JSPM's

Rajarshi Shahu College of Engineering, Pune

Department of Electronics & Telecommunication Engineering

INNOVATIONS IN TEACHING AND LEARNING

Subject: Electronic Devices & Circuits **Class:** S.Y. BTech E&TC

NAME OF THE ACTIVITY: ANIMATION VIDEOS

I. **Concept:** Animation videos on working of Diode, working and structure of SCR, were integrated into classroom teaching to demonstrate the internal structure, working principle, and characteristics of electronic devices, making abstract concepts more visual and interactive.

II. **Objective (Goal):.**

To simplify complex device operations through animated visualization.
To enhance conceptual clarity and long-term retention among students.
To bridge the gap between theoretical knowledge and practical understanding.

III. **Appropriateness (Relevance of Selected Method):**

Electronic devices involve microscopic operations (carrier flow, switching, conduction) not easily visible. Animations provide dynamic illustrations, making the invisible processes tangible. The method aligns with modern pedagogy emphasizing active and visual learning.

IV. **Effective Presentation (Implementation Details):**

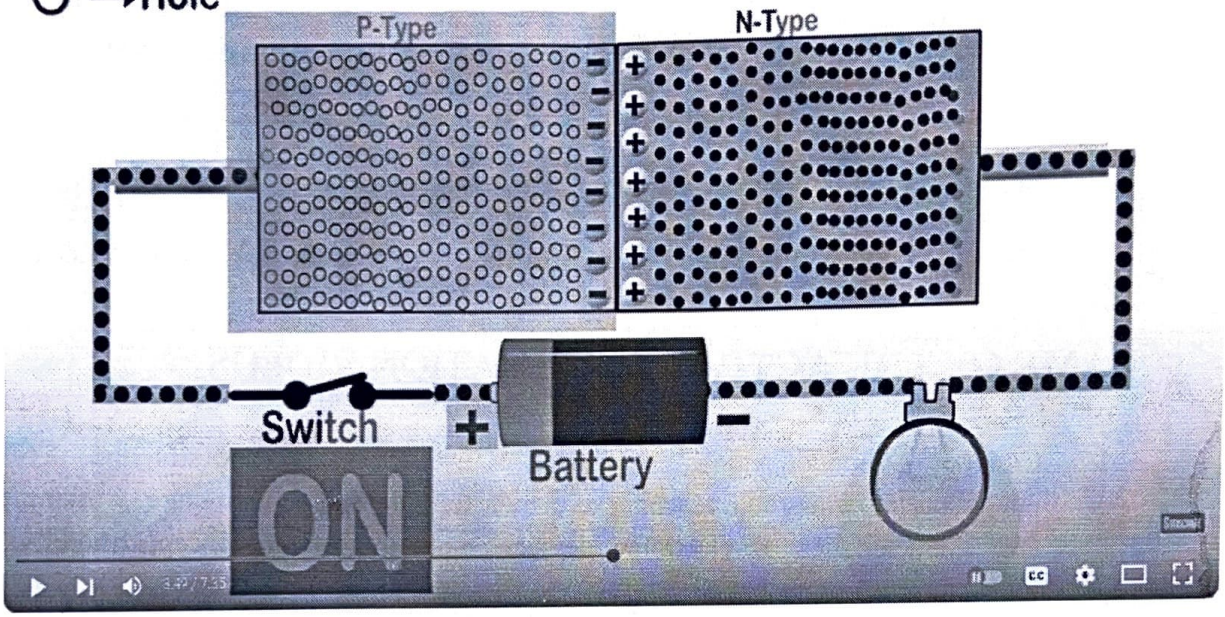
Short, focused videos (5–7 minutes each) were used during relevant lecture segments.
Pauses and teacher explanations were inserted to connect theory with visuals.

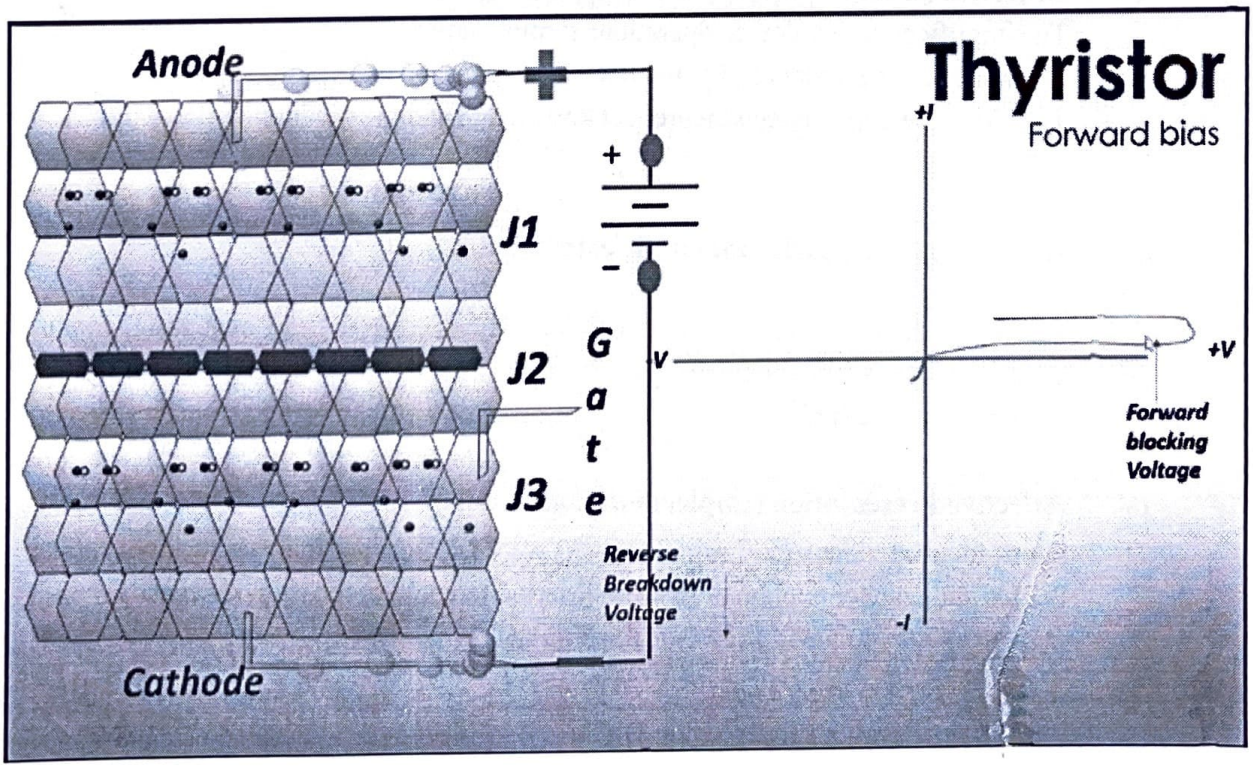
Sr.No	Topic	Animation Link on YouTube
1	How does a P-N Junction Diode works? Explained through Animation	https://youtu.be/OsfguONJw2Q https://youtu.be/qu9reCzzrco
2	Construction, characteristics, working of SCR	https://youtu.be/b5JJiDWx6lY https://youtu.be/0AgPUikpvpM
3	Crystal oscillators using Op-amp.	https://youtu.be/YzcKQWwkzWs
4	IGBT	https://youtu.be/0acIVX-aBEE?si=rguTb527R2rzW0HG
5	MOSFET	https://youtu.be/Bfvyj88Hs_o

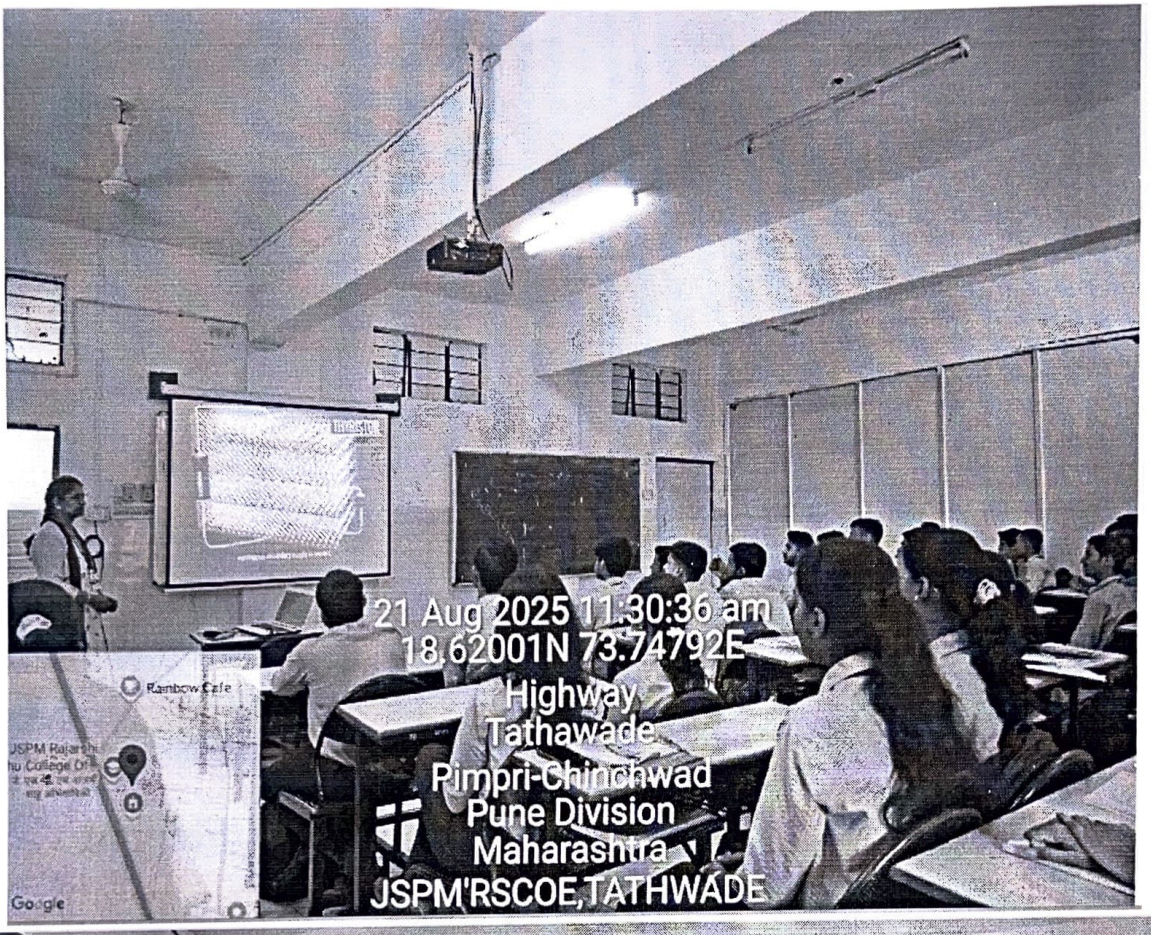
● →Electrone

○ →Hole

P-N Junction Diode



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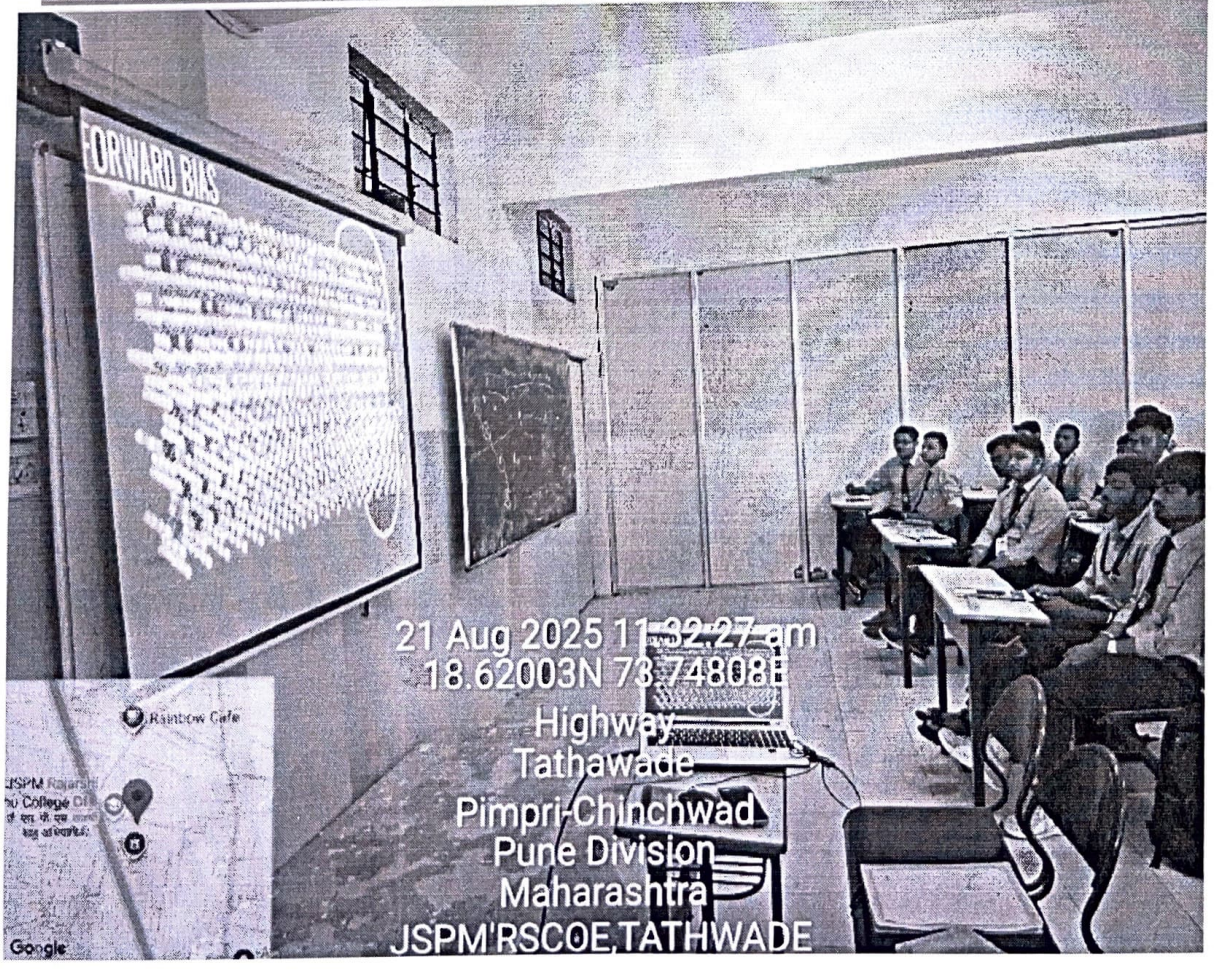
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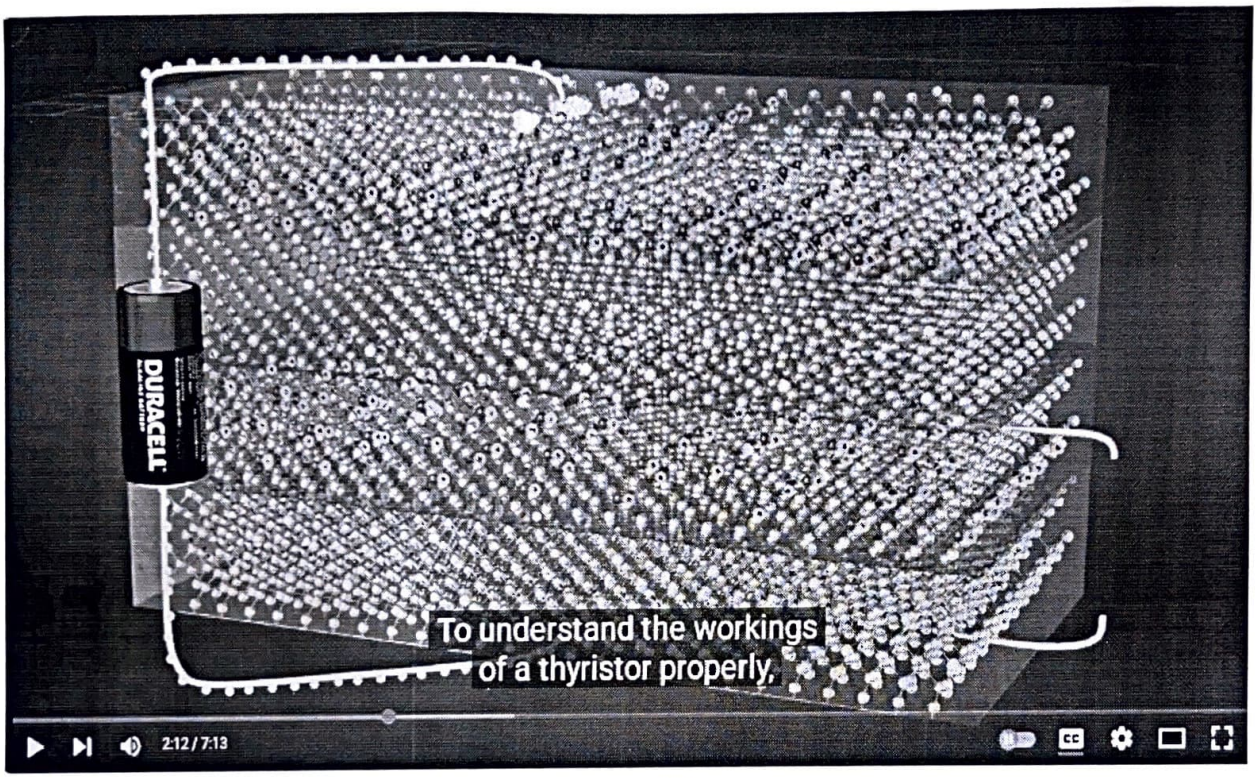
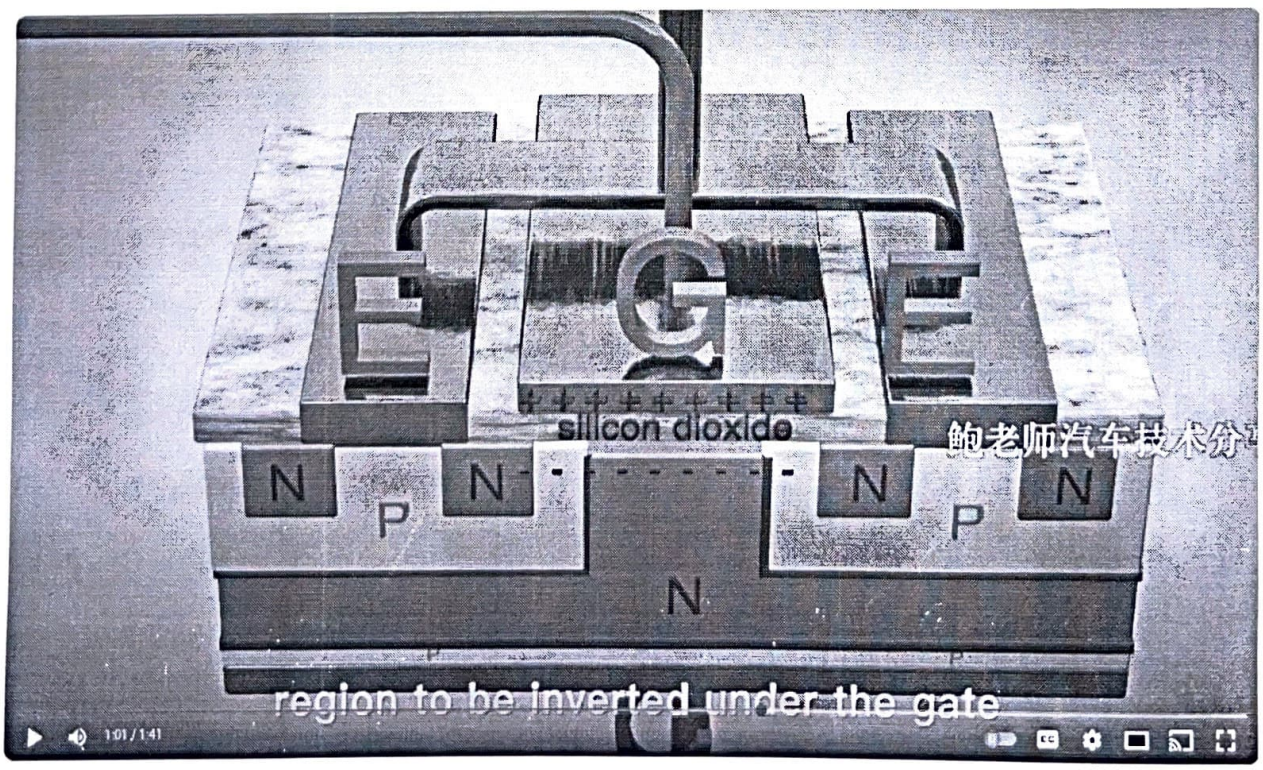


IGBT:



V. Results (Impact):

a. Improved student engagement and reduced conceptual doubts.
b. Better performance in problem-solving and circuit analysis tasks.
c. Positive feedback indicating increased confidence in handling practical lab experiments.

VI. Reproducibility and Reusability by Other Scholars for Further Development

The videos can be reused across semesters and for different courses (Power Electronics, Analog Circuits).
The methodology can be adapted by other faculty members with minimal preparation.
Content can be extended with quizzes, interactive simulations, or case studies.

Sr.No	Innovation Used by	Details of User	Purpose of Reproducibility and Reusability
1	SY, E&TC Div A students	Students of RSCOE,E&TC	Used by faculty of another division of same class
2	Final year Mechanical students	Students of RSCOE,Mech department	In mechanical department structure, EDC course is under Honors.

VII. PEER REVIEW AND CRITIQUE

Category: Internal/External/Interdepartmental
Score: (1:Least 2: Moderate 3:Highly)
Question 1. Is this Innovative Teaching and Learning Methodology useful during content delivery?

Question 2. Did this innovation increase student motivation or participation?

Question 3. Will it show improvement in student learning?

Question 4. Suggestions for improvement in future iterations.

Category	Name of Peer	Organization	Q.1	Q.2	Q.3	Q. 4 Suggestion/Critique
Internal	Dr. B.D. Jadhav	RSCOE ENTC	3	3	2	The clarity & effectiveness of visual aids is noticable
External	Docter AB patil	PCCOE	3	2	3	Integrate assignment, tools to measure learning gain
Interdepartmental	Swapnali Patil	RSCOE Comp Dept	3	2	3	Recommendation of creating in-house animation

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