



Digital Learning India 2008

July 29 -31 , 2008

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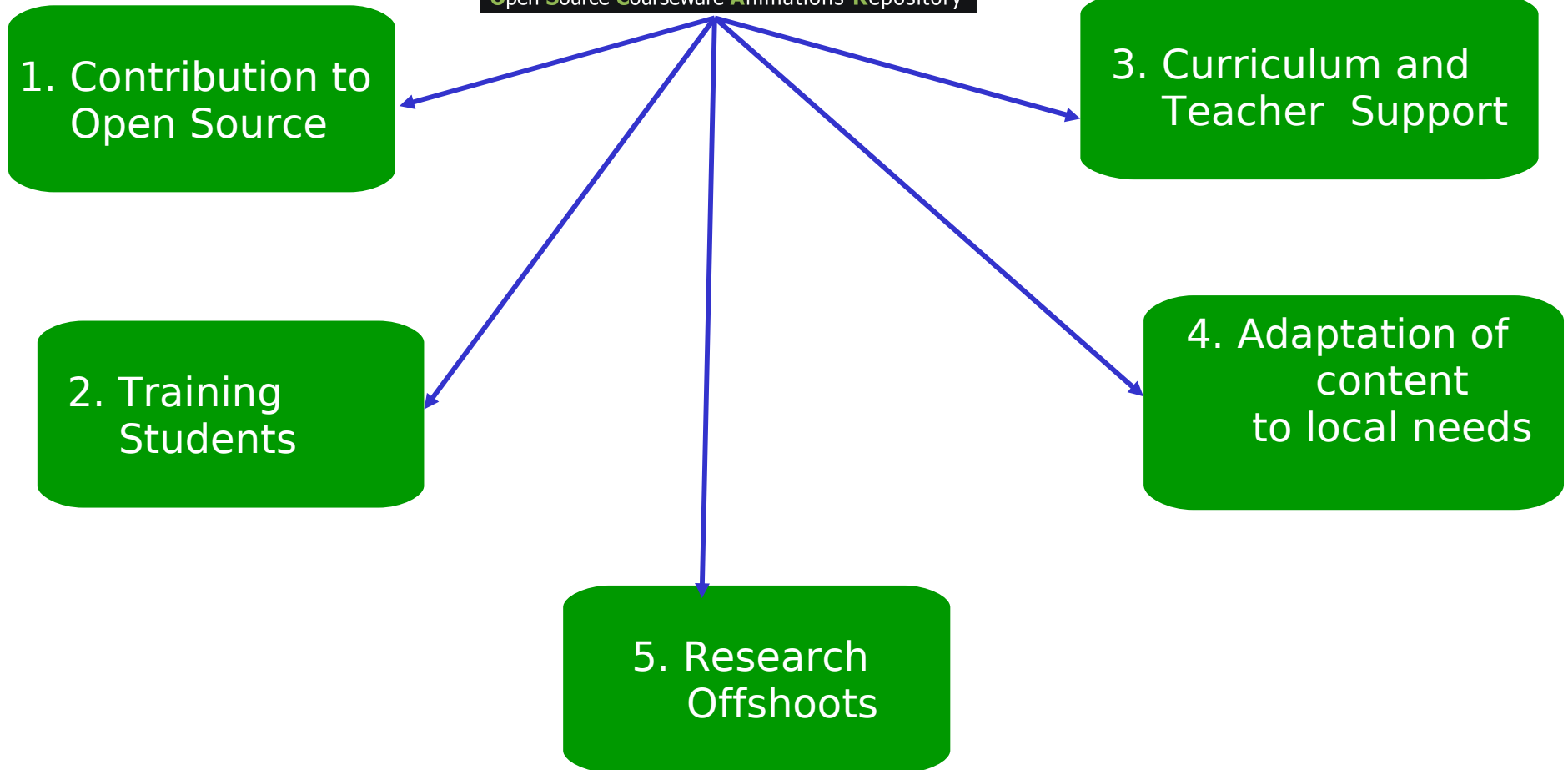
Department of Computer science and Engineering

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## Goals

- Create a searchable repository of
  - *Open source Web-based interactive animations for teaching various concepts and technologies*
- Provide a platform for
  - *Mentors (Teachers and experts in various domains) to suggest ideas for animation*
  - *Developers (Students) to create content based on the suggested ideas and guidance*

# The Facets



- **Existing Open Source Courseware**

**Course web pages:**

- Made available by instructors in most universities
- Content may be text , web pages, slides etc.

**Class videos:**

- Made available for streaming and off - line access
- Example: IIT Bombay - [www.cdeep.iitb.ac.in/](http://www.cdeep.iitb.ac.in/)

## OUR FOCUS

## ANIMATION WITH USER INTERACTION

## **Contribution to Open Source -1**

### *Applet Implementation*

- Evolution of content
  - Mentors, Developers, Topic
- Implementation Strategy of applets
  - Design of Explanations, explorations, interactions
- Software development
- Evaluation and acceptance
- Inclusion in repository

# Contribution to Open Source -1

## *Applet Features*

- Animations – Six bar linkage, ATP synthesis
  - Base technology – Java
    - Platform independent
  - Interface with various types of media
    - Text, graphics, animations, multimedia
  - User interactions with exploration element
  - Self assessment


## **Contribution to Open Source -2** *Scalable Collaborative Mechanism*

- **Project OSCAR provides a portal for :**
  - Users who can be either Developers , Mentors
  - Collaborative animation development
  - Easy, cost effective and scalable solution
  - Collaboration with other institutes developing similar Open Source content


## Contribution to Open Source -2

### Scalable Collaborative Mechanism - Developers/Mentors


Department of  
Computer Science  
and Engineering





Open Source Courseware Animations Repository





IIT BOMBAY


  
HOME

  
ABOUT US

  
ANIMATIONS

  
SEARCH

  
LOGIN

  
EVENTS


**ANIMATIONS**

AVAILABLE ◀

DEVELOP ◀

SUGGEST ◀

SUBMIT ◀

DISCUSSION FORUM 

The main goal of Project OSCAR (Open Source Courseware Animations Repository) is to create a repository of web-based, interactive animations for teaching various concepts and technologies. The Current Goal of Project OSCAR is to develop animations for Classes VII, IX and X.

**SEARCH THE REPOSITORY**

Keyword

Area


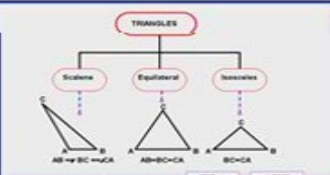



**USERNAME**

**PASSWORD**

[Forgot your password?](#)

[Sign Up](#)



**Top Animations**


CONTACT US

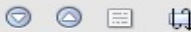

FEEDBACK

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# Contribution to Open source - 2

## Scalable Collaborative Mechanism – Interactions on wiki

presentations [Doks] - Windows Internet Explorer

File Edit View Favorites Tools Help

presentations [Doks]

### Image formation by Spherical Mirrors

Mirror conceptualization slides - mirror.pdf

**Response from Ms. Anitha**

Dear Dhanya

I have gone through the module and noticed the following :

The pole in the case of a convex mirror should be shown in front of the reflecting surface and not behind the mirror. The sign convention shown here and the sign convention given in the 10 text book is different. In the text book the distances are measured from the pole to the focus or object or the image. The distances in the direction of the incident ray of light is taken as positive. So the focal length in case of the convex mirror is positive, virtual image is positive ....

If I come across any more things to be changed I will let you know.

Bye Anitha

Dear Dhanya

The write up on "rules of reflection for curved mirrors" is a little confusing. It can be written as:

The rays parallel to the principal axis reflected from a concave surface, passes through the focus. In the case of a convex surface on the other hand, the reflected ray diverges out and appears to come from the focus.

The incident ray passing through the focus (or moving towards the focus), is reflected parallel to the principal axis.

The incident ray passing through the centre of curvature (or moving towards it), will fall on the curved surface normally and hence be reflected along the same path.

Anitha

Lens conceptualization slides - lens.pdf

Design slides sphericalmirrors.pdf

Local intranet 100%

## **Students as developers**

- **A win win situation**
  - Short and Long term training for students
  - Projects ideal for undergraduate students
  - Suitable for B.E./M.C.A final year and non-Computer Science majors also

## Curriculum and Teacher support

- **Curriculum**

- Concepts from middle school to undergraduate level
- Concepts suggested by teachers
- Current focus eighth to tenth standard Maths, Physics, Chemistry, Biology

- **Teacher Support**

- Explain the concepts effectively
- Value addition to text book content
- Can be used in class room teaching and for experiments in labs
- Relevant applets can be sequenced to generate courseware

## **Adaptation of content**

- Local language translation
- Adapt content for resource constrained areas

## Research Offshoots

- Building animation authoring tools
- Developing courseware authoring tools
- Developing effective search engines
- Tool for translating content to local languages
- Developing an independent learning system for students

## Conclusions

- *Students (200) – Responses to conversant and non-conversant concepts*

Concepts more clear,

Enables self-study and revision of topics,

Increase interest in subject

Exploring concepts and gaining more insight

***Unanimous: Teacher's should include these tools to enrich***

***learning and enhance our understanding***

## Conclusions ..contd

- *Teachers (100) – Reflection on the usability and integration issues of the concept*

Motivates and attracts students

*Virtual effect helps in visualizing and understanding the concepts*

*Encourage exploration and inquisitiveness*

Applets and related resources

*Improve the design and delivery of lessons*

*Increase student interest in the Subject*

*Increase aspiration to learn and achieve*

## Conclusions ..contd

- **Student developers**
  - Absorbed by renowned software industries
  - Higher studies
- **Statistics on the portal**
  - 110 animations
  - 14529 hits since January, 08
  - More than 3000 downloads of applets





## The Team

Prof-In-Charge

Web Development Team

Content team

Communications team

Developers

Mentors

Administration team

## OSCAR Statistics

Area	Level	No. of animations	Avg. no. of downloads
Biology	UG	2	354
Chemistry	8-10	1	77
Data structures and algorithms	11-12	1	8
Maths	8-12	31	1231
Mechanical simulations	UG	5	544
Networking	UG/PG	28	1169
Physics	8-12	65	3120