

P.K.M. COLLEGE OF EDUCATION

MADAMPAM, KAITHAPRAM PO, KANNUR-670631, Website-www.pkmcollege.org Govt. Aided Teacher Education Institution affiliated to Kannur University Recognized by NCTE and included under UGC 2(f) & 12B category Accredited by NAAC with 'A' Grade, RUSA 2.0 beneficiary

PROGRAMME PORTFOLIO

DEPARTMENT OF NATURAL SCIENCE
2023-2024



P.K.M. COLLEGE OF EDUCATION, MADAMPAM

DEPARTMENT OF NATURAL SCIENCE

ACTIVITY REPORT 2023-2024

Objectives

- To acquaint with the theoretical back ground in teaching learning process.
- Develop skills in teaching like skill of introducing a lesson, skill of explanation, illustrating with examples, class management, skill of questioning, skill of board writing, skill of using learning aids, teaching methods, class management, organizing different school activities etc.
- Develop research skills and research culture among the student teachers by preparing and publishing field manuals, books, booklets etc.
- Develop competent natural science teachers with subject competency, organization skills, communication skills, ICT Skills, leadership quality, laboratory skills, skills in organizing different curricular and co-curricular activities etc.
- Develop socially committed Natural science teachers with scientific sensitivity, attitude interest and creativity in all works and activities.
- Student teachers get critical thinking, analytical skill, creativity skills, organization skills, leadership quality etc. through different co-curricular activities such as role play, projects, seminars etc.
- The student teacher develops presentation skills and communication skills through different presentations and seminars.
- By doing outdoor activities like project, surveys, planting tree saplings, campus cleaning help the learner to get opportunity to spend with nature and gain naturalistic intelligence.

- To make environmental awareness among the Student Teachers and public. To promote eco-friendly lifestyles.

Strategic plan

- By different sessions the student teachers will get critical thinking, analysis, creativity skills, organizing skills , develops ways of expression, communication skills etc.
- Through the different projects the student teachers get opportunity to develop research skills, leadership skill, co-operation, organization skill, interpersonal skill, collection of data, analysis, interpretation, report writing etc.
- By preparing science related albums the student teachers will get skills in collecting data, analyzing, organizing, presenting and reporting etc.
- Surveys, field trips project works etc. were also helps the student teachers to acquire different skills.
- Seminars and presentations will improve the presentation skills and confidence among the student teachers.
- Both theoretical and practical curricular and co-curricular activities definitely develop different skills and this makes efficient natural science teachers with ethics and positive attitude.

Course learning outcomes

- By theoretical activities, discussions, demonstrations, panel discussions, online teaching etc. student teachers get a sound knowledge on the theoretical back ground of the teaching learning processes, become subject competent.
- By the practical sessions such as microteaching discussion, demonstration and criticism lessons the student teachers develop different skills in teaching learning process, student management , class management, organizing different

programmes, science clubs, exhibitions, games, conducting projects, role plays debates and several curricular and co-curricular activities.

- By preparing science related albums the student teachers develop skills in collecting data, writing skills, skills in analysis, organizing skills, editing skills etc.
- By doing action research and preparing articles and presenting papers the student teachers develop research skills.
- By conducting survey, field trips, projects the student teachers get deeper knowledge in different methods and acquire different skills such as leadership skills, interpersonal skills, data analysis, interpretation etc.
- By doing environment related activities the student teachers develop naturalistic consciousness.
- Student teachers develop competency in article preparation, editing, team work etc. through publishing departmental publications.

Activities planned

- Magazine
- Biological album
- Publications
- Project
- Seminar
- Workshop
- Question Bank
- Assignments

- Seminar
- Day observance
- Ecofriendly activities
- Waste management
- Content analysis
- Practical records
- Discussion, demonstration and criticism. Sessions.
- Teaching aids preparation
- Action research
- Resource unit
- School internship.

Many curricular and co-curricular activities were done by the Natural Science department.
The details were given below

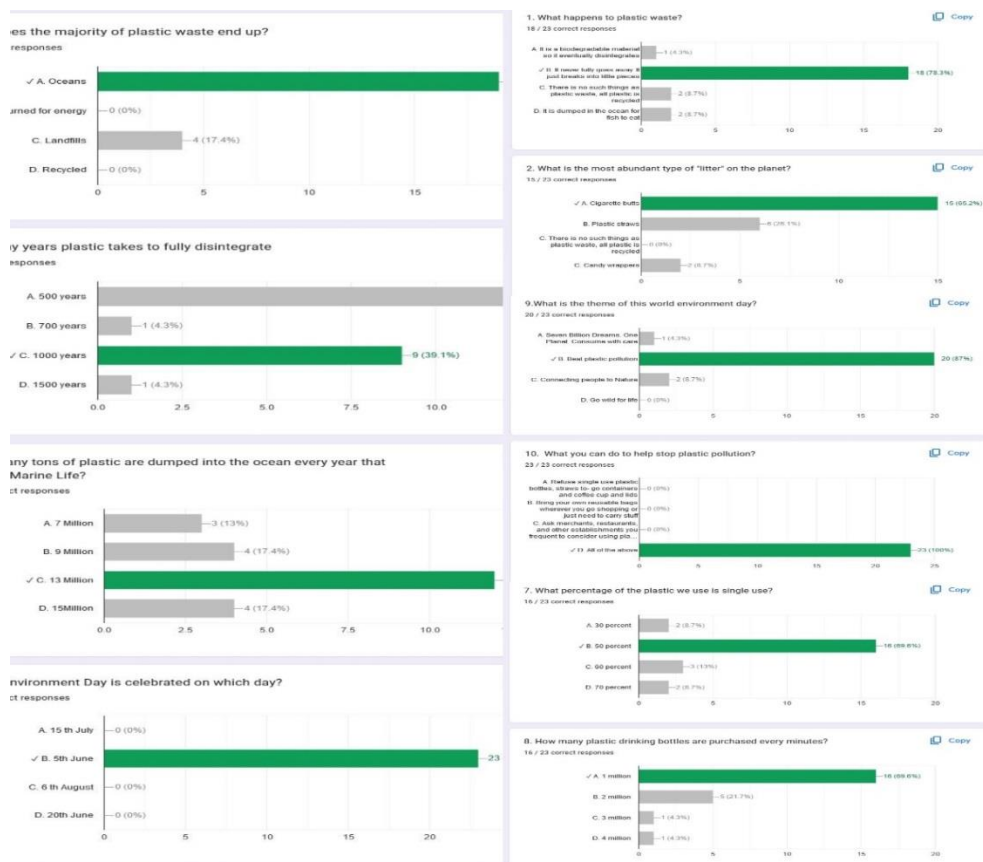
WORLD ENVIRONMENT DAY CELEBRATIONS

(30-05-2023-6-05-2023)

Day 1-30-05-23

ONLINE LIFE QUIZ

As part of World Environment Day observance 2023 IQAC, PKM College of Education in association with department of Natural Science and Bhoomithrasena club conducted an online Life Quiz on the topic Beat Plastic Pollution on 30-05-23. The questions were covered different areas such as environment day, plastic pollution, its degradation, consumption and measures to stop plastic pollution. A total of 19 students were participated in the online quiz competition. First place was won by Akhila V, Mathematics. The programme was a good opportunity for the student teachers to understand different dimensions of plastic pollution.



Day 2- 31-05-23

ONE FAMILY PLANT ONE TREE



P.K.M. COLLEGE OF EDUCATION, MADAMPAM
B.Ed Degree Programme
Department of Natural Science & Bhoomithrasena Club
Organized by N.C.E. 2013-14, 2014-15, 2015-16, 2016-17, 2017-18, 2018-19, 2019-20, 2020-21, 2021-22, 2022-23

WORLD ENVIRONMENT DAY OBSERVANCE
May 30th to June 5th

**one family
plant
one tree**

On 31/05/23
Wednesday

Instructions

- At least one plant should be planted.
- Photo of planting the sapling should be sent to the following mobile number before 6pm.
Mob: +919567931005

Organized by IQAC in association with Dept. of Natural Science & Bhoomithrasena Club

As a part of World Environment Day observance, IQAC in association with Department of Natural science and Bhoomithrasena club of P. K. M. College of Education conducted a tree planting programme called “ONE FAMILY PLANT ONE TREE” on 31st May 2023. As per the programme, the students planted a tree at their home and sent pictures and videos of planting tree to the coordinator.



Day 3- 01-06-23

CAMPUS CLEANING

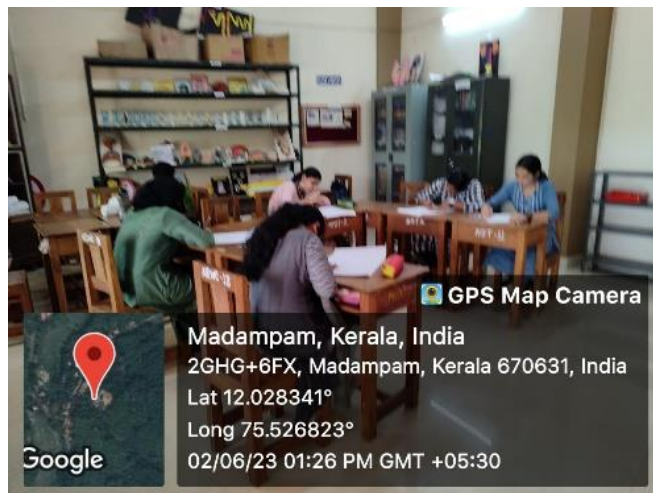
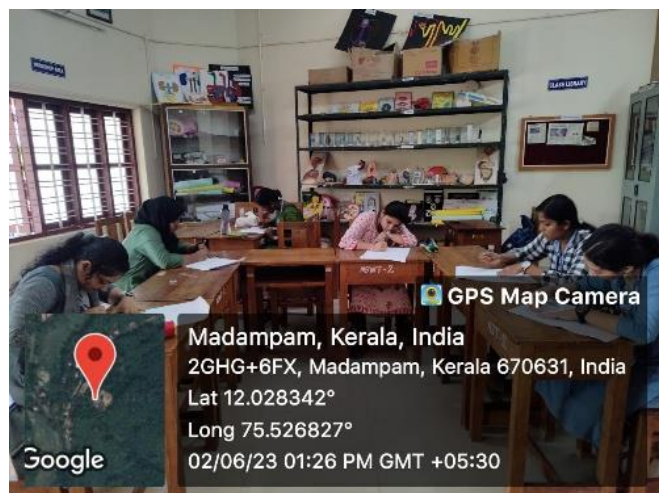
As a part of World Environment Day observance, IQAC in association with Department of Natural science and Bhoomithrasena club of P. K. M. College of Education conducted a campus cleaning programme on 1st June 2023 at 2.30 pm. All the student teachers of P. K. M. College of Education participated in the cleaning programme. The programme came to an end on 3.00 pm.



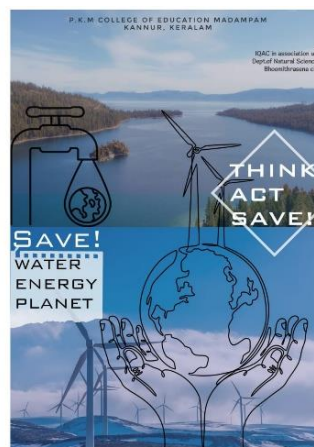
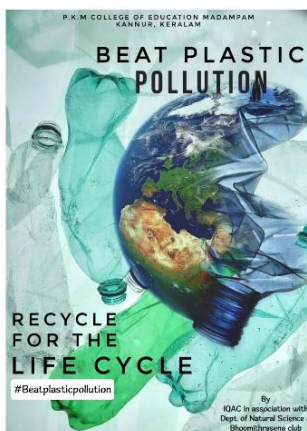
Day 4 – 2-06-23

PAINTING COMPETITION

As a part of world Environment Day observance, IQAC in association with Department of Natural science and Bhoomithrasena club of P. K. M. College of Education conducted a drawing competition for student teachers on 2nd June 2023, at 1 pm in the Natural Science class under the direction of Ms. Jomol Jose, Assistant professor of Natural Science and Bhoomithrasena club Faculty. In the theme, “Save Environment “student teachers created outstanding drawings. Haseena C.M of First year Malayalam won the first prize. Ms. Arsha V of First year English and Ms. Aksharamol of Second year Social science got incentive prizes for their amazing effort. The programme came to an end at 2.00 PM.



Day 5- 03-06-23 – E- POSTER SHAIRING



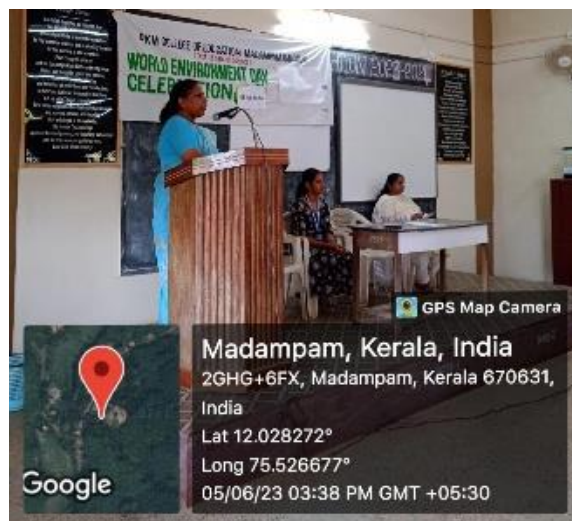
As a part of World Environment Day observance, IQAC in association with Department of Natural science and Bhoomithrasena club of P. K. M. College of Education conducted an online E- poster sharing programme on 3rd June 2023. Our principal Dr. Jessy N C inaugurated the programme by distributing posters to student teachers through online media and the student teachers became the part of the programme by sharing the posters through their social media

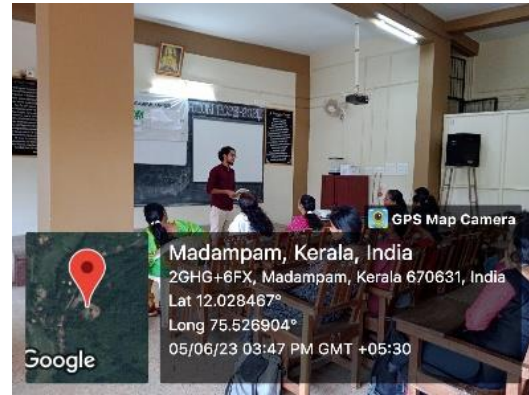
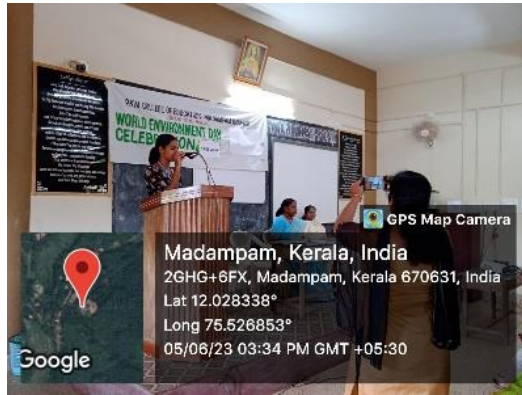
accounts. As the social media is a huge platform, it was possible to reach more people with the message of environmental protection through this programme.

Day 6- 5-06-23

PLEDGE & SKIT

As a part of World Environment Day observance, IQAC in association with Department of Natural science and Bhoomithrasena club of P. K. M. College of Education celebrated environment day programme on 5th June 2023, 3.30 pm at College General classroom. The welcome speech was given by Ms. Jobina Jose (Joint convenor, Bhoomithrasena). The presidential address was delivered by Principal Dr. Jessy N C. The event featured a group pledge followed by a skit performed by bhoomithrasena club members. The pledge was given by Mrs. Jomol Jose (Staff coordinator, Bhoomithrasena). Vote of thanks were given by Ms. Aiswarya P V(Convenor, Bhoomithrasena. The programme came to an end at 4.00 PM.





Day 7 - 6-06-23

FRUIT TREE SAPLING PLANTING

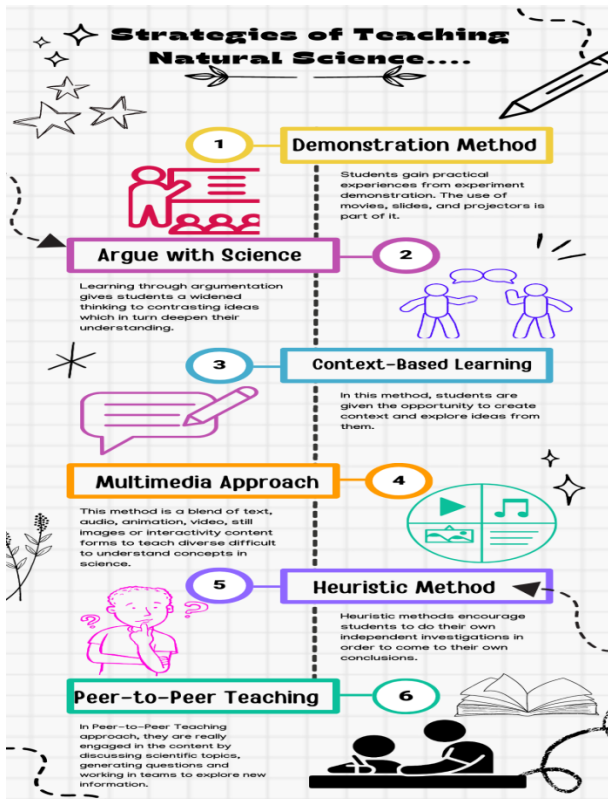
As part of this environment Day programme, decided to fruit plant saplings in the college compound. The programme was inaugurated by college principle Dr. Jessy N C by planting a mango sapling. Followed by this, almost 22 saplings were planted by students, teachers and non-teaching staffs of the College.



P.K.M. College of Education has conducted different awareness, awareness and action and action programmes were conducted as part of World Environment Day 2023 in association with Meri Life. Our student teachers, teaching and non-teaching staffs were got much information regarding the plastic pollution and conservation of environment. This was a good and highly informative programme for all. I am here by submitting the detailed report of World Environment Day 2023 for further actions needed.

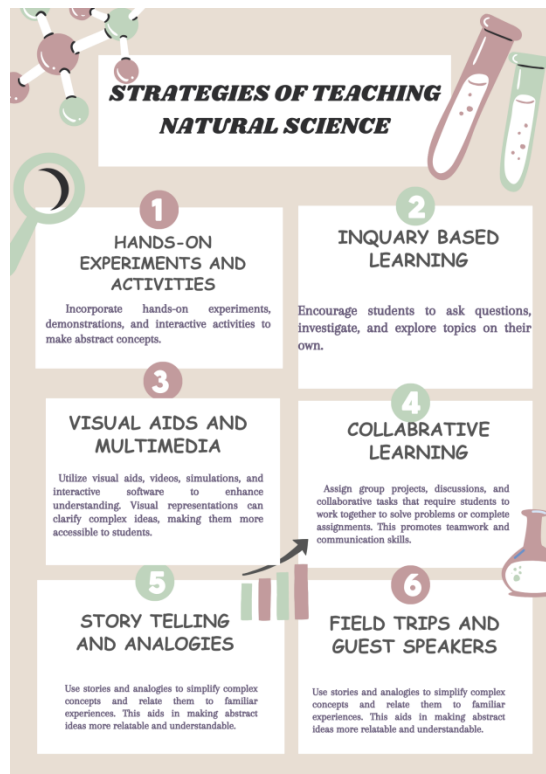
COLLAGE – SRATEGIES OF TEACHING NATURAL SCIENCE

Conducted a Collage making on the theme Strategies of Teaching Natural Science. Student teachers prepared very creative, versatile and unique digital collage regarding the topic Strategies of Teaching Natural Science.



Teaching Methods & Methodologies

- Lecture method
- Lecture demonstration method
- Discussion method
- Assignment method
- Project method
- Role play
- Audio visual method

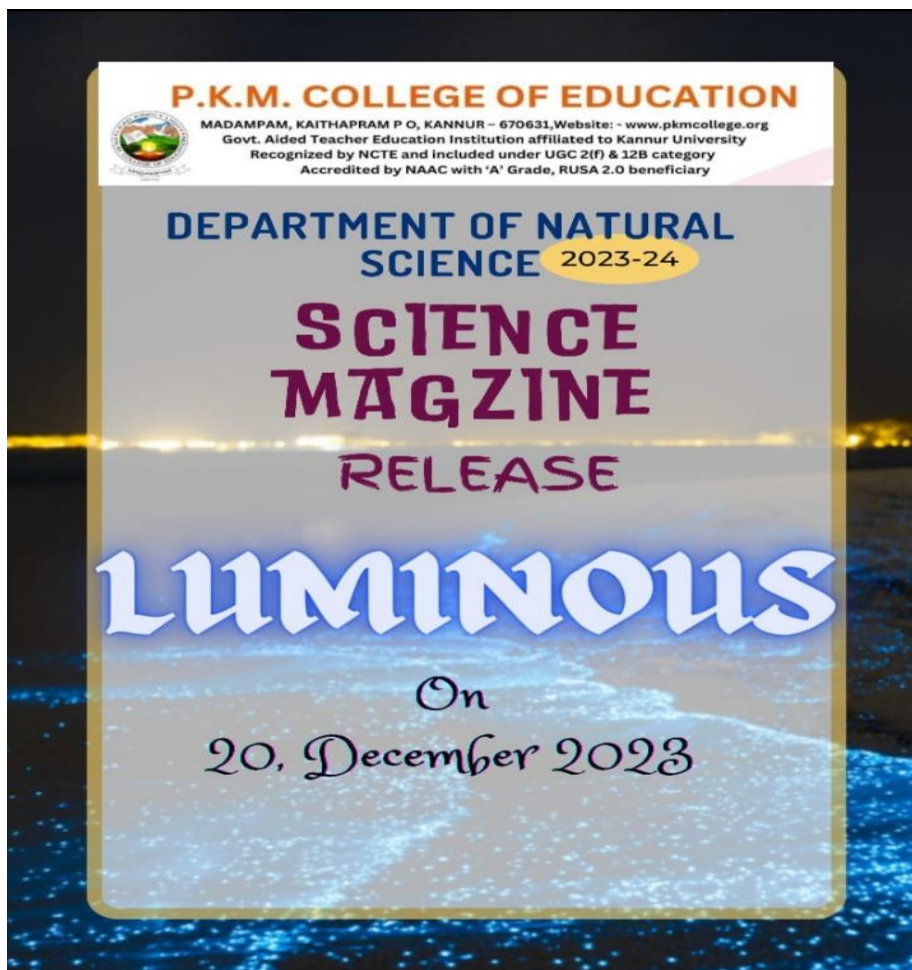




BIOLOGISTS ALBUM

Student Teachers prepared biologists album. The students were selected 10 biologists according to their interest and their contributions in different fields. Each student teacher prepared a biologist album including the photographs, history, their major contributions and findings etc.

SCIENCE MAGAZINE



Department of Natural Science prepared a Science Magazine. Jyothis Thomas was chosen as the student editor. The whole magazine exhibited creativity, scientific attitude, scientific interest etc. all student teachers prepared different articles, current diseases, posters, cartoons, poems, stories etc. Natural science department released the magazine on 20/12/ 2023 at 12.00 Pm. Title of the magazine is **LUMINOUS**. Sisira gave everyone a hearty welcome. Then the student editor Jyothis Thomas talked about the magazine. After that Mrs. Jomol Jose released magazine and talked about the magazine. At about 12.15pm, the programme ended with an official vote of thanks by Annchristy James. The programme was an effective one as it

provided valuable insights and corporation of the all students. This programme helped the students to improve the coordination and scientific temper. This is ended up being a successful one.

WILD LIFE WEEK CELEBRATION (1-10-2023 to 7-10-2023)



Department of Natural Science conducted a Wild life Week Celebrations from 1st October to 7th October 2023. In each day prepared a catalogue of endangered species with photograph, characteristics and description. The catalogue was shared through social media to spread the awareness about the endangered species near to us. This programme was really a successful one in promoting environmental awareness and consciousness among student teachers

P.K.M. COLLEGE OF EDUCATION
MADAMPAM, KATHAPRAM P.O, KANNUR - 670631, Website: www.pkmcollege.org
Govt. Aided Teacher Education Institution affiliated to Kannur University
Recognized by NCTE and included under UGC 2(f) & 12B category
Accredited by NAAC with 'A' Grade, RUSA 2.0 beneficiary

Natural Science Department Presents

IN DANGER

DAY 1: ELVIRA RAT (LARGE ROCK RAT)



The Elvira rat (*Cremnomys elvira*) is a critically endangered species of rodent in the family Muridae. The species was first described by Sir John Ellerman in 1946. It is found only in the Eastern Ghats of Tamil Nadu, India. The Elvira rat reaches a head-and-body length of 149 mm, in addition to a tail of up to 196 mm. Its upper parts are brownish grey and the underparts are greyish white. The tail is bicoloured.

Elvira rat
Domain: Eukaryota
Kingdom: Animalia
Phylum: Chordata
Class: Mammalia
Order: Rodentia
Family: Muridae
Genus: *Cremnomys*
Species: *C. elvira*

P.K.M. COLLEGE OF EDUCATION
MADAMPAM, KATHAPRAM P.O, KANNUR - 670631, Website: www.pkmcollege.org
Govt. Aided Teacher Education Institution affiliated to Kannur University
Recognized by NCTE and included under UGC 2(f) & 12B category
Accredited by NAAC with 'A' Grade, RUSA 2.0 beneficiary

DEPARTMENT OF NATURAL SCIENCE PRESENTS

IN DANGER

Day 2: Nilgiri tahr (*Nilgiritragus hylocrius*)
(02/10/2023)

Taxonomical Classification

Domain: Eukaryota
Kingdom: Animalia
Phylum: Chordata
Class: Mammalia
Order: Artiodactyla
Family: Bovidae
Subfamily: Caprinae
Tribe: Caprini
Genus: *Nilgiritragus*
Species: *hylocrius*



- The Nilgiri tahr is an ungulate that is endemic to India. It is the state animal of Tamil Nadu.
- This endemic species of the Western Ghats is protected under Schedule I of the Wildlife (Protection) Act of India, 1972.
- The Eravikulam National Park has the highest density and largest surviving population of Nilgiri tahr.

P.K.M. COLLEGE OF EDUCATION
MADAMPAM, KATHAPRAM P.O, KANNUR - 670631, Website: www.pkmcollege.org
Govt. Aided Teacher Education Institution affiliated to Kannur University
Recognized by NCTE and included under UGC 2(f) & 12B category
Accredited by NAAC with 'A' Grade, RUSA 2.0 beneficiary

NATURAL SCIENCE DEPARTMENT PRESENTS

IN DANGER

DAY 3- NAMDAPHA FLYING SQUIRREL
3/10/2023 (*Biswamoyopterus biswasi*)



Kingdom: Animalia
Phylum: Chordata
Class: Mammalia
Order: Rodentia
Family: Sciuridae
Genus: *Biswamoyopterus*
Species: *B. biswasi*



- The Namdapha flying squirrel is an arboreal, nocturnal flying squirrel endemic to Arunachal Pradesh in northeast India.
- It is listed as critically endangered by the IUCN.
- It is known from a single specimen collected in 1981 in Namdapha National Park.
- Its range of the Namdapha flying squirrel may be restricted to a single valley and it is threatened by poaching of animals for food from within the park, and possibly by habitat destruction.

P.K.M. COLLEGE OF EDUCATION
MADAMPAM, KATHAPRAM P.O, KANNUR - 670631, Website: www.pkmcollege.org
Govt. Aided Teacher Education Institution affiliated to Kannur University
Recognized by NCTE and included under UGC 2(f) & 12B category
Accredited by NAAC with 'A' Grade, RUSA 2.0 beneficiary

Natural science department presents

DAY: 4 IN DANGER

ASIAN ELEPHANT

Scientific name: *Elephas maximus*



Kingdom: Animalia
Phylum: Chordata
Class: Mammalia
Order: Proboscidea
Family: Elephantidae
Genus: *Elephas*
Species: *E. maximus*

POPULATION	LOCATION
Less than 5,000	Asia

CONSERVATION STATUS	WEIGHT
Endangered	3,000kg - 5,000kg

HABITAT
Grassland, Forest, Scrubland

Asian elephants have relatively smooth gray skin, smaller ears, and trunks which end in a single appendage.

P.K.M. COLLEGE OF EDUCATION
MADAMPAM, KAITHAPRAM P O, KANNUR - 670631, Website: - www.pkmcollege.org
Govt. Aided Teacher Education Institution affiliated to Kannur University
Recognized by NCTE and included under UGC 2(f) & 12B category
Accredited by NAAC with 'A' Grade, RUSA 2.0 beneficiary

Department of Natural science
presents
In Danger



**Day 5:
Kashmir Stag**
(Cervus hanglu hanglu)

KINGDOM: Animalia
PHYLUM: Chordata
SUBPHYLUM: Vertebrata
CLASS: Mammalia
ORDER: Artiodactyla
FAMILY: Cervidae
SUBFAMILY: Cervinae
GENUS: Cervus

The Kashmir stag (Cervus hanglu hanglu), also called hangul, is a subspecies of Central Asian red deer endemic to Kashmir and surrounding areas. It is found in dense riverine forests in the high valleys and mountains of Jammu and Kashmir and northern Himachal Pradesh. In Kashmir, it is found primarily in the Dachigam National Park where it receives protection, and elsewhere it is more at risk.

P.K.M. COLLEGE OF EDUCATION
MADAMPAM, KAITHAPRAM P O, KANNUR - 670631, Website: - www.pkmcollege.org
Govt. Aided Teacher Education Institution affiliated to Kannur University
Recognized by NCTE and included under UGC 2(f) & 12B category
Accredited by NAAC with 'A' Grade, RUSA 2.0 beneficiary

**NATURAL SCIENCE
DEPARTMENTS PRESENTS
IN DANGER
Day 6: FOREST OWLET**

The forest owlet (Athene blewitti) is endemic to the forests of central India. It is listed as Endangered on the IUCN Red List since 2018, as the population is estimated at less than 1,000 mature individuals. It is threatened foremost by deforestation.



Taxonomical Classification
Domain: Eukaryota
Kingdom: Animalia
Phylum: Chordata
Class: Aves
Order: Strigiformes
Family: Strigidae
Genus: Athene
Species: A. blewitti

WORKSHOP ON NUTRITIONAL VALUE OF LOCALLY AVAILABLE FOODS

P.K.M. COLLEGE OF EDUCATION
MADAMPAM, KAITHAPRAM P O, KANNUR - 670631, Website: - www.pkmcollege.org
Govt. Aided Teacher Education Institution affiliated to Kannur University
Recognized by NCTE and included under UGC 2(f) & 12B category
Accredited by NAAC with 'A' Grade, RUSA 2.0 beneficiary

**WORKSHOP ON
NUTRITIONAL
VALUE OF
LOCALLY
AVAILABLE
FOODS**



20/12/2023
@ NATURAL SCIENCE
CLASSROOM

Nutritional value or nutritive value as part of food quality is the measure of a well-balanced ratio of the essential nutrients carbohydrates, fat, protein, minerals, and vitamins in items of food or diet concerning the nutrients required of their consumer. International and national guidelines exist to inform consumers about optimal nutrient intake from their diets. The aim of this workshop was to become aware about the locally available food. The primary objective is to increase awareness among students about the nutritional value of locally available food. On 20/12/23 a workshop was conducted. The students of department of natural science were prepared a chart on the nutritional value of 22 locally available foods. The workshop was served as a significant platform for raising awareness and promoting the significance of being fit by controlling our food habits.





FOOD	CALORIES	PROTEIN	FAT	CARBOHYDRATE	WATER	MINERALS/VITAMINS
RICE	120	2	—	30	70	—
MILK	45	3.2	1	5	87	A, B ₁ , B ₂
EGG	150	12	11	—	75	A, B ₁ , B ₂
PORK	340	29	24	—	36	B
CHICKEN	120	25	5	—	55	B, B ₁ , B ₂
FISH	220	20	10	2	60	A
CARROT	20	0.6	—	4	91	A, C
CUCUMBER	10	0.6	—	2	75	B
POTATO	80	1	—	3	78	A, C
TEKATO	10	1	—	20	30	C
BANANA	90	1	—	1	36	C, B
ORANGE	25	1	—	2.8	9	A, B ₁ , B ₂
WHEAT	100	14	—	3	80	A
BEANS	40	2	—	1	16	A, C
CABBAGE	10	—	10	—	11	D
CORROD OIL	5	2	1	6	32	—
MUSHROOM	1	1	—	4	12	B
ONION	1	1	—	5	85	C, B ₁ , D, G
ASPARAGUS	180	8	0.7	2.5	20.1	C, A, G, H, P
TAPIOCA	28	1.7	0.4	2.6	10	C, B ₁ , D, G, H, P
COLOCASIA	28	1.7	0.4	2.6	10	C, B ₁ , D, G, H, P
SPINACH	28	1.7	0.4	2.6	10	C, B ₁ , D, G, H, P

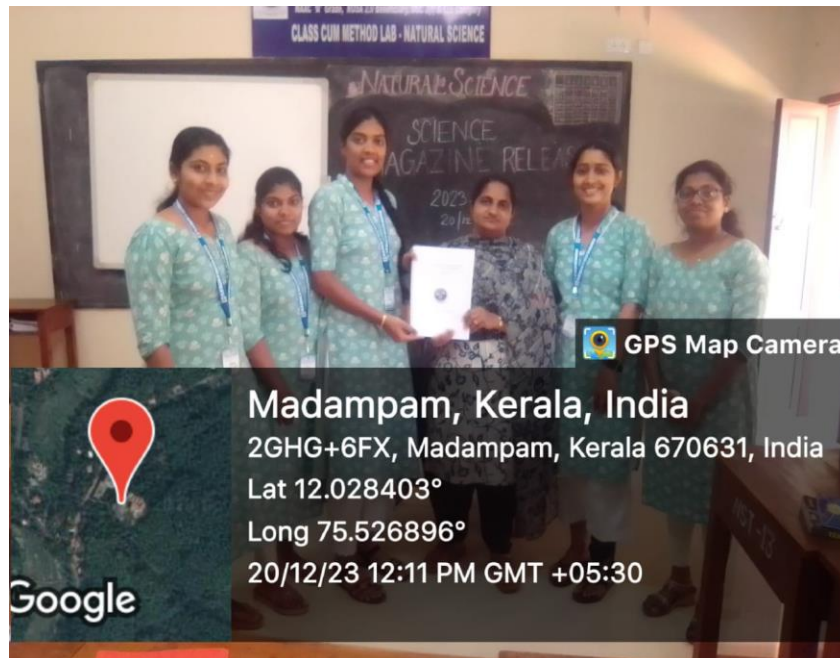
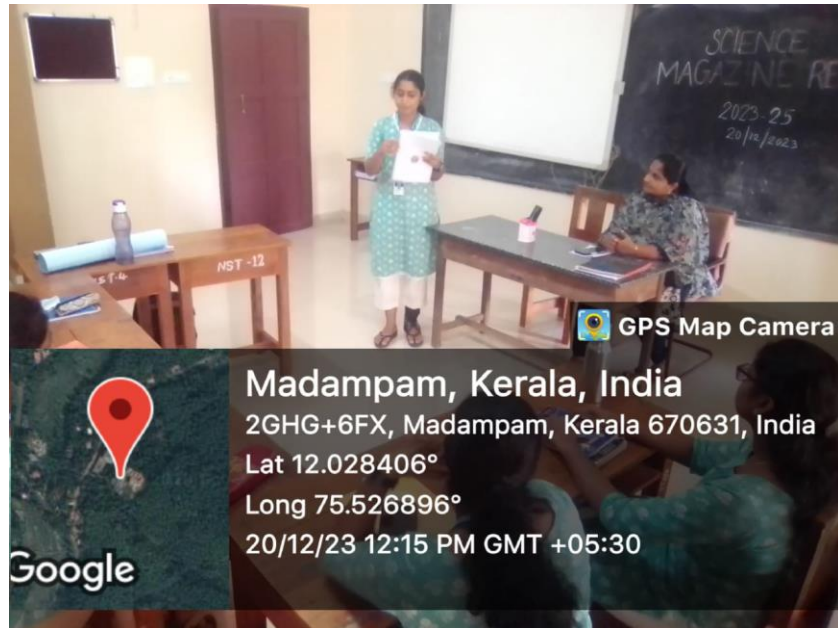
PROJECT WORK

Department of Natural Science conducted a project work titled “**EXPLORING THE ANT DIVERSITY IN THE CAMPUS ECOSYSTEM OF P.K.M COLLEGE OF EDUCATION, MADAMPAM**”. The project release event at PKM College's Natural Science Department on 20/12/2023 aimed to explore the fascinating realm of ant diversity. The project delved into the multifaceted world of ants through meticulous research and observation,

shedding light on their diverse species, behaviors, and ecological significance. This report encapsulates the essence of the event, outlining its objectives, content, and findings. The primary objective of the project release was to elucidate the diversity of ant species within various ecosystems, emphasizing their ecological roles and impact on the environment. The event sought to enhance understanding and appreciation for these industrious creatures among students, faculty, and attendees.

Ant Diversity Analysis: Present an overview of different ant species in diverse habitats. **Ecological Significance:** Highlight the ecological roles various ant species play in their respective ecosystems. **Awareness and Education:** Foster awareness and knowledge regarding the importance of preserving and diversity for ecological balance. **Introduction to Ant Diversity:** An overview of ant species, their classifications, and importance in ecosystems. **Field Studies and Research Findings:** Insights from field studies, showcasing the diversity of ant species in different habitats. **Ecological Role of Ants:** Exploration of how ants contribute to seed dispersal, soil aeration, pest control, and nutrient recycling. **Threats to Ant Diversity:** Discussion on factors endangering ant populations, such as habitat loss and climate change. **Conservation Strategies:** Suggestions and strategies for preserving ant diversity and their habitats.

The project release event at PKM College's Natural Science Department successfully shed light on the diverse world of ants. It not only emphasized the sheer variety of ant species but also highlighted their critical roles in maintaining ecological balance. The event aimed to instill a sense of responsibility among participants to conserve and protect these tiny yet significant creatures and their habitats. Ultimately, the endeavor sought to inspire action toward preserving ant diversity for the well-being of our planet's ecosystems. This report encapsulates the essence of the project release event, aiming to encourage ongoing exploration and conservation efforts within the field of ant diversity and its broader ecological implications.



ASSIGNMENT

Assignment is one of the activities conducted. Students were prepared and submitted assignments on the topic which were allotted to them.

SEMINAR

Seminar presentation is one of the activities done during the academic year 2023 – 2024. The topics for seminar were distributed to all students in different area. All students were taken the different seminar topics with in allotted period of time.





QUESTION BANK

Prepared a question bank of high school biology. The questions were prepared under different objectives such as Remember, Understand, Apply, Analyse, Evaluate and Create. The questions were assembled to a booklet.

- **PREPARED DISCUSSION LESSON PLANS**

To familiarize with lesson planning student teachers discussed the various instructional objectives and activities in groups and prepared five discussion lesson plans based on the topics in high school biology. Given an orientation to lesson plan writing, its objectives, steps involved, pattern, procedure, critical evaluation etc. Then one discussion lesson plan session was conducted for whole group. Directed, guided them in throughout the session. Then divided the students in to two groups and conducted two discussion lesson plan preparation session. Given corrections and after modifications the students were submitted five discussion lesson plans.

- **PREPARED DEMONSTRATION LESSON PLANS**

Conducted five demonstration lesson plan sessions. Given the links of class videos of Victers channel. Given directions to observe the classes and for preparing lesson plans on demonstration classes. After the five sessions the students were prepared five discussion lesson plans and submitted. The demonstration lessons helped to develop observation skills and learned the patterns and teaching skills used in the constructivist classrooms

- **CRITICISM CLASSES**

Criticism classes were conducted for seven students in natural science where prepared one criticism lesson plans and submitted. corrections and modifications were given. Then each one had taken a criticism class and recorded it. The recorded video of the classes were digitalized. Later conducted a criticism sessions for each student to critically evaluate the classes. Critically evaluated different teaching skills of each student and pointed out strength and weaknesses and given suggestions for improvement. The students made the initial attempt to execute the lesson plan. Most of the students were presented the class with confidence. They understood their strength and weaknesses. The teacher educator peer group had given the suggestion for improvement.

- **REMEDIAL CRITICISM SESSION**

Remedial criticism session was conducted after criticism classes. After the suggestions and corrections student teachers revealed a positive improvement in their teaching.

- **ACADEMIC COUNSELLING ON INTERNSHIP – INTERACTIVE SESSION**

Conducted an Interactive session on Internship was conducted. Discussed about Profession, Teaching profession, qualities and skills required for a teacher, professional quality, commitment, teaching behaviour, inter personal, intra personal skills required. Also discussed about the challenges in teaching and how to overcome it and how to adapt and how to become an efficient teacher with social commitment.

- **PRE-INTERNSHIP ORIENTATION**



A pre-internship orientation on recent trends in lesson plan preparation, teaching learning process and evaluation was organised by department of Natural science on 4th August 2023. The resource person was Mr. Vinod kumar K, State resource person HSS, Mambram. The session was highly informative and resourceful session. The student teachers got a new experience on real classroom teaching and the resource person was highly experienced and talented person.

- **PRACTICE TEACHING**

Done a 4 months school internship programme. Student teachers were participated in different school activities, summary preparations, home works corrections, test preparations etc. Directed them in all activities in school internship programme. They developed skills in

teaching, organizing different activities, homework correction, test preparation etc. They were practiced to manage works in schools, interact with students, teachers etc.

.....



DEPARTMENT OF NATURAL SCIENCE

2023-2024 ACADEMIC YEAR