Digital Learning India 2008
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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*
1. Contribution to Open Source
2. Training Students
3. Curriculum and Teacher Support
4. Adaptation of content to local needs
5. Research Offshoots
• 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
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 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 Anitha

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
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

eIndia 2008:
C.Vijayalakshmi
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

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<thead>
<tr>
<th>Area</th>
<th>Level</th>
<th>No. of animations</th>
<th>Avg. no. of downloads</th>
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<td>UG</td>
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<td>Chemistry</td>
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<td>11-12</td>
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