

**PROGRESS REPORT FOR EVALUATION OF
STAR STATUS
BY COLLEGES SUPPORTED UNDER STAR COLLEGE SCHEME**

By Department of Biotechnology,
Ministry of Science & Technology, Government of India, New Delhi

(2018-19 to 2020-21)

Submitted by:



Mula Education Society's
Arts, Commerce and Science College Sonai
At/Po. Sonai, Tal. Newasa, Dist. Ahmednagar,
Maharashtra, PIN 414 105



Department of Biotechnology

Proforma for submission of progress reports for evaluation to Star Status by College supported under Star College Scheme

Arts, Commerce and Science College, Sonai, reaccruited with 'A" grade in 2017 by NAAC, Bangalore, is a premier institute offering higher education (UG and PG) in Arts, Science and Commerce faculties. Three departments of the college namely, Botany, Chemistry and Geography had been recommended by the Department of Biotechnology (DBT), Ministry of Science & Technology, Government of India, New Delhi, to receive financial support under the Star College Scheme. For implementation of the Star College Scheme, the DBT, New Delhi has sanctioned Rs.63 lakhs to the college, for a tenure of 3 years (Academic years 2018 - 21). The grant included 33 lakhs of recurring (11 lakhs for each department) and 30 lakhs non-recurring grant (10 lakhs for each department). The objective of the Star College Scheme is to strengthen Life Science and Biotechnology education at the undergraduate level by providing quality education and to encourage students to pursue a career in Life Sciences.

- 1. Name of the College:** **Mula Education Society's**
Arts, Commerce and Science College Sonai
A/P. Sonai, Tal. Newasa, Dist. Ahmednagar
Maharashtra, 414105
- 2. Name of Coordinator, Designation,** **Dr. Mohiuddin J. Shaikh**
Address, Phone No.: Assistant Professor in Zoology
Arts, Commerce and Science College Sonai
A/P. Sonai, Tal. Newasa, Dist. Ahmednagar
Mob. No. 9604458850
- 3. Assessment duration:** **05/03/2018 to 31/03/2021**
Duration in years: **03 Years**

4. Details of Departments Supported

Sl. No.	Name of the Department	Courses (B.Sc. /M.Sc. /PG Diploma etc.) offered	Regular Faculty members	
			Total = 30	
			With Ph.D.	Without Ph.D.
1	Botany	B.Sc. and M.Sc.	04	05
2	Chemistry	B.Sc. and M.Sc.	01	15
3	Geography	B.Sc. and M.Sc.	01	04

5. Number and Date of Advisory Committee meetings: **Total = 11 meetings**

2018-19 – 06/04/2018, 11/04/2018, 18/07/2018, 31/07/2018, 12/02/2019

2019-20 – 13/06/2019, 23/09/2019, 16/01/2020

2020-21 – 22/01/2021, 18/02/2021, 22/03/2021.

6. Qualitative improvements due to DBT support. Please highlight 5 salient points (within 500 words).

With the financial assistance received from the DBT, during the last three academic years 2018 - 2021, the college has made tremendous progress in improving the quality of education, it is offering to the students. It has also helped us in strengthening physical infrastructure in laboratories, library, teaching aids, and promoted networking with neighbouring institutes. Hands-on training and projects of day to day relevance have enhanced interest in students to pursue science courses at Undergraduate level. Some conspicuous sea changes observed in the college are:

i) Increased Number of Students' Projects

As far as student minor projects are concerned, it is neither included in curriculum nor we conduct at UG level. Due to DBT support the under graduates students were able to take up small in- house projects which helped them to gain an insight into research methodology. The three departments, during the scheme duration of three years have completed as many as 81 projects involving 259 students (Appendix 1).

Noteworthy is the fact that, earlier very few students used to participate in ‘Avishkar’ & ‘Anveshan’ research project Competitions. After implementation of projects to undergraduate students, the number of participants has increased significantly.

ii) Increased Exposure of Students to different types of Instruments

The Star College Scheme has enabled the sanctioned departments to purchase equipment worth Rs.10, 00,000/- each. This included either procurement of new equipment which were not available in the laboratory earlier or purchase of equipment already available in the laboratory, in multiple numbers. Procurement of new instruments enabled us in conducting the practicals already mentioned in the syllabus but could not be conducted earlier due to lack of essential equipment. It also has enabled the departments to design and introduce new practicals beyond syllabus (we call them as STAR practicals) to provide greater understanding of the subject. Procurement of equipment in multiple numbers has enabled the departments to make them available to every student and provide 'hands on' experimental exposure to the students.

iii) Enhanced Hands on experiments for students

DBT support has enabled us to increase hands-on experiments and maximum students were benefitted. As many as 47 experiments were conducted during the scheme period, providing individual hands on experience to the students.

iv) Introduction of new Practical beyond Syllabus (STAR Practical)

During the period of DBT Star College scheme, as many as 101 experiments were newly introduced. These experiments were conducted in addition to the regular university curriculum practicals.

v) Increase in number of Industrial/ Field visits

DBT support has made it possible for the departments to organize exposure trips to relevant industries, research laboratories and scientific institutes. The industrial visits have proved to be highly beneficial to the students. It has widened their scope of learning and evoked in them an interest to explore the practical aspects of theoretical knowledge gained in classroom. Students had interaction with eminent researchers working in scientific laboratories. The DBT support has also enabled deserving but economically poor students to attend such field trips and get academic and industrial exposure.

7. Any novel aspect introduced or planning to introduce during the Scheme duration.

One novel aspect we have introduced during the scheme duration is organization of Science exhibition on 28.02.2019, Flower exhibition related to basic concepts of life sciences on 11.02.2020 and Poster presentation competition on the theme 'Importance of Plants in Human welfare and Health Awareness' on 10.02.2020. These programs have elicited huge response from students and parents. School and college students and teachers residing in Sonai and nearby schools and colleges were invited to these events. They have attracted large number of school and college students from the surround 25 villages and we were successful in motivating them towards basic sciences. This has helped us in popularising Biotechnology and its importance among the people.

8. Lessons learnt / difficulties faced / suggestions if any, in implementation of the programme and utilization of DBT grant. (Max 3 points within 300 words).

Lessons learnt:

1. It requires proper planning and huge efforts of all faculty members collectively to run a novel program like DBT Star College Scheme.
2. Participation in seminars, workshops, projects, hands on training, visit to industry and research institutes and interdisciplinary activity helps the students in building up their self-confidence and better understanding of their course curriculum.
3. Experimental based learning is more fruitful for better understanding of basic science. Students acquire some of the basic skills like designing and execution of experiments, logical thinking, reaching to meaningful conclusions and scientific writing.

Difficulties Faced:

1. We faced difficulties in implementing some of the activities under DBT star college scheme, due to lockdown of colleges from 23rd March 2020 onwards due to Covid -19 pandemic. It has also created a tough situation for us to comply with all the pre-scheduled activities like laboratory and industry visits etc., under star college scheme.
2. During the lockdown period, we could manage invited talks and lectures through online mode. However, the response from students was low because of their constraints in procuring electronic gadgets and lack of internet and Wi-Fi facilities in villages.

Suggestions:

1. Fund should be released preferably in the beginning of the academic year so that it can be very well utilized.
2. Young talents could be allowed to visit and interact with Scientists of DBT centres CSIR and other renowned laboratories for motivation and encouragement towards research.

9. Key performance indicators

S. No.	Indicator	Pre-support			During/ After Support			Remarks
			Male	Female		Male	Female	
1	No. of students admitted (B.Sc.)	SC	19	13	SC	13	10	
		ST	05	00	ST	02	00	
		OBC	178	131	OBC	184	173	
		G	87	118	G	67	111	
		Total	289	260	Total	266	294	
		Total = 549			Total = 560			
2	No. of students passing out (%)	60.13			84.66			
3	Drop-out rates	16.24			10.83			
4	No. of students opting for M.Sc.	113			246			
5	Average marks	55			61			
6	No. of hands-on experiments being conducted:	0			47			Pl. See Appendix -2
7	No. of new experiments introduced	0			101			Pl. See Appendix - 3
8	Publications (Scopus indexed)/ patents, if any	0			30 publications & 2 patents			Pl. See Appendix - 4
9	Training received by faculty	0			22			Pl. See Appendix - 5
10	Exhibitions/ seminars/ training courses conducted	0			12			Pl. See Appendix - 6
11	Books/ Journals subscribed from grants	0			45			Pl. See Appendix - 7
12	Outreach Activities (Popular lectures)	Nil			06			Pl. See Appendix - 8

13	Colleges mentored to apply for DBT Star College grants	0	02	Pl. See Appendix - 9
14	Invited Lectures	0	38	Pl. See Appendix - 10

9. Self-evaluation

Department	Objective (as stated in proposal)	% achieved	Reasons for underachievement/ If achieved, state in quantitative metrics
Botany	<ol style="list-style-type: none"> 1. Enhancing multidisciplinary approach by training students and faculty 2. Sensitize the students for conservation and plant protection 3. Generate knowledge about current aspects in plant sciences 4. Developing need based skills among the students relevant to current issues in plant sciences 5. Increase in hands-on experiments for students 	90% 95% 90% 90% 95%	9.2
Chemistry	<ol style="list-style-type: none"> 1. Learning different laboratory skills 2. New developing techniques in chemical science 3. Developing confidence in students to handle instruments individually 4. Development of practical skills and interpretation of results 5. Understanding interdisciplinary nature of chemistry 	100% 90% 100% 95% 90%	9.5
Geography	<ol style="list-style-type: none"> 1. Introduction of skill based programmes for students of Geography 2. Emphasis on field oriented training programmes 3. Enhancing the competency of students with regard to practical techniques 4. Increase in the number of field and survey experiments 5. Nurture innovative ideas of students through this program. 	90% 95% 95% 100% 90%	9.4

10. 2 New dimensions that shall be added if accorded Star Status (within 200 words).

i) Laboratory to Field concept will be introduced:

There are number of applied experiments and projects which need to be executed in the fields. As the College is located in rural area and maximum people have agricultural practice, it is easy for our students to perform on the field. There are experiments like soil and water analysis. This can be applied for farmers in their agriculture farms. The projects like plant tissue culture will be developed in the next phase to produce tissue culture varieties. As the projects like finding slope of river, land survey, use of GPS and GIS is used by Department of Geography; it will be applied in the villages in vicinity of the College.

ii) Exhibitions and training programs for Higher Secondary School teachers and students:

Science exhibition elicits a good response from school students. It will be organized on large scale to attract the villagers and youth including school children. This will help us in popularising Biotechnology and its importance among the people. School and college students and teachers residing in Sonai and nearby schools and colleges will be invited to participate in the training programs and take benefit of it. Training programs meant for college teachers pursuing a career in life sciences will include basic experiments in molecular biology, recombinant DNA technology, Plant tissue culture, Chemical technology, Environmental biotechnology, etc. The school teachers will be given training of basic sciences.



**Dr. Mohiuddin Shaikh
Course Coordinator
(With Seal)**



**Principal Dr. Shankar Laware
Head of the Institution
(With Seal)**

Date: 16/04/2021

Appendix 1

Number of Student Projects Carried out during the Scheme Period:

S. No.	Name of Department	Year	No. of Projects	No. of Students
1	Chemistry	2018-19	03	06
		2019-20	05	18
		2020-21	10	40
2	Botany	2018-19	06	12
		2019-20	10	24
		2020-21	10	40
3	Geography	2018-19	05	20
		2019-20	04	16
		2020-21	08	32
4	Inter Departmental/ Inter Disciplinary Projects	2019-20	11	24
		2020-21	09	27
Total			81	259

Appendix 2

Number of hands-on experiments being conducted:

S.No.	Name of Department	Data for the year			Total
		2018-19	2019-20	2020-21	
1	Chemistry	03	05	06	14
2	Botany	06	06	06	18
3	Geography	05	05	05	15
Total		14	16	17	47

Appendix 3

Number of new experiments introduced:

S.No.	Name of Department	Data for the year			Total
		2018-19	2019-20	2020-21	
1	Chemistry	08	14	08	30
2	Botany	11	15	12	38
3	Geography	09	09	15	33
Total		28	38	35	101

Appendix 4**Publications (Scopus indexed)/ patents, if any:**

S.No.	Name of Department	Data for the year			Total
		2018-19	2019-20	2020-21	
1	Chemistry	01	02	00	03
2	Botany	05	04 1-Patent	03 1-Patent	12-Papers 2- Patents
3	Geography	05	06	04	15
Total		11	12 1-Patent	07 1-Patent	30 2-Patents

Appendix 5**Training received by faculty:**

S.No.	Name of Department	Data for the year			Total
		2018-19	2019-20	2020-21	
1	Chemistry	03	02	05	10
2	Botany	01	02	02	05
3	Geography	02	02	03	07
Total		06	06	10	22

Appendix 6

A) Exhibitions conducted:

S. No	Conducting Department	Date	Theme	No. of students involved	No. of beneficiaries
1	Geography	21/02/2019	Working of different instruments	22	150+
2	Chemistry	28/02/2019	Working of different instruments	24	200+
3	Botany	28/02/2019	Working of different instruments	20	200+
4	Geography	14/01/2020 to 15/01/2020	Working of different models for Secondary & Higher Secondary School Students	40	600+
5	Botany	11/02/2020	Flower bouquet & flower decoration of table, wall, stand, doors, windows etc.	50	200+
Total			05	156	1350+

B) Workshop/ Training courses conducted:

S. No	Conducting Department	Date	Theme	No. of students benefited
1	Chemistry	30/11/2019	Training on skills required for QC, QA, R&D in Pharmaceutical and Chemical industries	47
2	Botany	09/01/2020	Workshop on Flower arrangement and Bouquet preparation	78
3	Geography	28/02/2020	Training Program on Environmental awareness	96
4	Botany	24/01/2021	Workshop on Solid State Fermentation of Organic Waste	40
5	Botany	31/01/2021	Workshop on Industrially Important Fungi and Fungal Products for Sustainable Crop production	30
6	Botany	07/02/2021	Workshop on Production of organic Chelating Agents & Micronutrient Chelation	30
7	Chemistry	25/03/2021 to 26/03/2021	Workshop on Soil and Water Analysis	72
Total			07	393

Appendix 7**Books and Journals subscribed from grants:**

S. No.	Name of Department	Number of items	Amount utilized
1	Chemistry	13	24909.36
2	Botany	19	30592.00
3	Geography	13	27698.15
Total		45	83199.51

Appendix 8**Outreach activities:****A) Industrial/ Filed visits organized:**

S. No.	Department	Date of visit	Place of visit	Observation	No. of Students + Faculty
1	Botany	08/09/2018	Mahatma Phule Agriculture University, Rahuri	Medicinal & Aromatic plants and processing units	32+03
2	Chemistry	25/09/2018	Mahatma Phule Agri. University, Rahuri	Food processing unit, Dairy farm, Soil & water analysis	70+04
3	Geography	28/02/2019	Indian Meterological Dept. Pune and IUCAA Pune	Weather instruments, Weather analysis, Astronomy & Astrophysics	42+05
4	Chemistry	17/01/2020	Sahyadri Organic Farm & Sula Vineyards, Nasik	Group farming, Organic farming, Wine from grapes and other fruits, Fermentation	45+03
5	Botany	28/01/2020	Vani & Saputara	Ecological study, Study & collection of Hydrophytes	29+03
6	Geography	03/03/2020	Shani Shingnapur & Kautuki river	Village survey with GPS technology, Study of slope of river & drainage system with dumpy level instruments	40+04

B) Inter Departmental field visit to the Ideal village, Morya Chinchore:

One day inter departmental visit was organized to an ideal village Morya Chinchore, on 20/01/2020. This visit was conducted with 82 students and 09 faculty members from all the three participating departments. This village is adopted by NGO named Yashwant Samajik Pratishtan, Sonai. We had observed water shed management, Gram swachhata abhiyan, plantation and nurturing throughout the year. Also there is ban on plant cutting and liquor shops in and around the village.

C) One week Inter Disciplinary Student Development Program:

The College had organized one week multi-disciplinary student development program for all the college students under DBT Star College Scheme. This program was organized from 29/07/2019 to 03/08/2019 in the College seminar hall. In all 118 students and 10 faculty members participated in the program. The program has covered basics of science and technology, different aspects and DBT, DST, UGC, MHRD and Government of India schemes available for students and teachers.

Appendix 9**Colleges mentored to apply for DBT Star College grants:**

The Principal of the college, Course Coordinator and Departmental Coordinators have mentored two colleges for preparation and presentation of proposal for DBT Star College strengthening component within the period of this scheme. They are:

- 1) Mula Education Society's Shri. Dnyaneshwar Mahavidyalaya, Newasa, Dist. Ahmednagar.
(During the academic year 2019-20)
- 2) DPR Shikshan Sanstha's Dada Patil Rajale College of Arts, Commerce and Science, Adinathnagar, Tal. Pathardi, Dist. Ahmednagar (During the academic year 2020-21)

Both the colleges have applied and submitted the proposal to DBT.

Invited lectures:

S. No.	Department	Year	Number	Themes
1	Chemistry	2018-19	04	Laboratory techniques, Laboratory Safety Measures
		2019-20	04	Interview techniques, Green chemistry, IPR- Converting Idea to Patent
		2020-21	05	Chromatography techniques, Laboratory safety techniques
2	Botany	2018-19	02	Organic Farming, Plant industries & Entrepreneurship
		2019-20	02	Research methodology, Bio-fertilizers
		2020-21	08	Basics of organic farming, Cropland ecosystem, Nano particles in agriculture, Plant tissue culture
3	Geography	2018-19	04	GIS, Global mapper, Remote sensing
		2019-20	02	Dumpy level survey, Training on Global mapper software
		2020-21	07	Role of GPS & GIS, Remote sensing & Digital mapping, Application of map projections.
Total			38	