

# Creative teaching methods in Post-graduation studies to improve quality learning among students; a case study

Dr. Prathima Mathias D.A.,  
Assistant Professor, Department of Chemistry,  
I.D.S.G. Government College, Chikkamagaluru – 02,  
Karnataka, India  
E mail: [prathimamathias@gmail.com](mailto:prathimamathias@gmail.com)

**ABSTRACT:** Class room teaching in 21<sup>st</sup> century is highly challenging. There is once again a paradigm shift from teacher centered to student centered model. Young minds refuse to sit in a class room and learn everything in between four walls, mainly because this generation is attention deficit. One can argue use of ICT to be the best means of teaching. But, availability of many lecture videos and documents at finger tips at any accessible time further increases boredom. In modern world the needed role of a teacher is to become a facilitator. There is wide scope for innovative methods of teaching like use of poems, puzzles, pick and speak the lecture topic etc. methods. These methods involve students' humanitarian and skill profile and thereby improve learning. In this paper use of on spot collage preparation during a practical experiment has been utilized to teach the impact in detail the impact of a particular experiment. Students involved in this activity felt lively and when their work was displayed on notice board, other students of the college found it impressive and in turn a deeper message was conveyed.

*Key Words*-Teacher facilitator, Creative collage, crossword puzzles, effective learning.

## 1. INTRODUCTION AND LITERATURE REVIEW

In par with the National Knowledge Commission, the Karnataka Government has set up post-graduate Chemistry courses in regular degree colleges. The affordable fee structure has successfully attracted students from rural and urban backgrounds alike. Even though the objective of increasing the Gross Enrolment Ratio (GER) in line with NKC has been achieved, the quality of students has shown a sharp decline. This decline may be attributed to one among the following reasons:

- 1) The unsuccessful engineering /medical aspirants being admitted into degree.
- 2) The lack of interest of the student.
- 3) The inability of the instructor to effectively communicate the subject to the students.
- 4) The very low I.Q. of the student.

However to know the exact reason for this repulsion from Chemistry as a profession, the proposer conducted a small survey. The questionnaire of the survey was uploaded on <http://www.surveymonkey.com> (07/06/2019) and the url <http://www.surveymonkey.com/s/D9M3H72> was mailed randomly to many professional and non-professionals individuals in chemistry.

Out of the fifty responses thirty five (77.8%) were completely filled and hence only these were considered irrespective of sex.

Few interesting comments about the qualities they liked in their favorite teacher can be considered broadly under the following three categories,

- One who completed Graduation/Masters course in Chemistry/Ph.D. in Chemistry,
  - 1) Likes a science teacher whose method of instruction and approach was effective and impartial.
  - 2) Thorough understanding of subject (clarity).
  - 3) Use of inductive, innovative and detective methods.
  - 4) Practical approach towards real time problems in the subject.
  - 5) Correlation of subject with real life situations

- One who studied Chemistry more than a decade ago.
  - 1) Approach in delivering concept, simple language, attitude towards answering questions, module based teaching and systematic flow.
  - 2) Research oriented approach
  - 3) Subject knowledge, discipline, punctuality, presentation and appearance.

More than 50% of the responses were voted an average of 7 for organic chemistry to be the challenging subject in Chemistry. The suggestions for helping understanding of the challenging topic (Organic Chemistry in particular and Chemistry in general) were to adopt the methods they liked in their favorite teacher.

Literature survey reveals that attempts to merge science with arts have been made for higher primary school learning. Use of anecdotes, riddles, quizzes, puzzles, poster presentation etc. have been adopted and found useful<sup>1</sup>. Mixing psychomotor learning methods, like involving drama/movies in teaching not only improves presentation skills of students but leaves unerasable memories. We can understand the depth of such learning by the effect movies leave on young brains.<sup>2-5</sup> It may sometimes be difficult for Under Graduate and Post Graduate students to enact a role due to peer pressure and associated nagging thereafter. Alternatively writing poems can be more effective method of innovative teaching. There are many teachers who have adopted this method and reported success<sup>6-8</sup>. Few researchers have voted promoting use of poems for socio-historic understanding inculcating scientific literary skills to meet requirements of modern world.<sup>9</sup> When arts is incorporated in scientific teaching the campus can be made colorful with presentations and poems can be used to publish in college magazines.<sup>10</sup> Students of Under graduation and Post-graduation are youth with emotionally high state. Utilizing such emotions in poems can be more beneficial in the long run<sup>11</sup>. Buddy system of learning has been one of the promising methods for educating young minds<sup>12</sup>. In a paper on effectiveness of using crossword puzzles and key word to lecture method<sup>13</sup>. Here in this paper emphasis has been laid on importance of using collage preparation skill for effective learning has been utilized.

The Kuvempu University in Karnataka, has voluminously contributed to the number of Chemistry post graduates through its regular and distance mode. Out of this large galaxy of chemists, very few have actually tasted chemistry as an interesting subject. The government college under study is affiliated to this University. Since the government college out puts is side lined in front of University students, the proposer wishes to adopt different teaching methods and improve the understanding of organic chemistry among PG chemistry students. The author wishes to create competent students. This paper would help many government college professors to make their students who are in an amalgamated atmosphere of PG and UG grow in subject.

## 2. SIGNIFICANCE OF THE PROBLEM:

There is a manifold increase in the number of industries, both public and private, pharma and educational. It is devastating and dangerous to the society to have ill-informed students with respect to chemistry. Our present post graduate students are the future scientist of India. The present paper aims at grooming the knowledge of these future post graduates by adopting innovative method of teaching in general and collages in particular.

## 3. OBJECTIVES

- To revive traditional method of education
- To include innovative methods of learning
- To trigger thinking capacity of students through on spot preparation of collage after completion of routine laboratory experiment.
- To collect feedback and analyze effectiveness of the adopted methods.

## 4. HYPOTHESIS

- Students have good access to net learning.
- Students do not require conventional methods of teaching to fare well in examinations.

## 5. SIGNIFICANCE OF STUDY

This study will add to innovative methods of teaching in Higher Education. It will increase student thinking capabilities and involve their psychomotor abilities for effective learning. Since teacher will only be guiding the students, boredom which is usually generated in one way instructional methods can be eliminated.

## 6. METHODOLOGY

Study location: IDSG Government College, Chikkamagaluru, Karnataka, India, is affiliated to Kuvempu University. It is the only Government College in this district that offers both Under Graduate and Post Graduate courses in Science, Arts and Commerce. Our institution is a sample with large population size fit for such studies. M.Sc. Chemistry is the oldest PG course of the college and can be a study on the students of this college represents the study on students of Karnataka in larger perspective.

**Method:** Preparation of collage

Students of practical batches were divided into two batches after performing their routine laboratory experiment of extraction of nicotine from tobacco leaves. They were provided with a chart paper, colour pens and necessary articles to prepare a collage. Strict instructions were given that their collage has to be original and not stolen from elsewhere. Students were allowed to access internet to collect more information on effects of tobacco on human health. Time duration of 01 hour was fixed and post which they were instructed to present their collages. The best collage was to be handsomely awarded. Two collages are shown in figure- 1 and figure -2 respectively. These collages were later displayed on the department notice board.

### Population and sample size

Students (30) of M.Sc. Chemistry (IV semester), Academic year 2019-2020, were considered and included for learning through collage method.

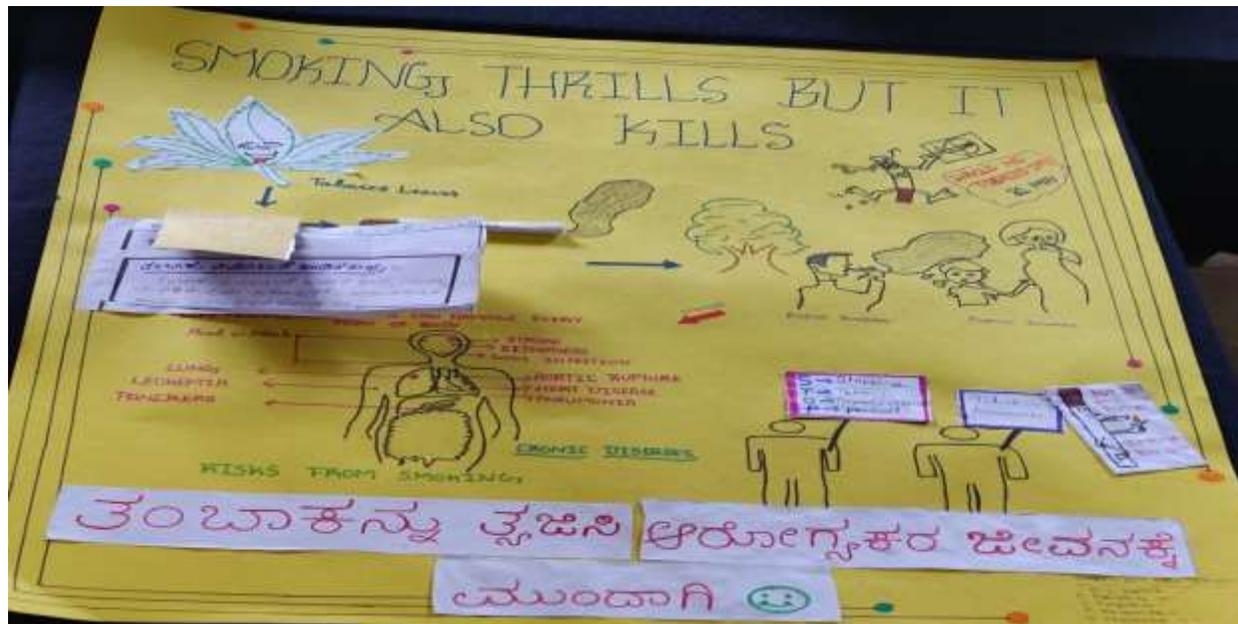


Figure 1: M.Sc. chemistry Batch -1 students (IV semester) collage on effects of tobacco.



Figure 2: M.Sc. chemistry Batch -2 students (IV semester) collage on effects of tobacco.

## 7. ANALYSIS AND INTERPRETATION

The effectiveness of method was analyzed by taking student feedback as in Annexure – 1 and Annexure – 2

Annexure – 1: Questionnaire with YES/NO type answers

Sl.No.	Acceptance parameter	YES	NO
1	Was the method implemented new?	30	NIL
2	Did this new method involve minimal investment and quality learning?	30	NIL
3	Did this method improve overall functioning quality indicators?	30	NIL
4	Are such pedagogical methods useful and to be implemented regularly?	30	NIL
5	Because of this method can the presenter improve his/her delivering skills	30	NIL

Annexure – 2: Questionnaire requiring gradation (Good/Satisfactory/Excellent)

Sl.No	PARAMETER	GOOD	SATISFACTORY	EXCELLENT
1	How was the student-teachers' performance?	18 (60%)	NIL	12 (40%)
2	How was the student- teachers' confidence level?	22 (73.3%)	2 (6.66%)	6 (20 %)
3	How was the student-teacher presenters' content level?	10 (33.3 %)	18 (60 %)	2 (6.66 %)
4	How was the overall student-teachers' convincing capability?	17 (56.6%)	13 (43.3%)	NIL
5	Overall rating of the new method of instruction	12 (40 %)	6 (20 %)	12 (40 %)

All 30 students of different batches felt the new method to be effective. They voted that this method was useful and had contributed in improving their skills. The variation in percentage of student who presented as a teacher shuttled between good to excellent because of lack of such activities in educational system. However, 40 % of the students voted this method to be excellent and 40 % of them to be good.

## 8. DISCUSSION AND CONCLUSION

This new method of learning in Post graduate level was accepted by the students enthusiastically. In routine laboratories, students concentrate more on completing the experiment and not on understanding the long term effects of the same. They are totally unaware of functioning of the society. Hence, this method not only brought out their creative skills but also stamped the harmful effects of using nicotine forever. This method improved interpersonal relationships among the class mates. The display of their collage on notice board added to aesthetic appeal and spread a sharp message to students with respect to quitting harmful habits. Such less expensive methods of innovative teaching has to be incorporated in degree and post graduate courses to bring human touch to science.

## 9. ACKNOWLEDGEMENTS

I sincerely acknowledge the active participation of M.Sc Final year students. It is because of their perceptive nature this method was successful.

## REFERENCE

- [1] Stephen Demeo, Teaching chemical technique. A review of the literature, Journal of Chemical Education, 78(3), March 2001, PP 373-379.
- [2] Books, Movies and Chemistry, Retrieved on 31/1/2020, <https://WWW.acs.org/content/acs/en/education/students/highschool/chemistryclubs/activities/chemistry-books-movies.html>
- [3] Kerstin Danckwardt-Lilliestrom, Maria Andree, Margareta Enghag, Creative drama in chemistry education: a social semiotic approach, Nordic Studies in Science Education, 14(3), 2018, PP 250-266.
- [4] Kirk Dorion, Dissertation thesis 'An exploration of how a drama-based pedagogy can promote understanding of chemical concepts in 11-15 year old science students, University of Cambridge, March 2007.
- [5] Stefanos Karageorgiou, Eirini Savvidou, Parthena Kathikaridou, Percles D Akrivos, Hector Katsikis, A chemistry teacher's drama in the Greek high school with biology as the protagonist, Journal of International Scientific Publications, 13, 2015, PP 395-403.
- [6] Teaching science through poetry in India, retrieved on 31/1/2020 <https://www.sawtrust.org/worldwide/science-through-poetry-in-india/>
- [7] J.L.Araujo, C.Morias and J.C. Palca, Poetry and alkali metals: building bridges to the study of atomic radius and ionization energy, Chemistry Education Research and Practice, Chemical Educational Research Practices, 16, 2015, PP 893-900.
- [8] Audrey C. Rule, Luke A. Camicelli, Sharon S. Kane, Using poetry to teach about minerals in Earth science class, Journal of Geoscience Education, 52(1), 2004, 10-14.
- [9] Joao Carlos Palva, Carla Morais, Specialization, chemistry and poetry: challenging chemistry boundaries, Journal of Chemical Education, 90(12), 2013, PP 1577-1579.
- [10] Ping Y. Furlan, Herbert Kitson and Cynthis Andes, Chemistry, poetry and artistic illustration: An interdisciplinary approach to teaching and promoting chemistry, Journal of Chemical Education, 84(10) 2007, PP 1625.
- [11] Prathima Mathias D A, Poems: A Tool For Amalgamating Chemistry With Arts For Effective Learning, International Journal of Intellectual Property Rights (IJIPR)10(2), 2019, PP 10-14.
- [12] D. A. Prathima Mathias, Buddy system of learning practical experiments in Post-Graduation Chemistry course and its benefits, International Journal of Research and Analytical Reviews June 2019, 6(2), 2019 PP 121-123.

- [13] Dr. Prathima Mathias D.A., Role of Teacher as a Facilitator in Improving Quality Learning among Students; a case study, International Research Journal of Engineering and Technology (IRJET), 7(1), Jan 2020, PP- 1988 – 1991.