



**ENCOURAGING DIALOGUE IN SCIENCE
COMMUNICATION IN AFRICAN COMMUNITIES**

**CASE STUDY: HANDS ON MICROSCALE CHEMISTRY
WORKSHOPS**

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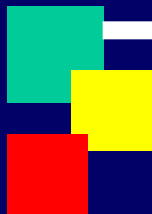
CHALLENGES FACING CHEMISTRY EDUCATION



Practical Chemistry in Developing countries is blighted by :

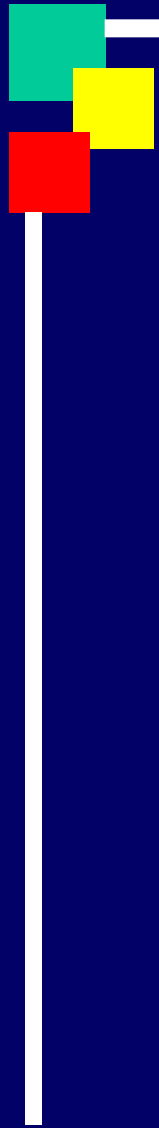
- Lack of chemicals, equipment and facilities
- Some institutions loan equipment for practical examinations
- Disposal of chemicals after experiments is an issue of great concern
- In the Higher Education Institutions the cost of running some facilities is prohibitively expensive

MICROSCALE CHEMISTRY




- Is that Chemistry carried out on Reduced Scale
- It utilizes small quantities of chemicals
- Is carried out mostly in simple equipments
- Advantages?
 - i. Reduced material costs
 - ii. Easier disposal of chemicals
 - iii. Is faster with reduced hazards

MICROSCALE CHEMISTRY

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- Why microscale chemistry?
 - i. It can help overcome difficulties experienced in Chemistry Practicals.
 - ii. Easier Disposal of Chemicals,
 - iii. The Apparatus are simple and Inexpensive.

HANDS ON MICROSCALE CHEMISTRY WORKSHOPS

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- Were meant to create awareness of these techniques in Kenya
 - AIMS:
 - i. Create Awareness and Understanding on the importance of utilizing Microscale techniques in Chemistry Education
 - ii. To make the HE community in Kenya gain acceptance of these techniques in Chemistry Education
 - iii. Promote Awareness of the Microscale technique as part of Fabric of Chemical Sciences Education stakeholders in Kenya.

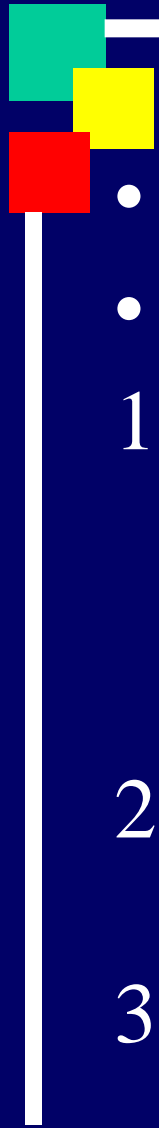
HANDS ON MICROSCALE CHEMISTRY WORKSHOPS



- AIMS:

- ii) To make the HE community in Kenya gain acceptance of these techniques in Chemistry Education
- iii) Promote Awareness of the Microscale technique as part of Fabric of Chemical Sciences Education stakeholders in Kenya.

HANDS ON MICROSCALE CHEMISTRY WORKSHOPS

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- OBJECTIVES:
 - The SAIN targeted:
 1. Participation of 10 Chemistry Educators in each HE Institution (University of Nairobi, Kenyatta University, Kenya Science Teachers College).
 2. Participation of 3 Chemistry Laboratory Technicians from each HE institution.
 3. Participation of 30 students in each event.

HANDS ON MICROSCALE CHEMISTRY WORKSHOPS

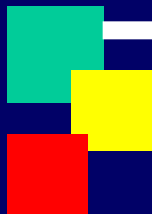
•OBJECTIVES:

4. 60% of participants to indicate that they have learnt a new technique of Practical Chemistry.
5. Long-term Partnerships to be formed after the Workshops.



•Dr.A. J. Rest conducting a Workshop

HANDS ON MICROSCALE CHEMISTRY WORKSHOPS



- **DESIGN:**
- Audience included Students, Educators and Laboratory Technicians
- The Objective /Audience combination helped in the design of the workshops.
- They were Designed to consist of:
 - i. Illustrated Lectures and Talks
 - ii. PowerPoint presentations and Short Video Clips
 - iii. Hands on trailing of Microscale equipments

HANDS ON MICROSCALE CHEMISTRY WORKSHOPS

iv. Group discussions

v. Questions and answers session

vi. Final comments session

- These workshops were organized by the SAIN in Partnership with the Royal Society of Chemistry (RSC) and Chemistry Video Consortium (CVC)

They were conducted by Dr. Stephen Breuer of Lancaster University (2004)

- Follow up workshops were later conducted by Dr. Anthony J. Rest of Southampton University (2005)

OUTCOME / RESULTS

- The SAIN reached 3 HE Institutions (University of Nairobi, Kenya Science Teachers College , and Kenyatta University)
- 80 students (undergraduates and postgraduate) participated
- 30 Educators (lecturers/ tutors) and 10 technicians participated.
- Reducing Scale and Increased safety generated lots of Interest and Dialogue



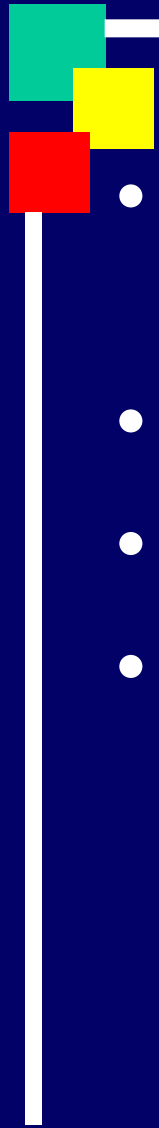
•Fig. microscale chem. equipments

OUTCOME / RESULTS

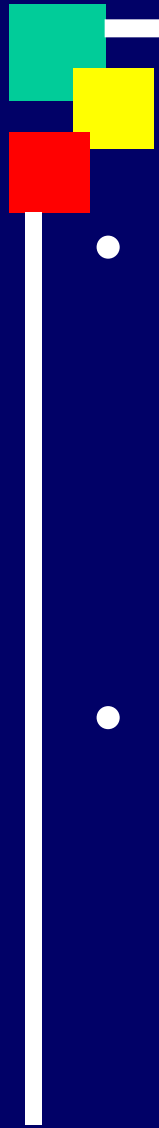


- Microscale Chemistry Committee formed at the University of Nairobi (U.O.N)
- Increased Dialogue between the SAIN and the HE institutions
- Increased Dialogue between the HE institutions and the RSC/CVC
- Partnerships developed between SAIN and HE institutions
- Partnerships developed between HE institutions and RSC/CVC

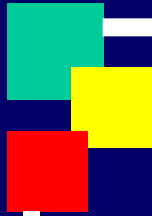
IDEAS / LESSONS

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- The following lessons was learnt from the workshops.
 - Setting objectives.
 - Helped in identifying the audience
 - Provided a means by which success could be measured

IDEAS / LESSONS

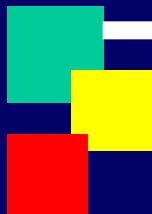
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- Identifying and understanding Audience
 - Different audience have different interests.
 - Our audience had interest in Chemistry Education hence were enthusiastic.
 - Design of the Activity
 - Depends on the interest of the Audience
 - Comes after the objectives/ Audience are identified

IDEAS / LESSONS



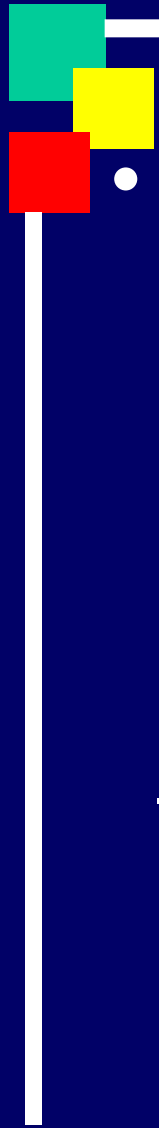
- These workshops were designed to include techniques of facilitating dialogue:
 - i. Talks and Illustrated Lectures.
 - ii. PowerPoint presentations
 - iii. Short Video Clips introducing the equipment
 - iv. Hands on trialling of equipments

IDEAS / LESSONS

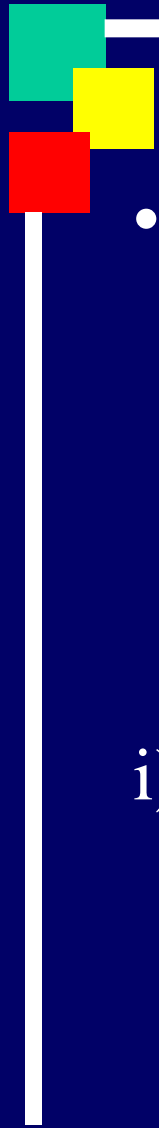


- v. Group discussions
- vi. Question and Answer session
- vii. Final Comments Session
- viii. Use of Written Resources (Microscale practical Chemistry manual)

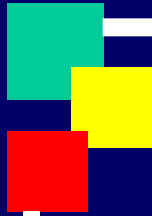
IDEAS / LESSONS

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- Activity publicity / marketing
 - Helps in attracting Audience after event Design.
 - personal contacts are important – we made contact with the HE Chemistry Heads of Departments (H.O.D's)
 - Use of posters will help attract audiences. The SAIN placed posters on institution's notice boards (free publicity)

IDEAS / LESSONS

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- Encouraging Dialogue
 - Dialogue requires much listening as talking
 - Hence requires techniques allowing people to put forward their views.
 - In the 'Hands on' Micro Scale Chemistry Workshops, techniques used included:
 - i) Illustrated Lectures and Talks – Accompanied by short video clips to introduce the topic, practical demonstrations, PowerPoint presentation (simple IT Resource) allowed for rapid collection.

IDEAS / LESSONS



‘Hands on’ Trialling

- Gave the audience a more active role
- Generated a lot of dialogue on the techniques.

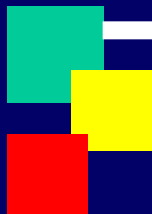
iii) Group Discussions – Encouraged Dialogue

- Some people contribute their views comfortably in small groups

iv) Question and Answer

- Giving time to the Audience to ask and to be asked questions generates lot of dialogue.

IDEAS / LESSONS



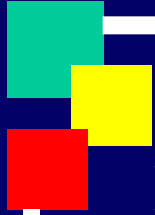
vi) Final comments

- Audience needs time to give their final comments before the end of a communication activity.
- Final comments are also useful for evaluation.

vi) Maximizing time Available for Audience participation

- was done in all 'Hands on' Micro scale chemistry workshops.
- All sessions in the workshops were given enough time hence,
- This allowed for maximum Audience participation generating a lot of Dialogue.

CONCLUSION



- 1) In any Science communication Activity
 - its important to set the aims and objectives
 - its important to catch audience attention using activities that will help engage the audience.
 - start from a point that the audience will understand before going to something new.
- 2) The ‘ Hands on’ microscale chemistry workshops project is a model of how communication projects through innovative partnerships can be carried out to encourage dialogue in African communities

ACKNOWLEDGEMENT



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- iv) You for your great attention.**