



DigiEduHack Solution

Jaffna - DigiEduHack Jaffna 2020

**Challenge: Jaffna - DigiEduHack Jaffna
2020 Challenge 2020**

AUDIOVISUAL REPRESENTATION OF CHEMISTRY AVC

AVC - A DIGITAL SOLUTION POST COVID 19

Audiovisuals in Chemistry (AVC) is an audiovisual project aimed Novelty teaching.comprises 900 videos 3-6 minute 38 chemistry chapters,35 hours.10 years dedicated research on teaching methodologies maintaining International standards. Audiovisual Course is copyright registered from Govt. of India.

Team: AUDIOVISUAL REPRESENTATION OF CHEMISTRY

Team members

DESAM SUDHAKAR REDDY, RAJENDER REDDY, SUNANDA

Members roles and background

The Project is self financed spending lakhs of rupees, single handedly managed, right from storyboard writing, rendering voice over's, editing work, to maintaining audio-visual synchronization with the aid of animator- **Desam Sudhakar Reddy**

Preparation of script:

Good content on a topic can be developed by referring various sources viz. Books, online resources, videos etc. - Desam Sudhakar Reddy

Preparation of Story Board

Consists of series of images / templates sequenced in an appropriate manner to avoid the disconnect with students. Story Board Templates and build a story. This is first process involves creating, designing of series of images / templates sequenced in an appropriate manner in the audiovisual development. This facilitates to know as to what

matter, pictorial representations, animations displayed in the video. - Desam Sudhakar Reddy

Typing Work : All content that appears in the audiovisual needs to be typed. Typing work is done in the software which includes incorporation of matter, special characters like pi, complex structures (hexagon) using line tool. It is time consuming & laborious work but plays key role in the outcome of the audiovisual -Rajender Reddy

Rendering Voice Over:

After designing Story Board one needs to write-up voice over for series of templates. **Prepared voice over needed to be recorded using audio recording software. Good quality microphone headset with Noise Cancelling Device be used - Desam Sudhakar Reddy**

Voice Over Audio recording

Voice over needed to be practiced and record one take before final recording. For recording voice over room should be closed with no sound. Even sounds of fan, air conditioner are recorded while recording. However using Noise cancelling recording microphone should be used as it records our voice over & cancels out background sounds. Voice over needed to be recorded presuming that we are in class room and lecture is being delivered to a class of students- Desam Sudhakar Reddy

Animation Work : Animation work is completed by ***Sunanda***

Instructions to animator :

A set of instructions needed to be given to animator, displaying what matter needed to be displaced at which part of voice over, what kind of animation involved at different parts of the video. It is very important to maintain audiovisual synchronization during development of high quality audiovisual. Appropriate pauses and transitions between different slides should be maintained in the video- Desam Sudhakar Reddy

Editing work:

After developing audiovisuals, it is spell checked & removing spelling mistakes. Retake of voice over's, Additions and deletions, Proper audio & video synchronization to be maintained by the Author- **Desam Sudhakar Reddy**

Contact details

DESAM SUDHAKAR REDDY +919441264062

Solution Details

Solution description

Solution **of AVC Audiovisual Course**

Comprised of ***Introductory Videos***-Introduction of topic using real life examples

<https://www.youtube.com/watch?v=OnRoU44U3UQ> - Farmer raising tomato crop and boron deficiency

Audiovisual begins with questions **What, Why, How** to create curiosity among students.

Basic Definition of a topic is provided using pictorial representations.

Various chemistry topics are explained following Scientific Methodology-Experiment-Observation-Conclusion

Incorporated Animated Videos & Pictorial representations to have Visual Impact.

Analogies were used to explain complex topics. Students should be engaged in live and practical session to experience the topic in the classroom for having better lesson understanding

https://www.youtube.com/channel/UCN9OmNjdY55NqHlQJXm1uZg?view_as=subscriber

Sample

videos https://www.youtube.com/channel/UCN9OmNjdY55NqHlQJXm1uZg?view_as=subscriber

AVC WEBSITE - <https://www.avceducate.com>

Solution context

1. I am Post Graduate in Chemistry, had been teaching Chemistry for the Students of 10+2 level.
2. Acted as coach for IIT JEE / Premedical aspirants for the past 20 years and guided them to achieve their goals apart from serving Government job. While teaching noticed that many good students are lacking basic concepts of chemistry discipline, despite studying well are failing in application part.
3. This lacuna in student community has instilled me to develop an animated audiovisual innovative course.
4. My Passion for Chemistry motivated me to develop Audio Visuals Course in Chemistry after 10 years of hard work and dedicated research on Teaching Methodologies.

Solution target group

1. **Target Audience**:-Students of 10+2 board of India
2. K12 of US/UK, highly useful for IIT JEE, NEET aspirants
3. All Chemistry Learners.

Solution impact

Solution impact

Impact of Audiovisual Course

- Best in Class maintaining National and International standards.
- Comprised of **Introductory Videos**-Introduction of topic using real life examples creates interest among students and all learners in chemistry discipline.
- Audiovisual begins with questions **What, Why, How** to create curiosity among students.
- Basic Definition of a topic is provided using pictorial representations.

- Various chemistry topics are explained following Scientific Methodology - Experiment-Observation-Conclusion
- **Incorporated Animated Videos & Pictorial representations** provides better student understanding, remembrance and Visual Impact.
- **Analogies** were used to explain complex topics using daily life examples, extensively used to have strong concept clarity.
- Introduction of Mind maps to have summary in one page.
- Students should be engaged in live and practical session on explained topic in the classroom to have better lesson understanding

Detailed Step by Step Basics to Complex teaching methodology.

- Clearing basic to advanced level concepts using Scientific Methodology - **Experiment - Observation - Conclusion.**
- Making students learning process more engaging & easier.
- Application Based Study.
- Instills scientific temper among Students and Researchers

Best-in-Class with below unique properties:

- **Enables students to acquire knowledge** in Chemistry from basics to complex topics with ease.
- Animated Highlights were provided at appropriate places to allow students to remain focussed, understand and conceptualize all chemistry topics.
- Pauses have been provided at different video intervals to allow students to **note down the main points of the explained concept**
- **Facilitates brain to understand one topic before being introduced to another connected topic**
- **Enable Critical thinkers to revisit, rewind and rethink the concepts.**
- Enormous number of incorporated superlative audiovisuals shall encourage students to think "OUT OF BOX", stimulate innovation skills & Develop Research Aptitude.

Solution tweet text

audiovisual animation impact on digital learning

Solution innovativeness

Innovativeness:

1. Each Chapter is provided with Introductory Video - Introduction to topic using real life example creates interest among students and all learners. Introductory Video - Defence Mechanism in Millipede. Millipedes when attacked by a prey releases compound called Mandelonitrile, which on chemical reaction results in products Hydrogen cyanide (HCN) & Benzaldehyde (C₆H₅-CHO). HCN being a poison kills the enemy, while benzaldehyde acts as irritant keeps away from the attack of ants. Defence Mechanism in Millipede introduces topic Benzaldehyde - an organic compound

<https://www.youtube.com/watch?v=hUokRZbLFbI> - Defense Mechanism in Millipede -

Introduction to Benzaldehyde

<https://www.youtube.com/watch?v=CK11VrcaaVY> -Thrilling sensation experienced by skydiver

<https://www.youtube.com/watch?v=OnRoU44U3UQ> -Farmer raising tomato crop & boron deficiency

2. *Each Audiovisual begins by asking question What, Why, How* to create curiosity among students.

3. *Basic Definition* of a topic is provided using pictorial representation.

4. *Experiments*: Various chemistry topics are explained by following Scientific Methodology - Experiment - Observation - Conclusion.

Rutherford α - Ray Scattering Experiment

<https://www.youtube.com/watch?v=iWifz1JSe70&t=1s>

Bomb Calorimeter - Thermo chemistry

https://www.youtube.com/watch?v=w_46wiUy_xc

Quantum Mechanics

<https://www.youtube.com/watch?v=J8mUFr0c5fU&t=246s> - Stern Gerlach Experiment

<https://www.youtube.com/watch?v=DdLvJujDrAI> -Millikan's Oil Drop Experiment

<https://www.youtube.com/watch?v=B0uxOH4Bm2M> - Kinetic Theory of Gases

<https://www.youtube.com/watch?v=2hwsJGtNdbU> -Properties of Cathode Rays

<https://www.youtube.com/watch?v=BilG1GpeRvY> - Vapour Pressure Experiment

https://www.youtube.com/watch?v=_Ns-gqnTzR8 - Adsorption & Absorption

5. **Analogies** : Analogy is a comparison between two things which are quite different in nature and aids understanding complex topics in easier manner.

Frequency of wave : It is defined as the number of waves that pass through a fixed point in 1 second. This definition can be properly understood using following analogy.

Analogy : Consider a man sitting in a still pond. When a stone is dropped into a still pond, it creates a disturbance & this disturbance is propagated or spread in water as waves. The number of waves that pass through the man sitting in still pond, which is considered as a fixed point in one second is called frequency of a wave.

<https://www.youtube.com/watch?v=zroD3-KaioQ&t=10s>

State Function Analogy - Thermodynamics

5. **Applications of Chemistry** :

Applications of various chemistry concepts were explained using real life examples.

Chemical Equilibrium - Breathing Process

Tyndall Effect - Watching Movie , Twinkling of stars , Blue Colour of Sky

Solution transferability

Solution is easily accessed and used via app, *Course*

Link : <https://www.aspirebuzz.com/neet-online-preparation-chemistry> aspirebuzz.com and also Material availability through avc website <https://www.avceducate.com/>

This course may be easily incorporated in all blending elearning courses. File size of the video is less than 10mb and hence can be easily transferable to all students and faculty. In addition to which many chemistry topics were covered via post and answers to many questions asked by students were answered using QUORA & can be accessed via <https://www.quora.com/profile/Desam-Sudhakar>

Solution sustainability

It is highly sustainable due to following

Detailed Step by Step Basics to Complex teaching methodology, which enables all students irrespective of their capabilities can understand concepts.

Making students learning process more engaging & easier.-which is the core of any curriculum

Clearing basic to advanced level concepts using Scientific Methodology - - ***Experiment - Observation - Conclusion - This approach is usually result in scientific inventions & innovations***

Application Based Study

Audiovisual course shall stimulate students to develop interest, pursue career in chemistry, apply chemistry concepts practically to develop new compounds and hence aids in development of new compounds /technology

Course by introducing concepts using different science disciplines like chemistry, physics and biological sciences, would inturn aid in instigating multidisciplinary research & Instills scientific temper among Students and Researchers

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- Enormous number of incorporated ***superlative audiovisuals*** shall encourage students to think "**OUT OF BOX**", stimulate innovation skills & develop Research aptitude.

Solution team work

TEAM WORK

MAKING OF AUDIOVISUAL COURSE

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Coordinated work and continuous work for longer duration many years close to 10 years aided in development of world class course in chemistry