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Prof. Sridhar Iyer

Department of Computer science and Engineering

Indian Institute of Technology – IIT Bombay

Goals

- Create a searchable repository of
 - *Open source Web-based interactive animations for teaching various concepts and technologies*

- Provide a platform for
 - *Teachers and experts in various domains to suggest ideas for animation*
 - *Students to suggest concepts that they think will be easier to understand through animation*
 - *Developers (Students) to create content based on the suggested ideas and guidance*

- Make quality e-learning product for
 - *Students in urban areas as well as*
 - *Students in semi-urban & rural areas*

The Facets

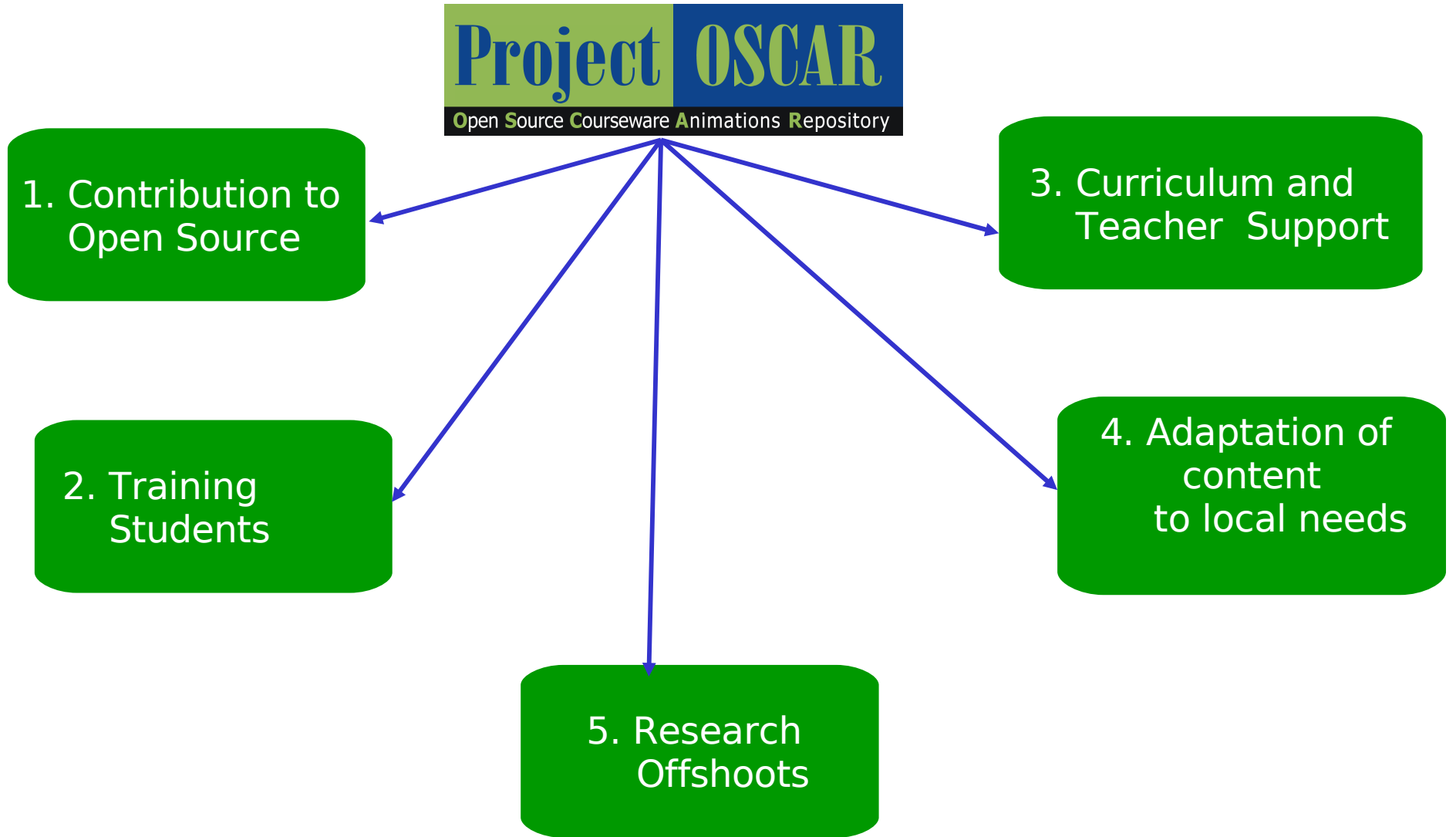
1. Contribution to Open Source

2. Training Students

3. Curriculum and Teacher Support

4. Adaptation of content to local needs

5. Research Offshoots



1. Contribution to Open Source

- **Existing Open Source Courseware**

Course web pages:

- Made available by faculties 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/

OUR FOCUS

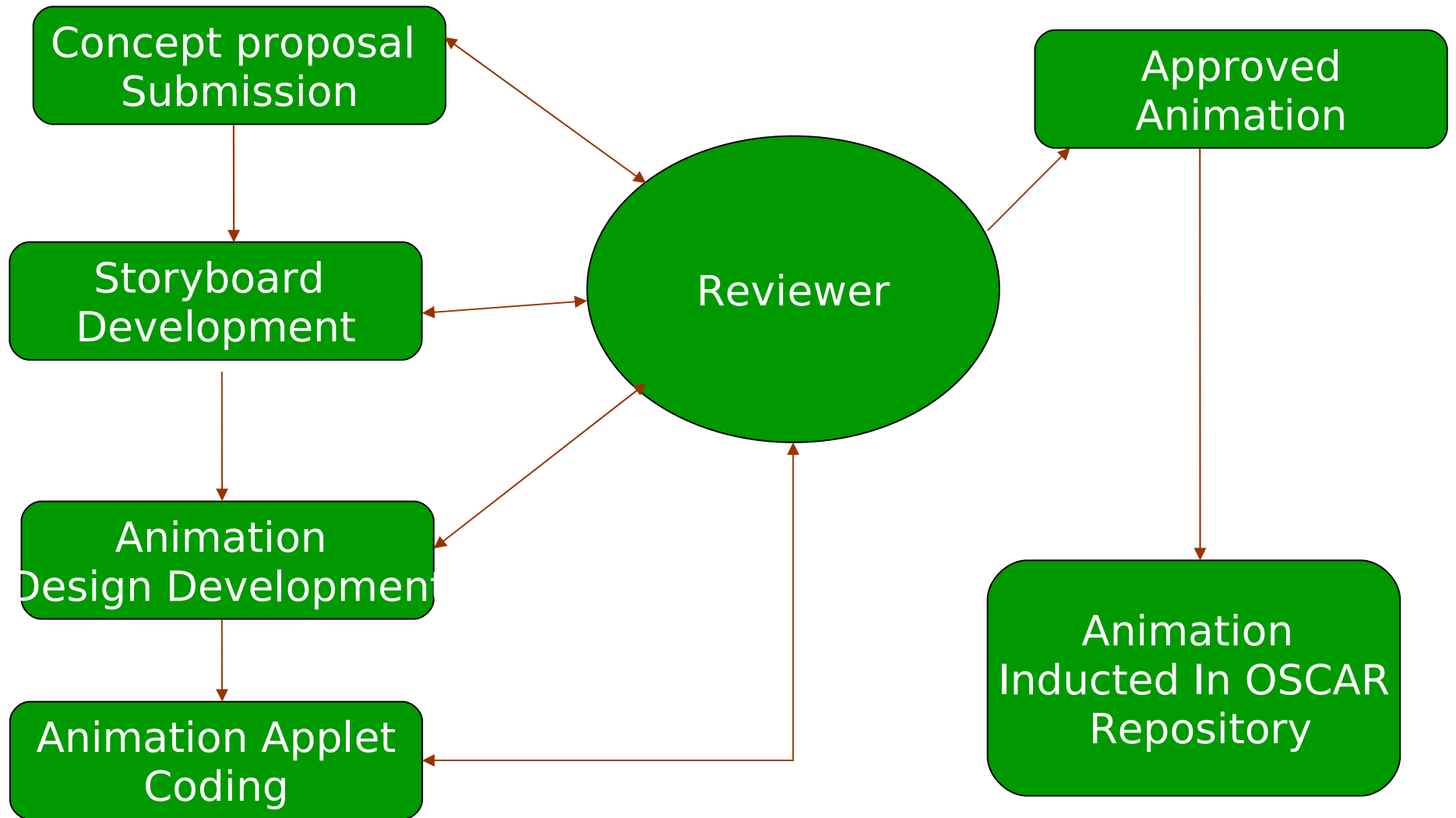
ANIMATION WITH USER INTERACTION

1. Contribution to Open Source

1.1 Applet Implementation

- Evolution of content
 - _ Concept proposers, Developers, Reviewers
- Implementation Strategy of applets
 - Design of Explanations, explorations, interactions
- Software development
- Evaluation and acceptance
- Inclusion in repository

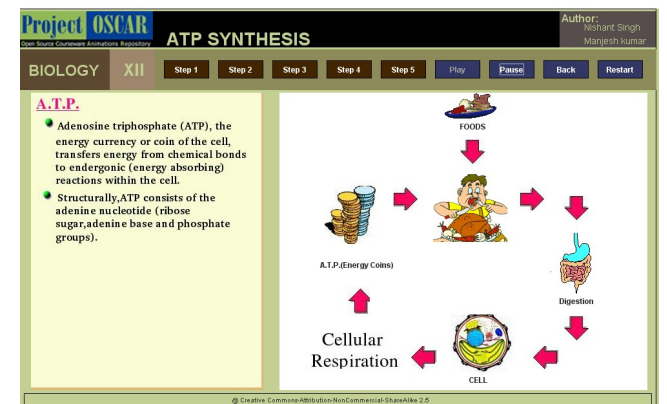
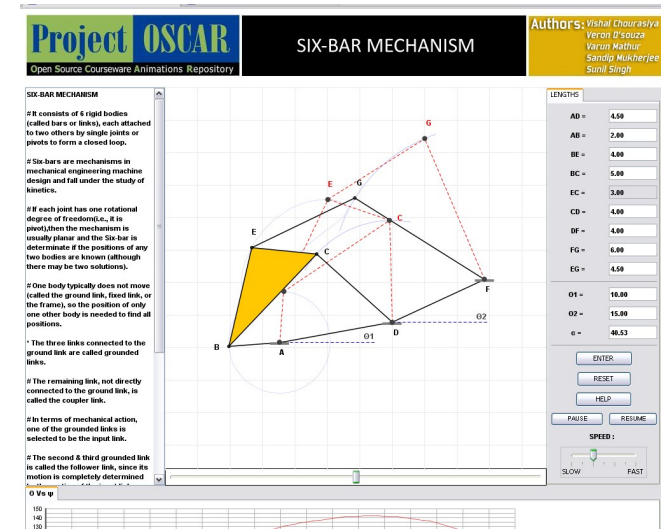
OSCAR PROCESS MODEL



1. Contribution to Open Source

1.2 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



1. Contribution to Open Source

1.3 Scalable Collaborative Mechanism

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

1. Contribution to Open Source

Scalable Collaborative Mechanism - Developers/Reviewers

The screenshot shows the Project OSCAR website interface. At the top, there is a navigation bar with the Project OSCAR logo and the text "Open Source Courseware Animations Repository". To the right of the logo is the IIT Bombay logo. Below the navigation bar is a horizontal menu with icons and labels for HOME, ABOUT US, ANIMATIONS, SEARCH, LOGIN, EVENTS, DOWNLOAD, and AWARDS. The main content area is divided into three columns. The left column is titled "ANIMATIONS" and contains a list of actions: Download, Available, Develop, Suggest, Submit, Discussion Forum, and OSCAR Brochure. The middle column features a "SEARCH FOR ANIMATIONS" section with a text input field for "Keyword", a dropdown menu for "Subjects" set to "All", and a "BROWSE" button. Below this is a "TOP ANIMATIONS" section displaying five thumbnail images of various educational animations. The right column contains a blue box with the text "Participate in National Mission on ICT (Information and Communication Technology) for education by contributing in Project OSCAR" and a "Click here to Sign Up" button. Below this are input fields for "Username:" and "Password:", a "LOGIN" button, and a "Forgot Password?" link. At the bottom of the page, there is a "CONTACT US" section with the text "Hit Count = 12456 Developers=256 Mentors=53" and a "FEEDBACK" button. The footer contains logos for IIT Bombay, TATA indicom, OSSRC (2006-2008), and DEVELOPMENT GATEWAY FOUNDATION (2004-2006), along with a Creative Commons license notice: "The contents in this page is licensed under Creative Commons license Attribute-Non Commercial-ShareAlike 2.5. While Project Oscar has taken best effort in preparing the contents, we have no warranties with respect to the accuracy or completeness of the content."

1. Contribution to Open Source

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%

2. Training Students

- **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

B. Curriculum and Teacher Support

- **Curriculum**

- Concepts ranging from middle school to Undergraduate & Post-graduate levels
- Concepts suggested by teachers & students themselves
- Current focus on Undergraduate & Post-graduate Levels

- **Teacher Support**

- Explain the concepts effectively
- Value addition to distance education programs of IITs and IISc
- 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

SOME OF THE CONCEPT SUGGESTIONS CURRENTLY UNDER DEVELOPMENT

- Longest Common Subsequence
- Travelling salesman problem
- Ensemble Averaging
- Lattice-Boltzmann Method
- Huffman Coding
- A* Algorithm
- Sorted Linked Lists
- Matrix Chain Multiplication

COMPLETE LEARNING IN EACH ANIMATION

INTRODUCTION

USER
INTERACTIVITY

CONCEPT
COMPREHENSION

THEORY

SPECIFYING
PARAMETERS

SELF-ASSESSMENT
QUESTIONNAIRE

ILLUSTRATIONS

RESULT SEEN
INSTANTANEOUSLY

FURTHER
READING
LINKS

OSCAR ADVANTAGE

IITB QUALITY CONTROL

REVIEW BY MAINLY IIT FACULTIES

AUTHENTIC

AFFORDABLE

BASED ON OPEN SOURCE SOFTWARE

FREE DOWNLOAD

USER INTERACTIVE

- THEORY
- SELF-ASSESSMENT QUESTIONNAIRE

INDEPENDENT LEARNING

4. Adaptation of content to local needs

- Local language translation
- Adapt content for resource constrained areas

Subject	No. of local language animations	Level
Maths	7	8-10
Physics	7	8-10
Chemistry	1	11-12
Biology	2	11-12

Project OSCAR Basic Angles and Triangle

AUTHOR: Mayank Sawhney, Mohil Khare

डेमो DEMO इन्टरैक्टिव INTERACTIVE सहायता HELP

रुको STOP शुरू RESUME

कोणों का परिचय
कोण का वर्णन
कहलाने वाले समान अंतिम-बिंदु से निकली दो रेखाओं से बनी आकृति को कोण कहते हैं।

विभिन्न कोण और उनके वर्गीकरण एनीमेशन द्वारा दर्शाए गए हैं।
(1) न्यून कोण
0-90 डिग्री के बीच का कोई भी कोण न्यून कोण कहलाता है।
(2) समकोण
दो रेखाओं के बीच 90 डिग्री का कोण समकोण कहलाता है।
(3) अधिक कोण
90-180 डिग्री के बीच का कोई भी कोण अधिक कोण कहलाता है।
(4) ऋजु कोण
दो रेखाओं के बीच 180 डिग्री का कोण ऋजु कोण कहलाता है।
(5) बृहत् कोण
180-360 डिग्री के बीच का कोई भी कोण बृहत् कोण कहलाता है।
(6) पूर्ण कोण
दो रेखाओं के बीच 360 डिग्री का कोण पूर्ण कोण कहलाता है।

236deg
180-360 डिग्री के बीच का कोई भी कोण बृहत् कोण कहलाता है।

60 डिग्री
न्यून कोण (0-89 डिग्री)

90 डिग्री
समकोण (90 डिग्री)

120 डिग्री
अधिक कोण (91-179 डिग्री)

180 डिग्री
ऋजु कोण (180 डिग्री)

अगला NEXT पिछला BACK

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5. 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

Reviewers

Administration team

OSCAR Statistics

Area	Level	No. of animations	Download count
Biology	11-12	2	485
Chemistry	8-10	1	245
Data structures and algorithms	11-12	1	8
Maths	8-12, UG	30	2018
Mechanical simulations	UG	5	796
Networking	UG/PG	18	2075
Physics	8-12	58	4325

Total no. of animations currently in OSCAR repository = 114