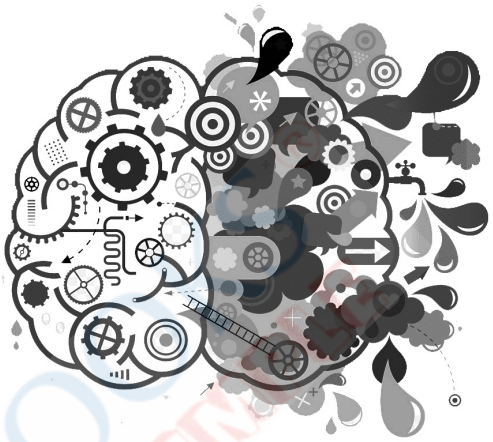
Art Integration



Chapter Covered	Human Health and Diseases
Subjects and Art Integrated	Biology/ Collage making/Investigatory project
Learning Objectives	Students will be able to : Understand about the life threatening diseases like COVID • Utilize visual and performing arts to understand the topic.
Materials Required	Newspaper cutting, Stationary, Internet
Methodology of the Activity	**Activity 1 :** Projects on the prevention from corona 1. Make a collage (on A3/A4 sheet) to spread awareness highlighting do's and don'ts to control the spread of COVID. Use newspaper cuttings/ print outs. 2. Maintain a healthy life style. Share your daily timetable and diet plan highlighting the yoga/exercise/ meditation that you do to stay fit and increase your immunity. **Activity 2 :** • Make "investigatory project" (spiral binding) with following heading in it. (a) First page- topic, submitted to/submitted by (b) Certificate (c) Acknowledgment (d) Contents (e) Introduction (f) Theory (g) Observation (h) Conclusion (i) Bibliography

	• Choose any one topic from the following : (i) To Study the Cannabis effects on the Human Body (ii) To Study the Antibiotic Resistance Investigatory Project (iii) Effect of Mobile radiation from Mobile towers on people and environment. (iv) Effect of video games in adolescence. (v) Topic on Ebola virus (vi) Project on AIDS. Taking case study will make it more interesting.
	(vii) Project on cancer and its treatment (viii) Coffee Addiction • Documentation will be followed by a Talk about the understanding of this topic. • You can also make models/poster/ on any of these topics.
Learning Outcomes	• Their communicative, collaborative, critical thinking and leadership skills shall be enhanced. • They will develop confidence and build ability to express. • They will start valuing every participant's opinion and idea.
Self –Evaluation and Follow up	• Application of the concept learned • Worksheets will be provided to the class where they have to write whatever terminologies they came across with meaning.
Resources/Links	Covid 19 :  Cancer :  Drugs :  AIDS : 

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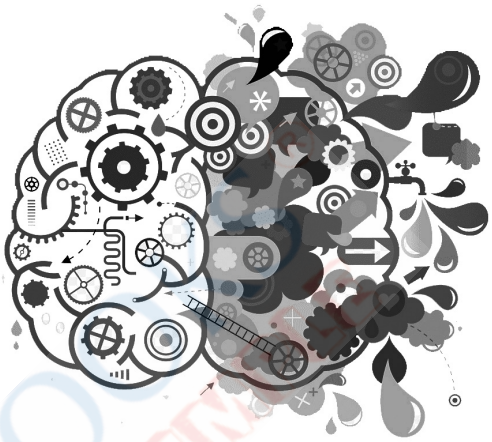

Chapter Covered	Microbes in Human welfare
Subjects and Art Integrated	Biology/ Talk Show
Learning Objectives	Students will be able to : • Understand the role of microbes in our life • Utilize visual and performing arts to understand the topic.
Materials Required	Internet, Textbook,
Methodology of the Activity	• Carry out an investigatory project on the topics given below and prepare a report of the same that would include a presentation of the result obtained in the investigation. (i) Microbes in household products (ii) Microbes in industrial products (iii) Microbes in sewage industry
	(iv) Microbes in production of biogas (v) Microbes as biocontrol agents (vi) Microbes as biofertilisers • Select a topic where in you can carry out survey, experiment, interview etc.

Learning Outcomes	• Students will develop confidence and build ability to express. • Students will improve their communication skills by giving presentation. • Students develop the skill of creating something new.
Self –Evaluation and follow up	The students (at the end of activity) can analyze their response, interest and flow of thoughts and ideas. The ideas and writings can be shared with the class.
Resources/Links	3D Bacterial model Microbes in human welfare

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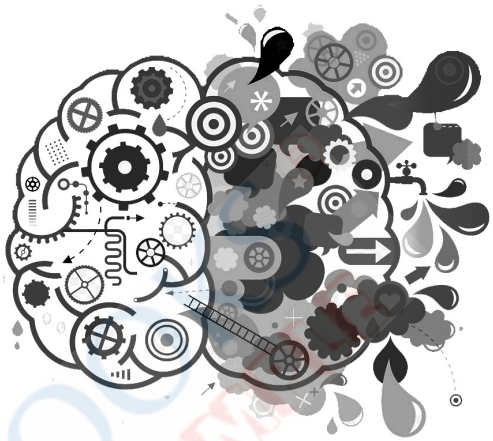

Chapter Covered	Biotechnology- Principles and Processes
Subjects and Art Integrated	Biology/ Quiz Time
Learning Objectives	Students will be able to : • Understand about the tools used in recombinant DNA technology. • Utilize visual and performing arts to understand the topic.
Materials Required	Internet, Textbook, Stationary
Methodology of the Activity	**Activity 1 :** • Students would be asked to pick the chits which will have the biological name of the tools of recombinant DNA technology. • Thereafter one by one they will come forward, enact and provide clues. • The students sitting as audience are required to identify the names of the tools/ enzymes involved. For instance,

	(i) 'I am a molecular scissor used in molecular biology for cutting DNA sequences from a specific site. Who am I?' (ii) I am a technique of separating mixtures of large molecules (such as DNA fragments or proteins) on the basis of molecular size and charge. Who am I ? **Activity 2 :** Model making : Prepare a model of any of this using clay, or any other eco-friendly materials : • Steps involved in rDNA technology • Gel electrophoresis • Polymerase chain reaction
Learning Outcomes	• They will enhance their creativity • They will develop confidence and build ability to express.
Self –Evaluation	The students (at the end of activity) can analyse their response, interest and flow of thoughts and ideas. The ideas and writings can be shared with the class.
Follow up	• Worksheets will be provided to the class where they have to write whatever terminologies they came across with meaning. • Discuss about the topic in the class.
Resources/Links	Recombination DNA technology Investigatory Project of Biology

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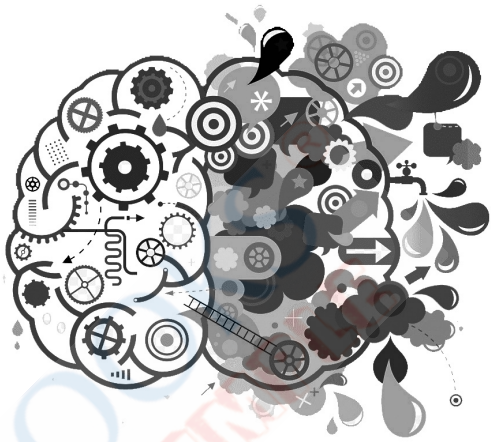

Chapter Covered	Biotechnology and its Applications
Subjects and Art Integrated	Biololgy/ Presentation/Scrapbook
Learning Objectives	Students will be able to : • Understand applications of biotechnology • Utilize visual and performing arts to understand the topic.
Material required	Notebook, Internet, Computer
Methodology of the Activity	The students are divided into groups to prepare a scrapbook /ppt : • To Study the Various new Biotechnological Researches. • To Study the Antisense RNA Technology Biology Project. • To Study Biotechnology and its application. • To Study Human Gene Therapy, Advances, Challenges. • To Study the Production of Human Insulin by Genetic Engineering.
	• To Study the Human Reproductive Cloning and Biotechnology. • To Study the Transgenic Animals : Production and Application.
Learning Outcomes	• They will enhance their creativity.

Self –Evaluation	• Students will themselves reflect upon their performance and will pen down their areas of improvement and how they would work towards them.
Follow up	• Worksheets will be provided to the class where they have to write whatever terminologies they came across with meaning. • Discuss about the topic in the class.
Resources/Links	Biotechnology in Human Welfare Project File Human Cloning

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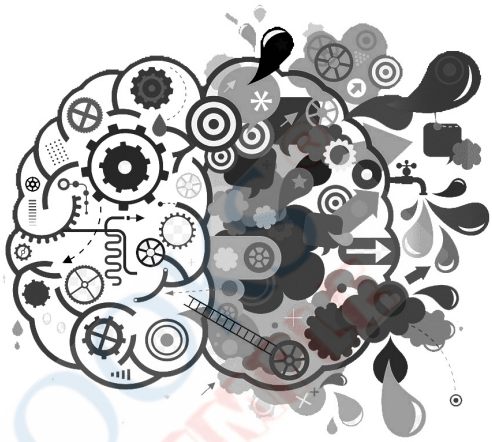

Chapter Covered	Organisms and Populations
Subjects and Art Integrated	Biology/ Documentation
Learning Objectives	Students will be able to : • Understand the population growth models • Learn about various population interactions • Do research on the various topics • Utilize visual and performing arts to understand the topic.
Materials Required	Computer, Internet, Books
Methodology of the Activity	• Select any one of the topics from the mentioned list of projects. • Do internet research and watch you tube videos on relevant topic. • Prepare PPT on the selected topic. • First slide has to carry the information like – project name, subject name, and session. • Starting from first slide to concluding slide, every related information should be presented in order. • Investigatory project must be supported with relevant pictures of the experiments performed (wherever required).

	• Bibliography to be included. • Topics can be : (i) Growth Models (ii) Exponential growth model (iii) Logistic growth model (iv) Population interaction • Documentation on ppt/ word will be followed by a talk about the understanding of this topic.
Learning Outcomes	• Their communicative, collaborative, critical thinking and leadership skills shall be enhanced. • They will develop confidence and build ability to express. • They will start valuing every participant's opinion and idea.
Self–Evaluation and Follow up	• Application of the concept learned • Self assessment • Peer evaluation
Resources/Links	Organisms and Population

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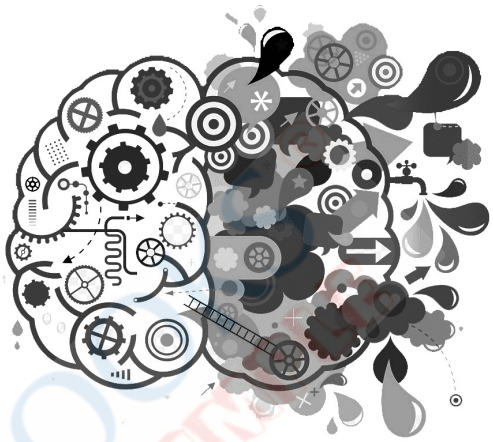

Chapter Covered	Biodiversity and its conservation
Subjects and Art Integrated	Biology/ Role Play
Learning Objectives	Students will be able to : • Understand the topic. • Utilize visual and performing arts to understand the topic.
Materials Required	Textbook, internet, Field
Methodology of the Activity	**Activity 1 :** You all would have been watching a lot of News these days, keeping a track of all the latest happenings on the COVID 19. So now, we bring to YOU , a chance to be a REPORTER. But of course, a different kind of reporting. Do a thorough research on any concept of the topic BIODIVERSITY. Members of the same group can discuss with each other on how to report different content, and still appear as if they have joined two aspects together. **HOW TO REPORT?** **Step 1** : Group 1 will begin with the topic assigned to him/ her. Report your topic just as a reporter would do. Make it interesting using some slides or flashing images at a screen behind you. Creativity is all yours. **Step 2** : Once done reporting, you'll end your video as if you're passing the Mic to the next Reporter *i.e.,* next member of your group.

	Step 3 : Similarly you'll continue this Mic challenge until it reaches the last member of your group. **Step 4** : Each member will be filming his / her video individually at your homes. **One person** of the group will then **club these videos into ONE single video** and mail it to the concerned Teacher. Total time of each video should not be more than **10 minutes** *i.e.,* each student in a group will get maximum of 1 minute time.
	DON'T FORGET TO • **Wear Formal Clothes** , as you are a Reporter (A video done in Casuals/ Fancy Clothes will attract Negative Marking. You can wear your school uniform too. But keep a symmetry.) • **Avoid repetition of content within the same group** i.e children with same topics ,in one group, should not be seen giving the same content on the topic assigned. So please communicate before you start recording your video. • **Mention your Name, Class/Sec and Roll No at the end** with a sentence like" This is Reporter ABC of class XII-B Roll No 45", or any other line you feel. **Activity 2 :** Conservation- a means to sustenance of life on Earth! (Investigative project should be based on the following points below) 1. Study the crisis of any two critically endangered species of your choice. 2. Why are they critically endangered? 3. Why do they need to be conserved? 4. Methods if any adopted for protecting them and by which organizations (governmental as well as non-governmental)
	5. What are the challenges faced? 6. New developments in conservation of these species. 7. Has any habitat of that organism under study been restored if so write about it.
Learning Outcomes	• They will enhance their creativity
Self –Evaluation and Follow up	• Student can tell teacher about the activity they enjoyed the most and they can express their opinion on the performed activity. • Make your observation in a file supported with appropriate pictures taken by you and graphical and mathematical presentations as appropriate to your findings.
Resources/Links	Sikkim Art Integrated project of Biology :