

# **Research Based Pedagogical Tools (RBPT)**



DEPARTMENT OF BIOTECHNOLOGY  
Ministry of Science & Technology



**DBT-Star College Scheme, UGC & Vellalar Educational Trust**  
**Sponsored**  
**Regional level Workshop on Research Based Pedagogical Tools (RBPT-VCW 2019)**

**Vellalar College for Women, Thindal, Erode – 638012, Tamilnadu**  
**December 5 - 7, 2019**

### **Report**

The aim of the workshop is to introduce and train participants to use a new pedagogical technique Research-Based Pedagogical Tools (RBPTs) - which can be used for science teaching at the undergraduate level. This method focuses on understanding the process and concepts of science, rather than memorizing facts. Teachers were trained to use (RBPTs) in their regular classrooms, in order to improve critical thinking and research skills among students. It encouraged teachers to explore alternative methods of pedagogy and make undergraduate science education more learner-centric.

**Level 1 Three-day Regional level workshop.** A team of 5 Trainers who were trained by a team of experts from UK and also certified by Centre of Excellence in Science and Mathematics Education (CoESME) and IISER Pune provided training to all participants on all three days.

#### **Trainers:**

- Dr. T. Robinson, Associate Professor & Head, Dept of Mathematics, Madras Christian College, Chennai, Tamilnadu
- Dr. P. Wilson, Associate Professor & Head, Department of Chemistry, Madras Christian College, Chennai, Tamilnadu
- Dr. N. Srinivas, Assistant Professor, Dept. of Zoology, PG Govt. Degree College, Kakinada, Andhra Pradesh
- Dr. Kannan Ramaswamy, Assistant Professor, Dept. of Physics, Birla Institute of Technology and Science, Pilani, Rajasthan
- Dr. S. Murugan, Associate Professor, Dept. of Biotechnology, Karunya Institute of Technology and Science, Coimbatore, Tamilnadu

#### **Trainees:**

Sixty Faculty members from Mathematics, Physics, Chemistry, Botany, Zoology, Computer Science, Nutrition & Dietetics, Computer Applications, Computer Technology, Information Technology, Foods and Nutrition, Biochemistry of our College and various other Colleges affiliated to Bharathair University, Coimbatore.

The workshop was conducted for three days from 9.30 am to 4.30 pm. It consists of common sessions on general aspects of RBPTs as well as discipline specific sessions. The sessions were designed to train participants in designing and deploying RBPTs and also to develop strategies to assess the learning outcomes amongst students. They employed a combination of theory and activity based methods to explain various principles of RBPTs.

## Day One

**Inaugural Session :** During the inaugural session of the workshop, Principal welcomed the gathering. We had an introductory talk about RBPT organised by IISER, Pune and British Council by the Organizers.

**First Session: Three in three –the People involved, Purpose of involvement and the final Product** were introduced. **Effective Pedagogy** - Various pedagogical methods to foster the skills and attitudes that are expected from the students was explained.

**Second Session: Ideal student** - Participant groups were asked to prepare posters to list interests, attitudes, work habits, and ambitions of a perfect student and also a perfect teacher. These activities were implemented in mixed groups consisting of delegates from various disciplines.

**Third Session: Paper Planes activity** - Learning's from Paper Planes preparation, displaying the same as a poster and explaining to the peers.

**Fourth Session: Learning through Questioning** - Review the goals of RBPTs in terms of learning and Questioning.

**Fifth Session: Student research and autonomy** - Background, concept of student research and autonomy were discussed.

## Day Two

**First Session: What is RBPT? Why RBPT required? and Implementation of RBPT.** He further elaborated on strategies needed to follow RBPT, 5R's (Require, Refine, Recognize, Report and Reward) and how regular practicals differ from RBPT?

**Second Session: Elements of RBPT – Revised Structure of RBPT and its six elements** (Context, Problem, Activity, Resource, Output and Assessment) – Discussion about 3C's (Context, Content and Connection) and 3R's (Researching, Reflecting and Reasoning)

**Third Session : RBPT Examples :** Discussion about RBPT examples and Presentation on one example of RBPT from each subject

**Fourth Session:** Participants were divided into groups (subject-wise or interdisciplinary) and each group is instructed to take some provocative contexts and to **develop RBPT** from the context.

**Fifth Session: Poster Preparation**

## Day Three

**First Session: Preliminary review of Posters** - Posters were displayed for getting feedback from Peers and Trainers. Participants refine RBPT's based on review and finalize their Posters for Presentation. Group Photo was taken.

**Second and Third Session: Presentation of RBPT by each group and evaluation by peers and trainers and the list is given in the table below.**

S. No.	Department(s)	Problem	Context
1	Computer Science & Mathematics	Identification of Gender and Age of a Person from blog /facebook	Authenticity of Author Profiling in Social Media
2	Computer Science & Mathematics	Traffic crawls on arterial roads in erode	Horn Free 2020
2	Computer Science & Mathematics	Identifies issues-Water and air pollution	Healthy environment Vs Healthy workforce
3	Computer Science & Mathematics	Is digitalization develop Indian economy?	Digitalization & Indian Economy 2020
4	Computer Science & Mathematics	How to apply the concept of matrix in digital image processing	Vikram lander found
5	Computer Science & Mathematics	To develop the security for the person who are in need of help	Eagle auto system
6	Life Science	SWM-Critical concern & need attention.	Solid Waste Management
7	Life Science	In India, about 75% of the population was found to be at risk of life style diseases.	Diet & Lifestyle disease – Food is Medicine
8	Life Science	Malaria, Dengue, chikungunya, Nile virus, Ziga virus	Mosquito Larva controlled by Neem leaf product
9	Life Science		Adolescence and Anemia
10	Chemistry and Nutrition & Dietetics	Teens too busy with smartphones: lack of exercise is making them obese and pron to heart disease	8 & 8 = Sweet 16, Ate & Ate = Obesity
11	Chemistry and Nutrition & Dietetics	Decolourisation of Dye Effluents using Adsorption	Water Pollution due to Effluent Discharged into River Cauvery by Dyeing Units in Palliupalayam
12	Physics	Identifying the emitted pollutants from erode corporation wastages using metal oxide semiconductor based semiconductor	Sensor for sensing pollutants
13	Physics	To rectify the harmful hazards of LED radiation	LED constructive & destructive to nature
14	Chemistry and Nutrition & Dietetics	Decolourisation of dye effluent from dying units	Dye effluents-rest in peace

**Fourth Session: Summing up:** Discussion about the 3 day RBPT workshop

**Fifth Session: Valedictory Session:** Trainers and Participants expressed their views about the three day RBPT workshop. Certificates were distributed to all participants.

*L.M. Swarnalatha*

**Dr. L.M. Swarnalatha**

IQAC Coordinator

Vellalar College for Women (Autonomous)

Erode - 638 012.



## ORGANIZING COMMITTEE

- Chief Patron** : **Thiru. S. S. KANDASAMY**  
President, Vellalar Educational Trust
- Patron** : **Thiru. S. D. CHANDRASEKAR**  
Secretary & Correspondent  
Vellalar Educational Trust
- Chairperson** : **Dr. N. MARAGATHAM**  
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- Organizing Secretary** : **Dr. M. YOGESWARI**  
Assistant Professor  
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Mathematics  
Physics  
Chemistry  
Botany  
Zoology  
Nutrition & Dietetics  
Computer Science  
Bio chemistry  
Foods And Nutrition

**Online Transfer:** Registration fee may be paid directly to the account of  
“The Organising Secretary RBPT 2019” as per details given below:

- Name of the Bank** : Bank of Baroda  
**Name of the account holder** : The Organising Secretary RBPT 2019  
**Name of the Branch** : Thindal  
**Account No.** : 25670100026264  
**IFSC Code** : BARBOTHINDA [Fifth character is zero]  
**Type of Account** : SB  
**MICR Code** : 638012004  
**Bank Address** : Bank of Baroda, Thindal, Erode - 12.



**GOLDEN JUBILEE YEAR 2019 -2020**

*Department of Biotechnology*

*Ministry of Science and Technology, Government of India, New Delhi,*

*University Grants Commission*

*New Delhi*

*and Vellalar Educational Trust*

*Erode*

*Sponsored Regional level Workshop on  
“Research Based Pedagogical Tools”  
(RBPT- VCW 2019)*

**5<sup>th</sup> - 7<sup>th</sup> December, 2019**



ORGANIZED BY



**VELLALAR COLLEGE FOR WOMEN  
(AUTONOMOUS)**

**“College with Potential for Excellence”**

(Reaccredited with 'A' Grade by NAAC &

Affiliated to Bharathiar University, Coimbatore - 641 046)

**Erode – 638 012, Tamil Nadu.**



## About the Institution

Vellalar College for Women, a pioneer institution offering quality education for the cause of women empowerment was established in 1970. It is an Aided Institution of the Government of Tamil Nadu, affiliated to Bharathiar University. The status of Autonomy was conferred in the Academic year 2007. A rich array of UG, PG programmes with Choice Based Credit System (CBCS) for academic flexibility, UGC sponsored add-on courses, certificate courses and research programmes equip the students for multiple career prospects. The sprawling campus with its comprehensive infrastructure viz. the library with DELNET, INFLIBNET and online back-up facility, computer laboratories, smart class rooms, seminar halls, MathLab, Central Research Laboratory, English Language & Career Laboratory and the Communicative Skill Centre contribute to the inclusive growth of the scholars. Towards social responsibility initiatives, Self Employment Technopark, Vellalar Printing Press, Agri Business Training and Consultancy Services, Student Herbal Nursery, Unnat Bharath Abiyan 2.0, Swatch Bharat Abiyan, Part-V Extension Activities through 15 Clubs in the adopted villages and NSS activities are noteworthy. NCC, NSS, YRC, RRC, Green Society, Bio-Health Club, Enviro Club, Citizen Consumer Club, EDP Cell and Women Cell inculcate a sense of civic responsibility and team spirit among the students. NAAC has accorded 'A' grade with CGPA 3.43 in 2015 (re-accreditation III cycle) to the institution which vouches for its academic dimensions and magnitude. All the seven science departments of Aided stream are supported under DST-FIST programme and STAR College Scheme funded by Department of Biotechnology (DBT). The UGC has bestowed the institution with 'College with Potential for Excellence' for its overall excellence in the domain of education in 2011 and extended the coveted status for another term of five years in 2016. The 72<sup>nd</sup> Rank in the NIRF ranking 2019 is an authentic recognition of the glorious heritage of the institution.

## About the RBPT workshop

Science is a systematic enterprise that builds and organizes knowledge in the form of testable explanations and predictions about the universe. Scientific knowledge allows us to develop new technologies, solve practical problems, and make informed decisions both individually and collectively. It's a challenge in higher education to retain curiosity in young learners within the routine conventional classrooms. RBPT seek to train college teachers to develop, implement and evaluate Pedagogical tools based on inquiry and research. This is a part of a series of workshops, designed to introduce teachers to Research based Pedagogical Tools (RBPT) that focuses on process of science rather than information and help students to develop critical thinking and problem-solving abilities. The workshop also gives teachers a platform to network with peers and to get information on funding opportunities. The subject trainers of this workshop are trained in previous national 3-level workshops by a team of experts from UK.

The Indian Institute of Science Education and Research (IISER), Pune is a premier institute dedicated to research and teaching in the basic sciences. IISER plans to develop advanced teaching and research under the mentorship of world-class faculty. With this motto, IISER is the driving force and knowledge partner for the forth coming RBPT workshop. The Centre of Excellence in Science and Mathematics Education (CoESME), focuses on concept based learning, with emphasis on pedagogical innovation by and for teachers. The Subject Trainers for this workshop are trained and certified by CoESME, IISER, PUNE and are listed below:

### Dr. KANNAN RAMASWAMY

Associate Professor,  
Department of Physics,  
Birla Institute of Technology and Science - Pilani,  
Hyderabad Campus.

### Dr. ROBINSON

Associate Professor & Head,  
Department of Mathematics,  
Madras Christian College, Chennai.

### Dr. P. WILSON

Associate Professor & Head,  
Department of Chemistry,  
Madras Christian College, Chennai.

### Dr. S. MURUGAN

Associate Professor,  
Department of Biotechnology,  
Karunya Institute of Technology & Sciences,  
Karunya Nagar, Coimbatore.

### Dr. NUTALAPATI SREENIVAS

Assistant Professor,  
Department of Zoology,  
PR Government Degree College (Autonomous),  
Kakinada, Andhra Pradesh.

## Who can participate?

Teachers, from all science disciplines in Arts and Science Colleges, teaching UG or PG level courses can participate.

## Registration

For registration, click the following link and submit on or before 22<sup>nd</sup> November, 2019.

<https://www.vcw.ac.in/register-form/>

The selected participants will be informed through email on 25<sup>th</sup> November 2019.

## Registration Fee

Faculty members - Rs. 1000/- (includes Lunch, Refreshment, Kit and Stationeries)

## Accommodation

Accommodation is arranged free of cost in the college hostel on prior request.

## For Contact:

Dr. M. Yogeswari – (Coordinator) Assistant Professor of Physics - 74025 83444

Dr. M. Sangeetha – (Coordinator) Assistant Professor of Zoology - 94861 48664

e-mail id : rbpt.vcw@gmail.com



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