning and purpose of these functions is explained.

### Statistical Functions used

In the analysis of the results the following statistical functions have been used. They are,

- (1) Mean,
- (2) Standard Deviation,
- and (3)  $t$  - value.

#### Mean

The mean of the marks of a set of students in a particular subject is obtained by summing all the marks and dividing the total by the number of students. If there are  $N$  students and  $X_1$

represents marks obtained by the  $i$ -th student, then the Mean ( $M$ ) is given by,

$$M = \left( \sum_{i=1}^N X_i \right) / N$$

If the Mean marks of a certain class increase, it implies that the students have done better in the examinations or, in other words, one may say that their knowledge has improved.

#### Standard Deviation

The Standard Deviation is a measure of the difference in the levels of the students among themselves. This is obtained by subtracting the Mean from the marks of each student and summing their squares and dividing the squared sum by  $(N-1)$  where  $N$  is the number of students in the sample. The square root of this figure gives the Standard Deviation. Mathematically,

$$S.D. = \left[ \sum_{i=1}^N (X_i - M)^2 / (N - 1) \right]^{0.5}$$

The standard deviation tends to decrease if all the students tend to be of equal level. If there is a wide difference in the level of students the S.D. tends to become large.

#### t - value

When two groups are to be compared the mean marks scored by the two groups give an indication of their levels. But even if the mean marks are higher for one group, it is possible that

the difference in marks is only a chance factor and not true. The t-value is a statistical function from which the level of significance of the difference in the mean values of two samples can be determined.

If two groups of students have strengths  $N_1$  and  $N_2$  with the marks of the  $i$ -th student represented by  $X_i$  and  $Y_i$  and their mean values given by  $M_1$  and  $M_2$  respectively, the t-value of the difference of their means is given by,

$$(M_1 \sim M_2)$$

$$t = \frac{\sqrt{\left\{ \sum_{i=1}^{N_1} (X_i - M_1)^2 + \sum_{i=1}^{N_2} (Y_i - M_2)^2 \right\} \left\{ \frac{1}{N_1} + \frac{1}{N_2} \right\}}}{(N_1 + N_2 - 2)}$$

The higher the magnitude of the t-value, the greater is the significance of the difference of the two means. Standard statistical tables are available [1], where the t-value for a given level of significance and for given sample size are tabulated. If the level of significance is specified as 0.05 level, it implies that there is 5% chance of both groups to be of the same level and there exists 95% probability that one group is superior to the other.

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[1] Ray and Sharma, "Mathematical Statistics", 1986, Ram Prasad and Sons, Agra.