



## **Dr. Rafia Ali's Profile**

Dr. Rafia Ali is a physicist/science educator engaged in the development of inquiry based science and mathematics programmes at the school level. She has worked extensively in the following areas:

- **Professional development of the teachers of mathematics and science at the elementary and middle school levels for both private and public schools.** Training has comprised of long term mentoring/coaching and facilitating short term workshops with emphasis on coordinators/teachers becoming inquirers themselves. Teachers are encouraged to develop their pedagogical content knowledge i.e., strengthening their understanding of key math and science concepts in conjunction with inquiry - based strategies to teach these ideas. Introductory training experiences require teachers to play a dual role that of a learner, constructing new ideas through practical investigations in different subject areas, and as an observer of teaching practices as modeled by the facilitator.
- **Development of inquiry-based elementary science and math curricula and instructional materials.** This multi-dimensional process has been based on current research in science education particularly on how children learn and construct scientific ideas and concepts. She has developed for grades 1-5: **1) Curriculum Frameworks** that delineate the topics to be taught at each grade level such that scientific knowledge and abilities evolve coherently and in a cognitively appropriate manner across grades; **2) Teachers' Planners and Guides in English and Urdu** which are structured to give the teacher a guided tour of all components of a lesson with emphasis on children working in groups, observing and analyzing their findings and finally communicating effectively; **3) Student Resource**

**Material** handouts/worksheets and activity books to develop their observational and investigative abilities; **4) Experimental Kits** to support the teachers' guides, made mostly of inexpensive and locally available material, enabling children and teachers to conduct inquiry in small groups and **5) Assessments** structured to assess students' ability to apply what they learnt and conduct inquiry.

- **Teaching high school physics and developing physics laboratories.** The learning and understanding of physics concepts is embedded in experimental investigations and problem solving. Teaching and laboratory experiences are structured to nurture students' observational skills, and analytical and logical abilities. Students are also encouraged to explore how physics ideas evolved historically and hence understand how scientific knowledge is acquired.

*Currently Dr. Rafia Ali is a consultant for the Elementary Science Education Project, Developments in Literacy (DIL).*

## **SAP**

**Science Association of Pakistan**

### **SAP's Introduction**

The Science Association of Pakistan (SAP) was formed on the 14<sup>th</sup> October 1998 as a voluntary non-governmental, non-political and non-profitable organization by science teachers from all over Pakistan at the Aga Khan University – Institute for Educational Development (IED). Able

**Vision of SAP / Dr. Rafia Ali's Workshop**

*“To improve the quality of Science Education in Pakistan”*

## **Workshop's AIMS**

As much as there is a need to have a firm grasp on science content, the following objectives are to be en-circled:

### **Workshop I – Introduction to Formative Assessment**

- ✓ To help teachers develop an understanding of formative and summative assessment and the different purposes they serve in the classroom.
- ✓ To help teachers understand the characteristics of formative assessment and the role it plays in supporting student learning.

### **Workshop II – Assessing Process Skills**

- ✓ To provide a method of observation designed to help teachers gather evidence of student use of process skills at different developmental levels.
- ✓ To help teachers add to observational evidence by offering strategies for framing questions and designing tasks that provide information about process skills from students' written and oral accounts of their work.

## **Methodology**

The participants were being engaged in learning through

- ✓ Interactive and learner centered approaches
- ✓ Inquiry
- ✓ Demonstrations
- ✓ Hands-on approaches
- ✓ Minds-on approaches
- ✓ Discussion method
- ✓ Activity based learning

## **ITA-IPL Representatives / Coordinators**

- Ms. Saba Latif
- Ms Tahira Maqbool
- Ms. Abida Chishti
- Mr. Adnan Khalil

## List of Participants

Sr. #	Name	Name of Schools
1.	Adnan Khalil	ITA-IPL
2.	Tahira Maqbool	ITA-IPL
3.	Saba Latif	ITA-IPL
4.	Abida Chishti	ITA-IPL
5.	Ruhí Zia	Punjab Education Foundation
6.	Ali Ghazanfar	Punjab Education Foundation
7.	M. Masood Khadi	Punjab Education Foundation
8.	M. Toseef Durrani	Punjab Education Foundation
9.	Yasir Hameed	Punjab Education Foundation
10.	Nadeem Arif	Punjab Education Foundation
11.	Faiza Sharukh	Sanjan Nagar Public Education School
12.	Sadak Nasim	Sanjan Nagar Public Education School
13.	Farzana Kousar	Sanjan Nagar Public Education School
14.	Saimon Robin	Sanjan Nagar Public Education School
15.	Fareeha Shahid	Sanjan Nagar Public Education School
16.	Maria Shah	Lahore Grammar School
17.	Afifa Shahzad	Lahore Grammar School
18.	Mehreen Sharif	Lahore Grammar School
19.	Bushra Saeed	Lahore Grammar School
20.	Fatima Zaka	Lahore Grammar School
21.	Sadia Saheer	Amal School
22.	Shanza Butt	Amal School
23.	Namrah Rifaqat	Amal School
24.	Noreen Hameed	The City Ed-Gate
25.	Ambreen Gulzar	Umeed School
26.	Rubina Ashraf	Umeed School
27.	Tasleem Gulzar	Umeed School
28.	Semina Saleem	The Herbert School
29.	Tayyaba Sadiq	The Herbert School

## SESSION PROCEEDINGS

### Day 1<sup>st</sup>

## “Introduction to Formative Assessment in Science”

By Dr. Rafia Ali

**What Dr. Rafia Ali presented.....!**

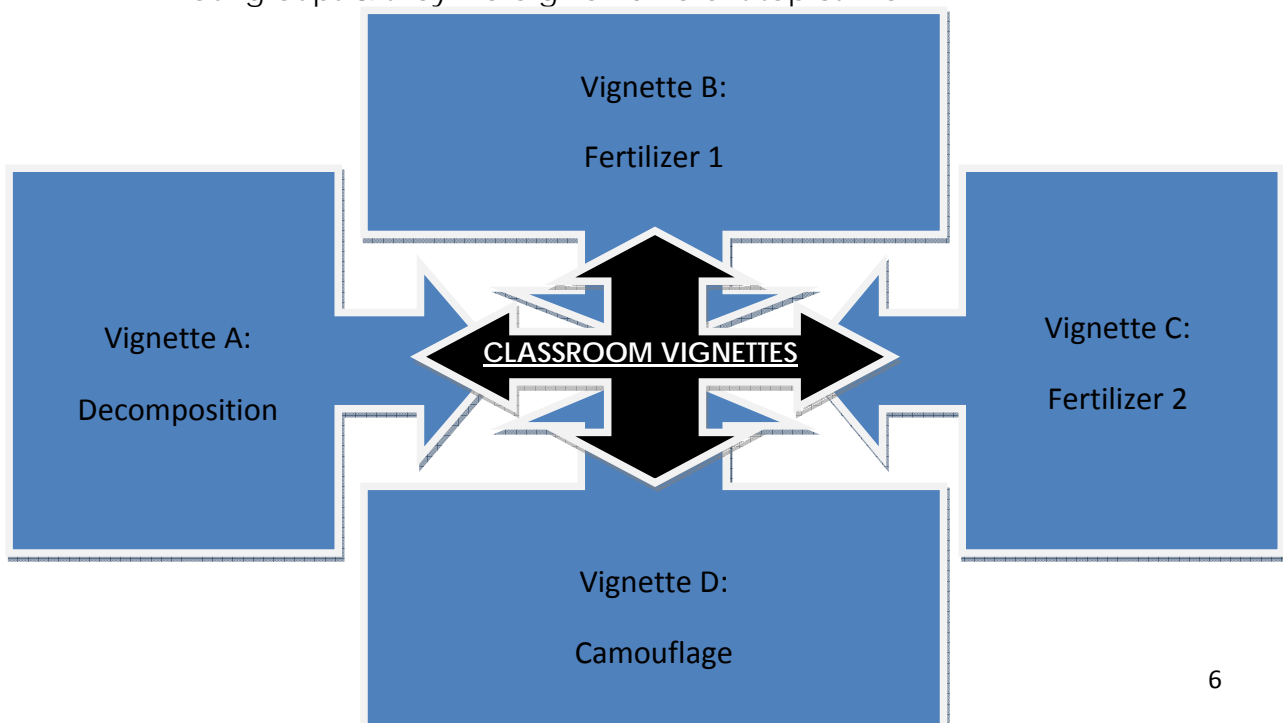
- o **TAKE HOME MESSAGES:**

The 1<sup>st</sup> activity done by Dr. Rafia Ali, in which she made the participant able to understand that Assessment is only formative when teachers use the information they've gathered to make instructional decisions.



- o **CLASSROOM VIGNETTES:**

Dr. Raffia Ali used some Classroom Vignettes for the best views & discussions between the participants. The participants were made into four groups & they were given different topics like



o **CLASSROOM VIGNETTES ACTIVITY SHEET:**

Then all the activity was then assessed by the sheet named Classroom Vignettes Activity Sheet

Vignettes	A Decomposition Vignette	B Fertilizer I Vignette	C Fertilizer II Vignette	D Camouflage Vignette
1. Is there Assessment				
2. What information was gathered				
3. By whom?				
4. About whom?				
5. Who used it & how?				



o **Key Points about Assessment:**

Dr. Rafia Ali did the following key points with the discussion activity.

- ✓ Assessment does not take place only after learning. Assessments can be done at any time during instruction- at the beginning & during, as well as at the end.



- ✓ Finding out learners' ideas at the start of a topic involves assessment

✓ Written answers or others artifacts are not necessary for assessment to take place. Assessment can be based on observations, conversations & on other information such as drawings.



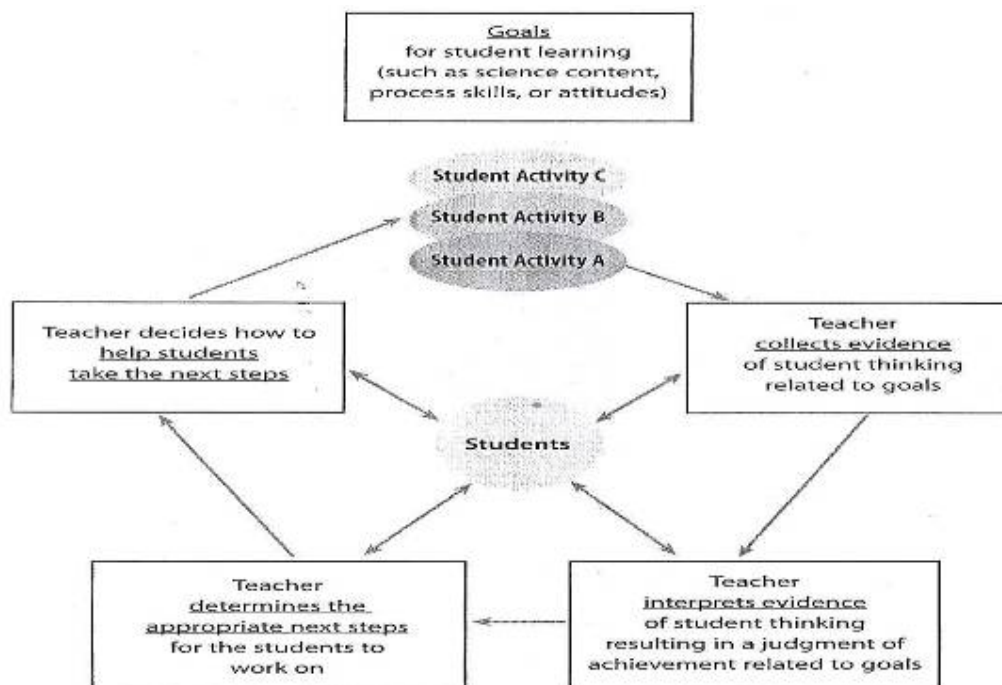
✓ Assessment involves gathering information, making a judgement about it, & using the information for some purpose.



✓ Assessment information can be used for the purpose of helping students in the process of learning as well as for gauging what students have learned.

✓ Assessment can be carried out by students as well as by teachers.

o **Formative Assessment Cycle:**



o **Understanding the Formative Assessment Cycle:**

- ✓ Dr. Rafia Ali has then discussed the Formative Assessment Cycle with all participants in order to understand the process of assessing the students' learning



o **Sound Activity Vignette:**

- ✓ Dr. Rafia Ali introduced the activity that a Teacher uses Formative Assessment in her second-Grade classroom during a unit on sound. When all participants read the vignette, Dr. Rafia Ali refer to the Formative Assessment Cycle to follow the teacher through each step as she formatively assesses both her students ' Process Skills & Ideas' .



o **Comparing Formative & Summative Assessments:**

Dr. Rafia Ali reveal some facts about the Formative & Summative Assessments. The points were as following:

- ✓ Both assessments begin with goal, students activities & collecting evidence related to the goals.

✓ In Summative assessment, the students are evaluated according to common criteriaso results can be compared



✓ In formative assessment, the information the teacher acquires about students is interpreted by also considering the students' effort & past achievement & is used to adapt the next learning experiences in ways that will help the students progress towards the goals.



o **Research findings about Formative Assessments:**

✓ This activity was done by Dr. Rafia Ali in-order to make the participants familiar with the findings about formative assessment with the help of research study.



## SESSION PROCEEDINGS

### Day 2<sup>nd</sup>

## “Assessing the Process Skills of Science”

What Dr. Rafia Ali gave to all participants.....!

o Take Home Messages:

Dr. Rafia Ali gave three Take- Home Messages

- ✓ By observing regular Classroom activities, teachers can use specific behavioral indicators to gather evidence of a student’s process skill development.
- ✓ By Using carefully framed tasks.
- ✓ By using behavior indicators.

o Introduction to the Process Skills of Science:

- ✓ Dr. Rafia Ali has fully gave the opportunity to the participants to discuss the Process Skills of Science & reveal their Own Ideas. Whereas Dr. Rafia Ali guided all the groups accordingly.



o Indicators of Development:

- ✓ Dr. Rafia Ali gave a clear idea of Indicators of Development. She introduce a Work Sheet with the help of which a teacher can find out the progression in the skill of not only earlier development but later development also.



o **Indicators for assessing Process Skills Development:**

✓ Dr. Rafia Alihas had given some valuable ideas about the indicators assessing the process skills of development. Dr. Rafia Ali introduces the questions about each Process Skill of Science. These questions examine development developmental levels of process skill development & play several important roles in Formative Assessment.



o **Fair Testing Activity Sheet:**

✓ Dr. rafia Ali really motivate the whole number of participants to perform activity. She provide three sheets, two sheets for Observers & one sheet for Investigators.





At The End...!

*Certificates distribution ceremony*



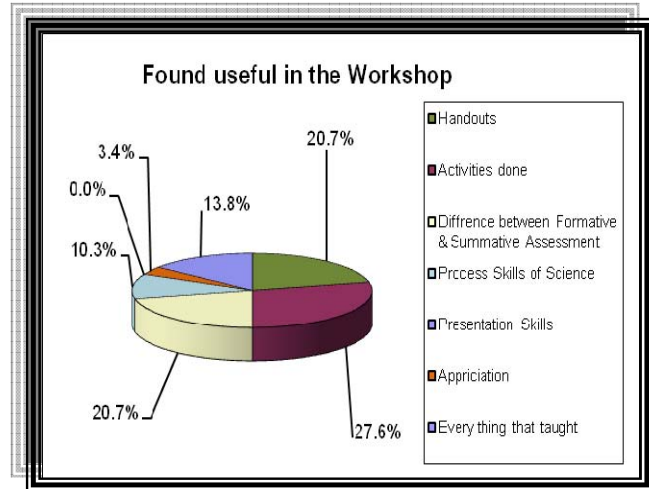
Best Wishes for Dr. Rafia Ali from ITA



## Evaluation of the Training by graph

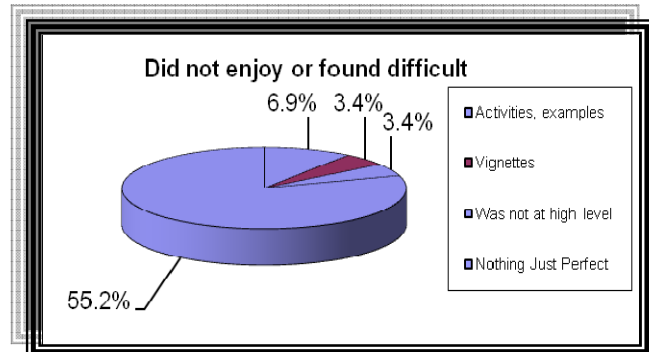
### ❖ A) What you found useful in Workshop?

	Freq	%
Handouts	6	20.7%
Activities done	8	27.6%
Difference between Formative & Summative Assessment	6	20.7%
Process Skills of Science	3	10.3%
Presentation Skills	1	0.0%
Appreciation	1	3.4%
Every thing that taught	4	13.8%



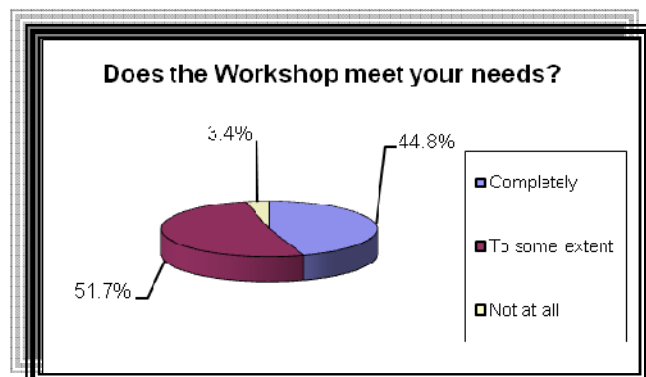
### ❖ B) What you did not enjoy or found difficult in Workshop?

	Freq	%
Activities, examples	2	6.9%
Vignettes	1	3.4%
Was not at high level	1	3.4%
Nothing Just Perfect	16	55.2%



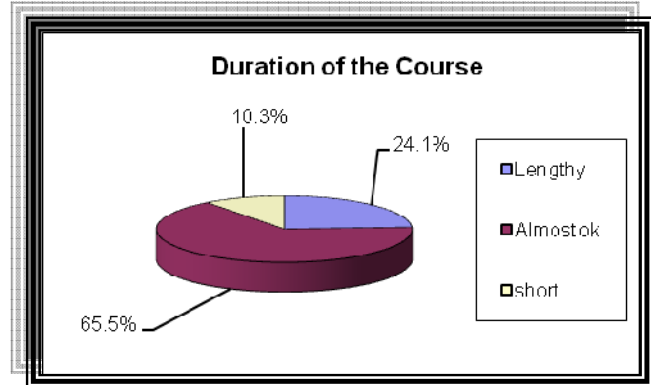
### ❖ Does the workshop meet your needs?

	Frequency	%
Completely	13	44.8%
To some extent	15	51.7%
Not at all	1	3.4%
Total	29	100%



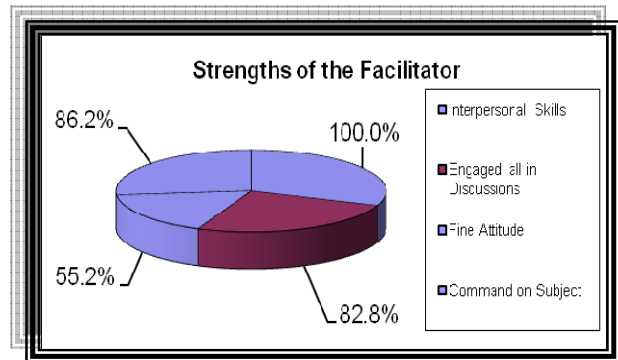
❖ Duration of the Course

	Frequency	%
Lengthy	7	24.1%
Almost ok	19	65.5%
short	3	10.3%
Total	29	100%



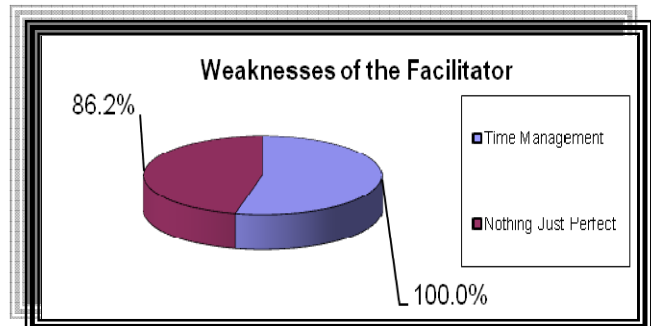
❖ A) Strengths of the Facilitator

	Freq	%
Interpersonal Skills	29	100.0%
Engaged all in Discussions	24	82.8%
Fine Attitude	16	55.2%
Command on Subject	25	86.2%



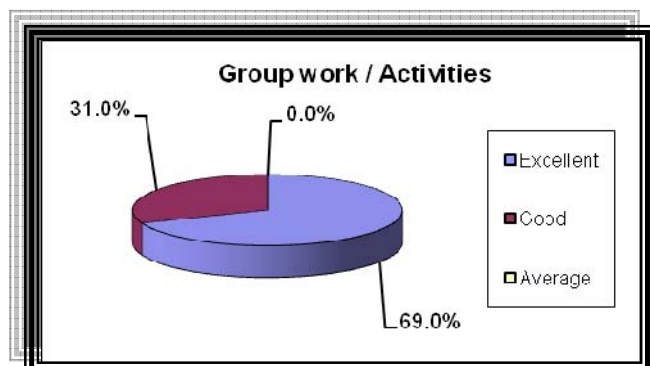
❖ B) Weaknesses of the Facilitator

	Freq	%
Time Management	29	100.0%
Nothing Just Perfect	25	86.2%



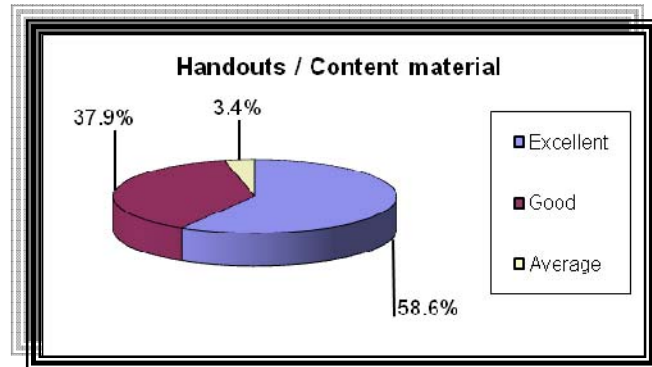
❖ Group work / Activities

	Frequency	%
Excellent	20	69.0%
Good	9	31.0%
Average	0	0.0%
Total	29	100%



❖ **Handouts / Content material**

	Frequency	%
Excellent	17	58.6%
Good	11	37.9%
Average	1	3.4%
Total	29	100%



**Lessons Learnt / Views of the participants:**

- It was highly observed that participants were profoundly taking part / interest in discussions.
- All participants felt a change in their learning graph.
- The training's environment was very friendly and interesting.
- The time seems too short for more learning.
- The material provided by Dr. Rafia Ali was very helpful for enhancing the scientific idea / concept of participants.
- Resource Person focused on Activity Based Learning.

**REPORTED BY:**

**ADNAN KHALIL (ITA)**