

Executive Summary of the NCERT Research Project (PAC-15.03)

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3. **Name of College-**Regional Institute of Education, Ajmer
4. **Title of the Research Project-** *A Study of Learning Resources in Understanding the Concepts of Stereochemistry and Reaction Mechanism in Organic Chemistry at Senior Secondary Level (PAC 15.03)*
5. **Effective date of starting the project-**01.04.2019
6. **Summary of research work carried out under the Project-**

The purpose of this research was to find out effectiveness of new dimensions of teaching methods focused on understanding of concepts with the following objectives:

- To enrich the PGTs of Chemistry by Learning Resources on the concepts of stereochemistry and reaction mechanism.
- To improve pedagogical skills of PGTs by capacity building in use of Learning Resources on the concepts of stereochemistry and reaction mechanism.
- To equip the PGTs with appropriate learning resources (3-D Models, Kits, e-resources developed by NCERT and other organizations) for the effective teaching learning process on the concepts of stereochemistry and reaction mechanism.
- To study the effectiveness of learning resources in understanding the concepts of stereochemistry and reaction mechanism at Senior Secondary Level.

To meet the objectives of the study 10 schools of Ajmer district were identified on the basis of parameters of the study. Resource material was developed in workshop mode for capacity building of the Lecturers of identified schools in the area of reaction mechanism and stereochemistry. Pre and post test of the students of identified schools were also conducted. An analysis of the data received is given below:

- ❖ The five days capacity building programme of lecturers in the area of reaction mechanism and stereochemistry enhanced the content knowledge (CK) as well as pedagogical knowledge (PK).
- ❖ Prior to study it was reported by the lecturers that these topics are not interesting for students and therefore they use to taught these topics just before the examination. However after capacity building programme they realised that these topics can also be made interesting for students.

Interaction with students and administration of pre and post test in the

sample schools revealed the following information:

- There is a significant improvement in the performances of students after teaching reaction mechanism and stereochemistry using innovative method including models and multimedia.
- Breaking and making of bond is a process that occurs when an organic reaction takes place and prior to intervention students were not able to understand movement of electrons with curved arrows. However, interventions made it easy for them.
- Earlier there was difficulty for teachers and students in visualizing 3D views of molecules and interventions made it easy for them.
- Capacity building of teachers in making 3D drawings using some soft wares and apps enabled them to make multimedia for students in the area of stereochemistry and reaction mechanism.
- Teachers reported that after interventions they were more comfortable in handling the concepts of stereochemistry and reaction mechanism in class room situation.
- Teachers and students also realised that interventions have been successful in creating an active learning environments. Interventions also motivated students and increased their interests in learning of such important concepts in joyful manner.
- As per teachers such type of interventions should be continued by NCERT for the benefit of teachers as well as students.

(R B PAREEK & R K SHARMA)
PRINCIPAL INVESTIGATORS