



St. Ann's College for Women
(Autonomous), Affiliated to Osmania University
Accredited 'A+' Grade by NAAC (3rd Cycle)
College with Potential for Excellence by UGC
ISO 9001: 2015-ISO 14001: 2015
Hyderabad- 500028, Telangana, India

3.3.1 Initiatives for the creation and transfer of knowledge/technology

Design and development of teaching Kits for School Students

The endeavor to design teaching kits for science experiments was undertaken with the aim of promoting practical, hands-on learning experiences for students. These kits allow students to engage actively in experiments that enhance their understanding of various topics. Students were divided into groups and were given the task of designing Teaching Kits on topics pertaining to Carbohydrate Analysis: Understanding the chemistry of carbohydrates through qualitative analysis. Testing Milk Adulterants: Demonstrating methods to identify common adulterants in milk. Concept of pH: Explaining the significance of pH and conducting experiments related to acid-base reactions. Chromatography Techniques: Introducing the principles of chromatography and its applications. Molecular Biology Experiments: Involving the isolation of DNA from cells, offering insights into genetic material.

As part of this activity students were supposed to create content on Design of the experiment which included principles, procedures, observation tables and worksheets. Also all the reagents required to conduct the experiment, along with samples was provided in the kit.

The designed kits were used in schools to demonstrate the experiments.

Outcomes

1. Enhanced Learning Experience: Students actively participated in the design and development of teaching kits, which deepened their understanding of the underlying scientific principles. By creating content such as experiment principles, procedures, observation tables, and

worksheets, students had to consolidate their knowledge, making it easier to explain and share with others.

2. Improved Concept Comprehension:

The teaching kits facilitated a better understanding of complex scientific concepts. For instance, students gained a clearer grasp of carbohydrate analysis, milk adulteration detection, pH concepts, chromatography techniques, and molecular biology experiments.

3. Hands-On Engagement: These teaching kits encouraged students to engage in hands-on learning, promoting critical thinking and problem-solving skills. Practical experiments reinforced theoretical knowledge and allowed students to witness scientific principles in action.

4. Application of Scientific Methodology: Students learned how to apply the scientific method, from formulating hypotheses to conducting experiments, gathering data, and drawing conclusions. They gained insights into the importance of controlled variables and accurate data recording.

5. Collaborative Learning: Group work was essential in the design and development of these teaching kits. Students learned to collaborate effectively, distribute tasks, and pool their knowledge and skills.

6. Real-World Relevance: The kits focused on real-world applications, such as detecting milk adulterants or understanding the importance of pH in daily life. This approach made science more relatable and relevant for students.

7. Practical Skills Development: Students acquired practical laboratory skills, including proper handling of chemicals and equipment, safety protocols, and experimental techniques.

The kits promoted a sense of responsibility and care in the laboratory environment.

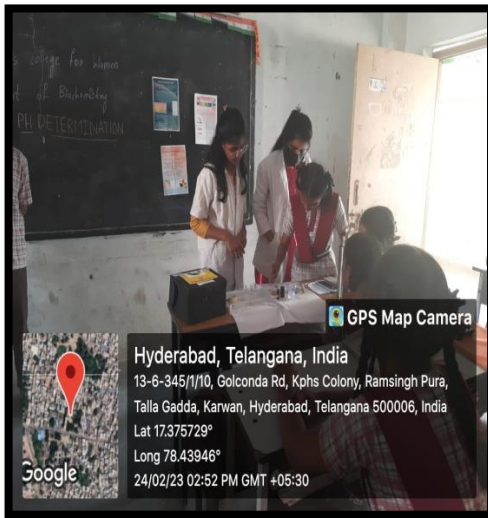
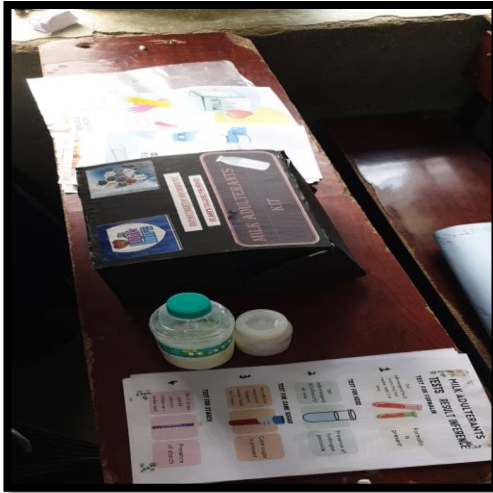
8. Knowledge Sharing: The teaching kits served as a medium for students to share their knowledge with peers and younger students in schools, reinforcing their own understanding while helping others learn.

9.. Teacher-Student Interaction: Teachers played a guiding role in this activity, providing valuable feedback and clarifications, strengthening the teacher-student relationship.

Designing and developing teaching kits for science experiments proved to be an effective way to enhance science education. The outcomes of this activity include improved learning experiences, better comprehension of scientific concepts, practical skill development, and the promotion of teamwork and independent problem-solving abilities. These kits serve as valuable tools for both teachers and students, making science education more engaging and impactful.

List of students –Development of Teaching kits

| S.No | Name of the student | Hall Ticket number | Title of the Kit Developed |
|------|---------------------|----------------------------|---|
| 1. | 120420488001 | Hafsa Anam | Qualitative analysis of Carbohydrates. |
| 2. | 120420488002 | Amena Mohammadi | Demonstration of Chromatography Techniques. |
| 3. | 120420488003 | Shimaliya Rooman | Testing Milk adulterants. |
| 4. | 120420488004 | Sofia Ifteqar | Testing Milk aduletrants. |
| 5. | 120420488005 | Ayesha Ghorri | Demonstration of Chromatography Techniques. |
| 6. | 120420488006 | Katari Lahari | Determination of pH Experiments. |
| 7. | 120420488007 | Yanamala Deekshitha Lehari | DNA Extraction kit. |
| 8. | 120420488009 | Ayesha Sania | Testing Milk aduletrants. |
| 9. | 120420488011 | Syeda Maria Hussain | Demonstration of Chromatography Techniques. |
| 10. | 120420488012 | Sarah Hunachagi | Demonstration of Chromatography Techniques. |
| 11. | 120420488013 | Nafiya Khan | Qualitative analysis of Carbohydrates. |
| 12. | 120420488015 | Gambo Anupama | Qualitative analysis of Carbohydrates. |
| 13. | 120420488018 | Rajasmitha Sabat | DNA Extraction kit. |
| 14. | 120420488019 | Saba Shireen | Qualitative analysis of Carbohydrates. |
| 15. | 120420488020 | Rodda Shreya | DNA Extraction kit. |
| 16. | 120420488021 | Tannu Sree Rajput | DNA Extraction kit. |
| 17. | 120420488023 | Vadla Pranavi | Qualitative analysis of Carbohydrates. |
| 18. | 120420488024 | Juveria Tanveer | Testing Milk adulterants. |
| 19. | 120420488025 | Mansi M Dama | DNA Extraction kit. |
| 20. | 120420488027 | Medarametla Akshitha Reddy | Determination of pH Experiments. |
| 21. | 120420488028 | Thota Gowthami | Determination of pH Experiments. |
| 22. | 120420488029 | Yanna Indumathi | Determination of pH Experiments. |
| 23. | 120420488030 | Dabbikar Sahithi | Determination of pH Experiments. |



Demonstration of science concepts using kits developed



Dr. Sr. P. Amrutha
 Dr. Sr. P. Amrutha
 Principal
St. Ann's College For Women
 (Autonomous)
 Mehdiapatnam, Hyderabad-28