Capacity Building of Secondary Teachers of Adarsh Nivasi Shalas of Gujarat State in Science subject

Programme Report

PAC-23.30

Session - 2023-24

Dr. R.P. Prajapati
Programme Coordinator

REGIONAL INSTITUTE OF EDUCATION (NCERT), BHOPAL (M.P.)

A constituent unit of National Council of Educational Research and Training, New Delhi

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PROGRAMME REPORT

DEE/2023-24/PAC 23.30

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PREFACE

The central role of experiments and practical work in the school science curriculum is universally accepted. A balanced science curriculum should not only give due emphasis to both theory and experiments but also integrate these complementary aspects of the subject in the teaching-learning process. Present-day science, as we all know, is the result of the creative interplay of observations, experimentation, and theoretical inferences. The importance of practical work in science education has also been recognized and greatly emphasized in the national policy of education for the past several decades. However, despite several laudable efforts in the past, experiments, by and large, have continued to be marginalized in the schools. The challenge arises due to the combination of several factors. The school should be keen to find out ways to promote laboratory work in the subject and introduce greater uniformity, objectivity, and reliability in the assessment of practical work.

In the last two decades, the impact of science and technology is visible everywhere. These recent innovative ideas in science have influenced every aspect of existence- vocational, social, economic, political and cultural. Science is intimately related to the means of production and means of communication. The exposure to science that students in our schools normally get creates in them an impression that science is a well-settled body of facts, principle, and theories. Even the laboratory work which they sometimes do consist of experiments set to a pattern, leading to results that are already known. With a little modification in approach however, the teacher can so design the experiments, that this weakness is removed from learners.

Science is a human endeavor which sharpens the mind through systematic and logical thinking. The practical skill inculcates many values in the learners. Noteworthy, among these, are reasoning ability, democratic and cooperative learning, accepting and rejecting the arguments on the basis of its merits and demerits, creative thinking and above all satisfaction of doing something. All these values generate confidence in the mind of the learners, which in turn helps the learner to become a responsible citizen of the country.

The National Policy of Education (NPE) 1986, and NEP 2020 stresses the importance of science education, in these words," science education will be strengthened so as to develop in the child well-defined abilities and values such as the spirit of inquiry, creativity, objectivity, the courage to ask questions and an aesthetic sensitivity". This enhanced responsibility can be adequately

performed only when science teachers are equipped with required scientific competencies. Science teaching, as these do not adequately develop the mastery of such competencies. It has, therefore, been emphasized that innovative approaches may be inducted into science clubs to sharpen the scientific competencies in both students and teachers. According to NCFSE-2022 teacher should act as a facilitator and not as a transformer of content where they can think, realize, analyze and develop their own way of learning which something beyond the textbook.

Encouraging learners to carry out practicals would also help develop in them the scientific attitude with its emphasis on objectivity and open-mindedness. The idea for practical skill may originate from something that has been taught in the class or read in a book or from the general surroundings. Science can be learned efficiently through experimentation. Abstract scientific principles can be understood and can be correlated with daily life experiences through activities and experiments. Though a science textbook incorporates many activities these activities are not being performed properly in the classrooms. Hence these activities need to be systematized and procedure of some important experiments must be formulated which will translate the basic scientific principles. The science teachers at the school level must be trained properly to perform some basic experiments in order to inculcate scientific temperament and appreciation for science. Use of the practical skills for science concepts may be helpful to understand several science terms.

Keeping in view the importance of practical skills in School education and particularly the Science education, the secondary stage was purposely chosen because it is felt that this is a most crucial stage for learners where the learner has to strengthen the knowledge gained at elementary stage and as well as build up right attitudes for the future life, which may make the learner a successful and confident human being in all walks of life.

This training programme provides a variety of materials for practical skills used in training workshops and students for Secondary school science teachers which can be used both in group-work and by individual teachers and learners for independent study.

It is hoped that concerted efforts will be put in by all schools and subject teachers to make the best use of this training programme and make the learning of science a joyful and meaningful experience for learners. Considering these

points of meaningful science learning using science kit the objectives of training programme mentioned below-

1. To develop skills to make science subjects more creative and enjoyable.
2. To provide training on identified areas which need proper explanation through science concepts.
3. To facilitate experimental learning and inculcate scientific temper and scientific curiosity at secondary level.

In order to achieve these objectives, in view this five days Training programme was organized at RIE,Bhopal.

Dr. R.P. Prajapati

Programme Coordinator

RIE, Bhopal

ACKNOWLEDGEMENT

I express my deep sense of gratitude to Prof. Dinesh Prasad Saklani, Director, NCERT for their inspiring leadership which has always been a source of inspiration to accomplish the task in hand in a skilled and satisfactory manner. I would like to express my sincere gratitude to Prof. Jaydip Mandal, Principal, RIE, Bhopal for giving to me the opportunity and necessary support to complete Training programme.

I would like to express my sincere thanks to Prof Jaydip Mandal, Dean of Instruction, and Prof.(Captain) Rashmi Singhai, Head, DESM, RIE, Bhopal for continuous support and encouragement.

I am grateful to Prof. Chitra Singh Head DEE, RIE, and Bhopal for his valuable help in organizing Training programme.

I am also thankful to all resource persons, participants for their valuable support, discussion and suggestion for improvement of this programme.

Dr. R.P. Prajapati
Programme Coordinator
RIE, Bhopal

CAPACITY BUILDING OF SECONDARY TEACHERS OF ADARSH NIVASI SHALAS OF GUJARAT STATE IN SCIENCE SUBJECT

(PAC 23.30)

Laboratory skill is an integral part of secondary level science curriculum. If properly planned and conducted, practical skills can provide a firsthand experience of the various activities that comprise science. Practical skills are meant to (i) develop the skills required to perform the experiments and (ii) to strengthen the understanding of the theoretical concepts pertaining to the experiments done in the laboratory. The important skills required in science practical is meant to assist the learners to learn and develop the skills of manipulation, observation, reading, recording, computing and interpreting. Success achieved by following these skills not only trains one in these abilities, but also increases confidence in the method of science. Encouraging learners to carry out practical would also help develop in them the scientific attitude with its emphasis on objectivity and open mindedness.

OBJECTIVE OF THE TRAINING PROGRAMME

1. To develop skills to make science subjects more creative and enjoyable.
2. To provide training on identified areas which need proper explanation through science concepts.
3. To facilitate experimental learning and inculcate scientific temper and scientific curiosity at secondary level.

Science can be learnt efficiently by experimentation. Abstract scientific principles can be understood and can be correlated with daily life experiences through activities and experiments. Though a science text book incorporates many activities but these activities are not being performed properly in the class rooms. Hence these activities used to be systematized and procedure of some important experiments must be formulated which will translate the basic scientific principles. The science teachers at secondary stage must be trained properly to perform some basic experiments in order to inculcate scientific temperament and appreciation for science. The main objective of this workshop is to develop the training package of practical skill in order to enrich the science teachers in learning the systematic performance of science experiments to relate the secondary science concepts effectively with practical skills.

PRACTICAL SKILLS IN SCIENCE CONCEPTS AND SCIENCE KITS

Introduction

In many parts of the world, science education occupies a comparatively insignificant place in school. Unfortunately what actually happens in the classroom under the label of science is often totally inadequate. Teacher training both pre-service and in-service, is one of the keys to this problem. Starting from the premise that this training should be carried out in ways more closely related to the active methods which teachers are expected to use in their school.

The crucial role of experiments in the school science curriculum is universally accepted. A good science curriculum must not only give balanced emphasis to both theory and experiments but also integrate these two essential and complementary aspects of science in the teaching-learning process. Modern science, as we all know, is the result of a creative interplay of experiments, observations and theoretical inference.

There are several ways in which experiments facilitate and improve the learning of science. First and foremost, experiments help students develop the right perspective of science, namely that science is not just a theoretical abstraction – it is an attempt to describe the working of the real world around us. A hypothesis or idea in science is acceptable only if observations and experiments confirm it. Second, experiments are among the most effective ways to generate interest in science. For many students, an apparently 'dry', 'uninteresting' fact of theory in the textbook can become live and exciting when translated into an experiment. Third, experiments promote the basic skills and competencies of doing science: procedural and manipulative skills, observation skills, skills of representing and interpreting data and the accompanying conceptual and critical abilities. For these various reasons, promoting activity and experiment-based learning has been at the heart of many efforts aimed at improving science education in our country.

Despite several laudable efforts in the past, experiments, by and large, have continued to be marginalized in our schools. There seem to be two principal difficulties. Firstly, experiments require a certain minimum infrastructure – a laboratory with some basic equipment and consumables on a recurring basis. Secondly, an assessment of practical skills in science in a sound and objective manner is by no means an easy task. The difficulty multiplies manifold if an assessment is to be carried out on a large scale. Thus lack of infrastructure and,

more important, lacks of reliable assessment have resulted in the unfortunate neglect of experimental work in most of the schools in India.

Experiments play a crucial role in the progress of science. A large number of path-breaking discoveries and inventions have been possible through investigations done usually in laboratories. The experimental work is, therefore, an essential component of any course in science. A course on practical work in science curricula in schools at the secondary stage is essentially designed to acquaint the learners with the basic tools and techniques used in a science laboratory. It also envisages developing problem-solving skills. These skills help the learner to acquire the ability to identify a problem, to design and to set up the experiment, to collect and analyze data through experiment, and to interpret data to arrive at a plausible solution in due course of time. These are, in fact, the long term objectives of laboratory work and become the nucleus of the philosophy of construction of knowledge by the learner. A school science laboratory is a place where basic experimental skills are learned by systematically performing a set of prescribed and suitably designed experiments. Performing experiments by one's own hands are not only a thrilling experience but are also important because it entails learning by doing. It also facilitates an understanding of the concepts of science. The experiments and project work suggested at the secondary stage intend to develop basic skills of measurement, handling of some common measuring instruments, equipment, and chemicals, setting simple apparatus, handling microscope and preparing slides, making observations, collecting data and presenting it in appropriate format interpreting and drawing conclusions, and preparation of report. There are certain rules and regulations that every student must be familiar with before undertaking practical work in a laboratory. A student is required to be acquainted with the general facilities and the equipment available in the laboratory and follow the rules and regulations. Generally, at the beginning of the session, the teacher takes the students around the laboratory to familiarise them with the general facilities available in the laboratory and tells them about certain do's and don'ts while performing the experiments in the laboratory. For the laboratory work categories of practical skills are given below:

1. Procedural and manipulative skills

- Select appropriate apparatus / instruments for performing the experiment.
- Know the limitations of the apparatus/instruments regarding their size, least count and accuracy.

- Arrange/assemble/ set and adjust the apparatus systematically.
- Handle the apparatus, instruments, chemicals carefully to avoid any damage or injury.
- Perform the experiment with reasonable efficiency and accuracy.
- Separate and remove desired parts of a specimen for detailed study without damaging it.
- Use appropriate methods and materials for specimen mounting.
- Locate and rectify the errors in apparatus, instruments, etc.
- Add chemicals in the appropriate quantity.
- Dismantle the experimental set-up carefully.
- Practice the precautions in handling sensitive apparatus or chemicals or flame.

2. Observational skills

- Find the least count of the instrument.
- Read the instrument correctly.
- Notice color change, the evolution of gases, formation of precipitates, chemical reactions, etc., carefully.
- Notice the relevant details in the given specimens minutely.
- Locate the desired parts in a specimen accurately.
- Take observations carefully and in a systematic manner.
- Read the graph correctly.

3. Drawing skills

- Make proper observation tables.
- Draw circuit diagrams, ray diagrams, experimental set-ups, sketches, etc. correctly and proportionately.
- Label sketches and diagrams correctly.
- Draw graphs from observed data correctly.

4. Reporting and interpretative skills

- Make a proper plan for recording the observations.
- Record the observations/data/information correctly and systematically.
- Classify and categorize organisms.
- Make correct calculations/predictions.
- Use proper formulae and mode of summarizing and reporting the result.

- Report the result using correct symbols, units, terms, and chemical equations.
- Interpret the observations and results correctly.

In the last two decades, the impact of science and technology is visible everywhere. These recent innovative ideas in science have influenced every aspect of existence- vocational, social, economic, political and cultural. Science is intimately related to the means of production and means of communication. The exposure to science that students in our schools normally get creates in them an impression that science is a well-settled body of facts, principle, and theories. Even the laboratory work which they sometimes do consist of experiments set to a pattern, leading to results that are already known. With a little modification in approach however, the teacher can so design the experiments, that this weakness is removed from learners.

An experimental skill for science concepts, on the other hand, involves a search to understand the unknown and begins with a question. In doing the usual science concept for practical, you report on, something that someone else has discovered. This does not mean that doing an experiment will earn your world- fame as a discoverer. It does mean that you can discover something, a fact or relationship that was unknown to you and that was not recorded in any book available to you. Scientists refer to this as an independent discovery.

The National Policy of Education (NPE) 1986, and NEP 2020 stresses the importance of science education, in these words," science education will be strengthened so as to develop in the child well-defined abilities and values such as the spirit of inquiry, creativity, objectivity, the courage to ask questions and an aesthetic sensitivity". According to NCFSE-2022 teacher should act as a facilitator and not as a transformer of content where they can think, realize, analyze and develop their own way of learning which something beyond the textbook.

Laboratory skill is an integral part of school level science curriculum (Primary, Upper Primary, Secondary, and Higher Secondary level). If properly planned and conducted, practical skills can provide a first-hand experience of the various activities that comprise science. Practical skills are meant to (i) develop the skills required to perform the experiments and (ii) to strengthen the understanding of the theoretical concepts pertaining to the experiments done in the laboratory. The important skills required in science practical are meant to assist the learners to learn and develop the skills of manipulation- involve the

correct and skillful handling of the apparatus by the experimenter. Observation- involves the use of senses hearing, sight, touch and smell to detect changes/reactions. Reading- refers to the ability to comprehend written or printed information. Recording-entails writing down, for example, measurements or statements of facts or other details for reference. Computation- the use and application of mathematical knowledge on the data collected. Interpretation- studying the data collected and drawing conclusions based on the established science principles/theories. The success achieved by following these skills not only trains one in these abilities but also increases confidence in the method of science. Encouraging learners to carry out practicals would also help develop in them the scientific attitude with its emphasis on objectivity and open-mindedness. The idea for practical skill may originate from something that has been taught in the class or read in a book or from the general surroundings. Science can be learned efficiently through experimentation. Abstract scientific principles can be understood and can be correlated with daily life experiences through activities and experiments. Though a science textbook incorporates many activities these activities are not being performed properly in the classrooms. Hence these activities need to be systematized and procedure of some important experiments must be formulated which will translate the basic scientific principles. The science teachers at the school level must be trained properly to perform some basic experiments in order to inculcate scientific temperament and appreciation for science. Use of the practical skills for science concepts may be helpful to understand several science terms which include the following:

1. To stimulate an interest in science subjects.

2. To improve their experimental and communicational skills and to develop scientific attitude and interests.

3. To inculcate divergent thinking and cooperative attitude among the students.

4. To make science subjects more creative, enjoyable and sound fundamental knowledge of facts and principles.

5. To satisfy scientific curiosity.

6. To encourage independent thinking.

7. To make use of the environment.

8. To give practice in critical thinking.

9. To develop problem-solving techniques.

10. To make scientific principles more meaningful.

11. To increase self-confidence.

The experiment should be so designed that its results are clearly interpretable. Interpretation becomes difficult if the variables are not identified and suitably controlled. The initial design of the experiment must be carefully looked into so that some of the possible sources of error can be located and steps taken in the design to correct. Before actually starting the experiment, a list of materials required must be prepared and all the materials procured according to the list. It would also be convenient if a method of recording the data has been decided upon so that the necessary tables etc. , could be prepared before the experiment is started. During the experiment, accurate observations must be made and duly recorded, exactly as they happen. The data collected should be arranged in a methodical manner so that interpretations would be facilitated. The results and conclusions of the practice will have to be presented finally as a report. There are a number of ways in which the experiments can be modified and improved. If these practical skills can generate ideas not only for the improvement of the suggested designs but also for new experiments, their purpose would be amply served. The steps involved in an experiment skill for science concept are:

1. Providing a situation- Experiment work almost always should be initiated by teachers. He/She should provide situations to the students which motivate to create some problem for them and in which they feel interested to work.

2. Purpose and selection- While selecting the experiment, for science concepts, the teacher should see that practical should be relevant to this level of skills. The objectives of practical should be clearly defined and understood by the students.

3. Planning- The success of an experiment work depends upon a good planning. The students should plan out the whole scheme under the proper guidance of the teacher. After a discussion of the practical work with the teacher and group of students should write down the plan properly.

4. Executing- The teacher should assign different tasks among the students of a group according to their interest and abilities. Every student should contribute actively towards the execution of practical work and skill. Some of the students may be assigned the work of library to collect information about the experiment. The student who is good in laboratory work must be given the task

to perform an experiment and he/she can also collect the data. In the same way, different tasks may be assigned to different students and teacher should give instructions wherever need be.

5. Evaluation- Evaluation should be done in terms of objectives. The work must be judged by the teacher and it should be reviewed in terms of the error committed by the students. Each practical should be evaluated on its own merits, not in competition with other practical's and with the abilities, interest, and background of the student given full consideration.

6. Recording- The students should keep a record of all the work i.e. how they planned, what discussion was held and finally criticism of their work and some key points for future reference.

Experiment skills for science concepts can make the study of science more exciting, enjoyable and educational. This provides an opportunity for teachers and learners to get a first-hand experience of the process involved in scientific concepts at the school level. It represents one method of helping learners explore their special interests in depth. The resulting finding is often for more valuable to the students who are involved than the information presented in regular class periods. The main objective of this book is to assess on science concept to promote the practical skills in order to enrich the science teachers and students in learning and systematic performance of science experiments to relate the science concepts effectively with experiment skills.

Dr. R.P. Prajapati
Programme Coordinator
RIE Bhopal

PROGRAMME REPORT

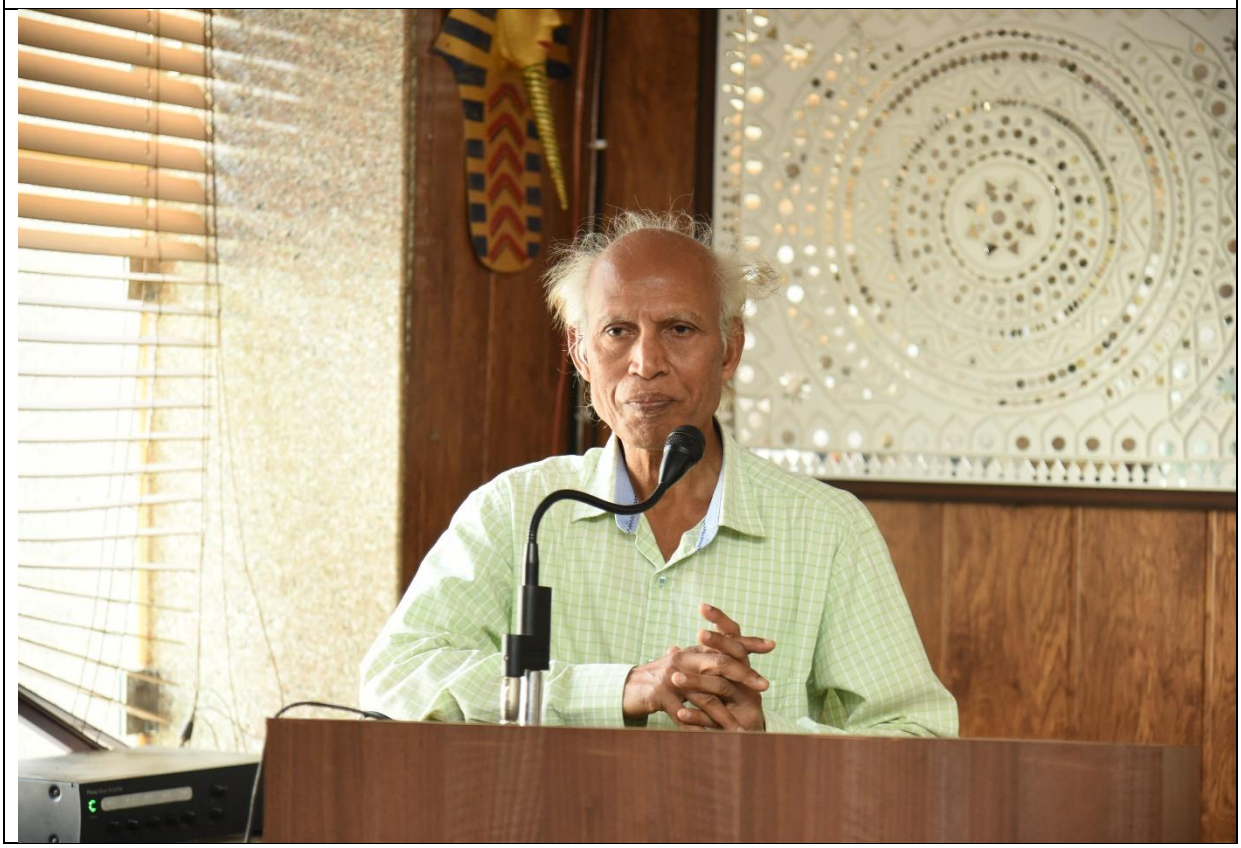
Laboratory skill is an integral part of school level science curriculum. If properly planned and conducted, experiment skills can provide a first hand experience of the various activities that comprise science. The National Policy of Education (NPE) 1986, and NEP 2020 stresses the importance of science education, in these words," science education will be strengthened so as to develop in the child well defined abilities and values such as spirit of enquiry, creativity, objectivity, the courage to ask questions and an aesthetic sensitivity". According to NCFSE-2022 teacher should acts as a facilitator and not as a transformer of content where they can think, realize, analyze and develop their own way of learning which something beyond the text books.

Training programme on conducting experiments of science using secondary science Kit (PAC 23.30) was organized in RIE Bhopal from 9-13 Oct. 2023 for state of Gujarat Adarsh Nivashi Shalas secondary science teachers.

TRAINING PROGRAMME (9th to 13th October, 2023)

The training programme began on 9th October 2023. The letters were sent well in advance and authorities were also consulted telephonically. Inspite of much effort only 20th teachers, out of 40 (GUJRAT) for training programme three state teachers registered for participation. During the inaugural session, the academic coordinator of the programme emphasized the need for the active involvement of the participants to derive the best out of the training programme. He called upon the participants to have a free academic interaction with resource persons so that they can project their problems and share their thoughts with regard to practical skills of science subjects. On the first day of the training programme, the resource persons had an informal interaction with the participants to explore their specific need to be met during the laboratory work. The discussions resulted in identifying the specific experiment which needs to be emphasized and doubts to be cleared during the discussions of those experiments. The participant attends the Chemistry, Physics and Biology laboratory sessions as per the training programme schedule. All participants were highly enthusiastic and actively involved themselves in the training programme. The resource person invited for training programme from 9th to 13th October 2023 as per the list is given as follows:

Activities performed during the Training Programme (Photos)

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CAPACITY BUILDING OF SECONDARY TEACHERS OF ADARSH NIVASI SHALAS OF GUJARAT STATE IN SCIENCE SUBJECT

(PAC 23.30)

FIVE DAYS TRAINING PROGRAMME (9-13 October. 2023)

LIST OF RESOURCE PERSONS (PAC 23.30)

S. No.	Name	Addresses	Email
1.	Dr. Jaydip Mandal Professor, Botany	RIE ,Bhopal	jaydipmandal07@yahoo.com
2.	Dr. L. K. Tiwary Professor, Chemistry	RIE ,Bhopal	lktiwary@gmail.com
3.	Dr. Rashmi Singhai Professor, Chemistry	RIE ,Bhopal	ras-iv@erdiffmail.com
4.	Dr. Daksha Parmar Assistant Professor, Botany	RIE ,Bhopal	daksha_parmar@yahoo.com
5.	Dr. Kalpana Maski Assistant Professor, Physics	RIE ,Bhopal	k-maski@rediffmail.com
6.	Mr. L. S. Chauhan Assistant Professor, Physics	RIE ,Bhopal	shreelschauhan@gmail.com
7.	Dr. ShivaliKa Sarkar Assistant Professor, Physics	RIE ,Bhopal	shivalikasarkar@gmail.com
8.	Mrs. Jagariti Sharma PGT, Chemistry	K.V. No. 2, Bhopal	05jagrati10@gmail.com
9.	Mrs. Ragini Bhatt, PGT, Biology	JNV, Indore	1966ragani@gmail.com
10.	Ms. Sanjay Dubey PGT, Physics	K.V. Bhairagarh, Bhopal	sanju27kvs@gmail.com
11.	Dr. R. P. Prajapati, Associate Professor, Chemistry Programme Coordinator	RIE ,Bhopal	prajapatirie@gmail.com

In this training programme all participants spent their entire time in Chemistry, Physics and Biology laboratories. The major techniques/experiments skills they learnt are as the programme included:

I**n Chemistry,** 1. Reading of thermometers and stop watches, 2. Weighing technique by chemical balance and maintenance of chemical balance 3. Handling of glassware's, using, clamping and cleaning. 4. Preparation and properties of gases and setting up of apparatus for the preparation of gases. 5. Determination of pH of different chemicals, fruits and vegetable using litmus paper/pH paper/universal indicator and hand pH meter. 5. Skill for preparation of soap 5. Titration by double burette method 6. Separation of coloured component by paper chromatography 7. Determination of specific properties of organic compound. 8. Experimental properties related to metals and non-metals. 9. Technique to prepare emulsion. 10. Technique involved in the study of evaporation, exothermic and endothermic reaction. **In Physics**, 1. Testing of electronic components. 2. Fuse -testing, rating and fitting. 3. Series and parallel wiring. 4. Reading circuit diagrams. 5. Identification of lenses and mirrors double convex and concave. 6. preparation of electronic circuit on the bread board. 7. Focal length of concave and convex lense.8 experiments on motion, slope and acceleration 9. Demonstration of Galileo's thought experiment.10. Error measurement and collection of real time data and position.11. Determination of fluid pressure by hydrometer.12. Working knowledge of electrical and electronic equiments, gravitation and Archimedes principle. **In Biology,** 1. Skill of aerobic respiration.2. Experiment on stomatal activity.3. Demontration of transportation in plants.4. Experiment on pigments of chloroplasts.5. Practical skills in mendelian genetics.6. Study of microscope part,handling and reading.7. Experiment on osmosis,meristematic tissue and spore formation in rhizopus.8. Demontration of flower structure, vegetative propagation,soil erosion and different soil samples. 9. Identification of monocot and dicot leaf.10.Onion peel structure under the microscope.

The participants fully utilized the training package which was distributed to them just after their arrival in inauguration session. During the programme session they removed their doubts and misconceptions if any by discussion with the resource persons. The III sessions of 13th September 2023 were utilized to visit Regional Institute of Education, Bhopal. All the participants enjoyed a lot in different experiment related to practical skills using science kit which were much helpful to inculcate interest in science, and also last day of programme all

participants submitted their feedback report. They appreciated this programme and requested to organize similar programmes for longer duration.

The valedictory function of the training programme was held on 13-10-2023. Prof. J.P. Mandal Principal of RIE Bhopal, in his valedictory address, stressed the importance for such training programme and hoped that the participants would pass on the benefits derived to the students in their classrooms. Some of the participants, who spoke, expressed that the training programme was highly rewarding enrichment of practical skills using science kit. They lauded the efforts of programme coordinator, resource persons and their academic inputs. At the end of the programme, the participants were given certificates for having completed the training successfully.

FEEDBACK OF PARTICIPANTS

A feedback report was prepared in order to study the effectiveness of such programme. Before valedictory 13-10-2023), all participants were suggested to submit their feedback related to training programme. There was encouraging response from participants and all cooperated to submit their feedback report to programme coordinator.

All participants appreciated this kind of programme and suggested to organize this kind of programme in future for themselves as well as for other teacher. Inspired by these comments similar programme was proposed for the secondary science teachers of Madhya Pradesh, Maharashtra, Chhattisgarh, goa and Gujarat state in coming session. The suggestion given by the participants summarized as follows:

1. Mostly all participants suggested organizing such Training programme related to science experiment using science kit regularly for the benefit of practicing science subject teachers.

2. All participants found that five days duration of training programme insufficient to cover maximum areas of their difficulties related to science experiments. Looking into these difficulties similar programme proposed for (Maharashtra Madhya Pradesh, Chhatishgarh, goa and Gujarat state) the next session has been scheduled to increase the duration of the programme, so that some more area of experiment skills will be covered and practices would be established effectively.

3. Some participants suggested sending the objectives of the programme and time table schedule to the participants well in advance so that they will attend with mental preparation to learn something they needed.

4. Mostly all participants appreciated this programme in understanding of minute problems coming across while performing experiments which are generally ignored by the teachers. Some participants requested to organize such programme during vacation so that the teaching in the schools will not affected.

5. All participants were highly satisfied on the hospitality provided to them and in the same time they were very happy on the co-ordination and overall management of the programme.

All the suggestion furnished by the participants are accepted with positive attitude and will try to be accommodated in the similar programme proposed in the coming session for (Gujarat, Maharashtra, Madhya Pradesh, Chhattisgarh and Goa) state.

CAPACITY BUILDING OF SECONDARY TEACHERS OF ADARSH NIVASI SHALAS OF GUJRAT STATE IN SCIENCE SUBJECT (PAC.23.30*)*
TRAINING SCHEDULE (9th – 13th October. **2023)**

Date/Day	**Time/Session I 9.30-11.00 a.m.**	**Time/Session II 11.30-01.00 p.m.**	**Time/Session III 2.00-03.30 p.m.**	**Time/Session IV 4.00-05.30 p.m.**
9/10/23 Monday	Registration& Inaugural	Biology Practical RB	Physics Practical SD	Chemistry Practical JS
10/10/23 Tuesday	Physics Practical LSC	Biology Practical RB	Chemistry Practical JS	Physics Practical KM
11/10/23 Wednesday	Physics Practical SS	Biology Practical RB	Chemistry Practical JS	Biology Practical DM
12/10/23 Thursday	Chemistry Practical RS	Chemistry Practical LKT	Biology Practical JM	Physics Practical LSC
13/10/23 Friday	Chemistry Practical RPP	Biology Practical DM	Chemistry Practical RPP	Valedictory Session

Tea Break-11.00-11.30 a.m.& 03.30-4.00 p.m., Lunch - 1.00-2.00 p.m.

JM - Prof. Jaydeep Mandal SS - Shivalika. Sarkar KM - Dr. Kalpana Maski
LKT-Pro.L.K. Tiwary DP - Dr. Daksha Parmar
RS -Prof.Rashmi Singhai SD - Mr. Sanjay Dubey LSC -Mr. L. S. Chauhan
RB - Ms. Ragini Bhatt JS -Ms. Jagriti Sharma RPP-Dr. R.P. Prajapati

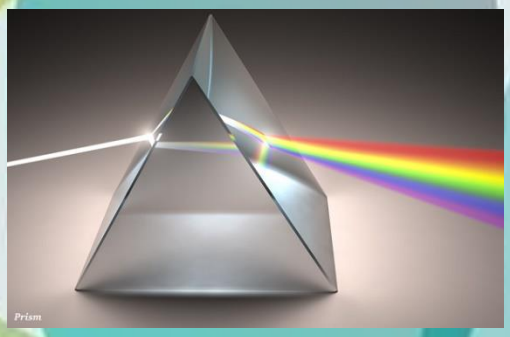
(Dr. R. P. Prajapati)
Programme Co-ordinator

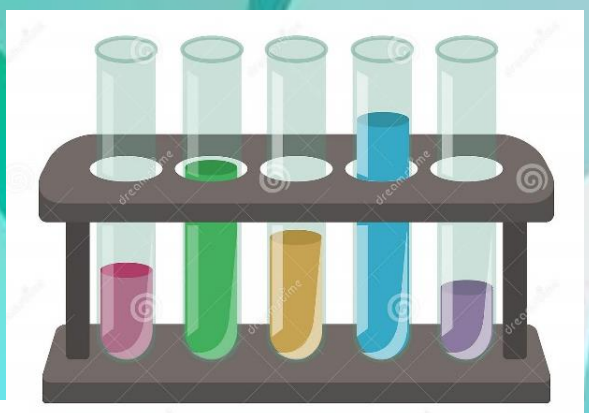
REGIONAL INSTITUTE OF EDUCATION, BHOPAL

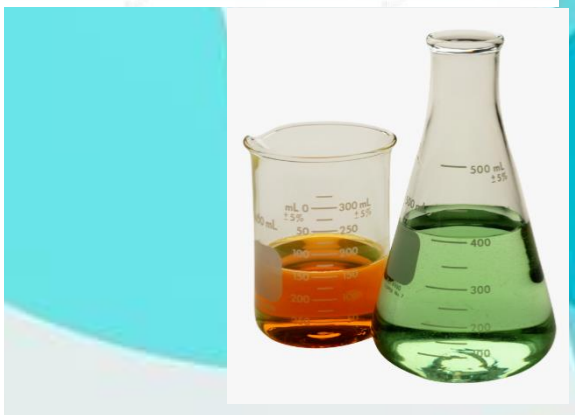
CAPACITY BUILDING OF SECONDARY TEACHERS OF ADARSH NIVASI SHALAS OF GUJRAT STATE IN SCIENCE SUBJECT (PAC.23.30*)*
TRAINING SCHEDULE (9th – 13th October,· 2023)

LIST OF PARTICIPANTS

S. No.	Name	Official Address
1.	Mrs. Daxaben K. Chavda	Adarsh Nivasi Shala Boys, Nasvadi, Chhota Udepur, Gujarat
2.	Ms. Monaben A. Solanki	Adarsh Nivasi Shala Boys, Ahmedabad, Gujarat
3.	Mrs. Bhartiben B. Tandel	Adarsh Nivasi Shala Girls, Chikhli, Navsari, Gujarat
4.	Mrs. Aktaben D. Patel	Adarsh Nivasi Shala Girls, Limkheda, Dahod
5.	Mrs. Archanaben P Shah	Adarsh Nivasi Shala Girls, Vadodara, Gujarat
6.	Mrs. Smitaben C. Hingu	Adarsh Nivasi Shala Girls, Saputara, The Dangs, Gujarat
7.	Mr. Jitendrasinh D. Ambalia	Adarsh Nivasi Shala Girls, Vyara Tapi, Gujarat
8.	Mr. Kamleshbhai B. Pandya	Adarsh Nivasi Shala Boys, Surat, Gujarat
9.	Mr. Vijaybhai Z Mistry	Adarsh Nivasi Shala Girls, Valsad, Gujarat
10.	Mr. Ilyasbin Y Arab	Adarsh Nivasi Shala Boys, Ankleshwar, Bharuch, Gujarat
11.	Mr. Hanubhai Somabhai Rathod	Adarsh Nivasi Shala Boys, Kawant, Chhota Udepur, Gujarat
12.	Mr. Jayeshkumar G. Vachhani	Adarsh Nivasi Shala Girls, Chhota Udepur, Gujarat
13.	Sh. Chintankumar R. Prasad	Adrash Nivasi Shala Girls, Sagbara, Narmada, Gujarat
14.	Mr. Sandipkumar R. Chaudhari	Adrash Nivasi Shala Boys, Mahuva, Surat, Gujarat
15.	Mr. Viralbhai B. Parmar	Adrash Nivasi Shala Boys, Vavol, Gandhinagar, Gujarat
16.	Mr. Yogeshkumar A. Parmar	Adrash Nivasi Shala Girls, Amirgadh, Banaskantha
17.	Mr. Anilkumar T. Parikh	Adrash Nivasi Shala Boys, Danta, Banaskantha
18.	Mr. Mayankkumar J. Patel	Adrash Nivasi Shala Girls, Jhalod, Dahod, Gujarat
19.	Mr. Maheshkumar R. Rathod	Adrash Nivasi Shala Boys, Nogama, Valsad, Gujarat
20.	Mr. Prafulchandra D. Kapadiya	Adrash Nivasi Shala Boys, Bhiloda, Arvalli, Gujarat







शिक्षार्थ आईए, सेवार्थ जाइए

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