

# Why (not) Teach



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## Motivation

- Start Discussion
  - *Hard Question*: many trade-offs
- Raise Awareness
  - *Important*: influences future of the area
- Propose one Answer
  - *IMPA's experience* (Graduate level)
- Get Feedback
  - *Other contexts* (Undergraduate, etc.)

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## OpenGL

- *De facto* standard for interactive 3D graphics
- Portable: *UNIX / Windows / Macintosh*
- Hardware implementation: *Graphics Boards*
- Free Software implementation: *Mesa 3D*
- Widely adopted: *Industry and Academia*

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## CG Education and OpenGL

- Professional Training
  - Conference Tutorials, Company Training
- Academic Education
  - Introductory Courses: CG-101
- Editorial Market
  - Manuals and Textbooks
- University Curriculum
  - SIGGRAPH educators program

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## Some Questions to Ask

- *Should we teach OpenGL?*
  - Technical Level: *YES*
  - Introductory Level: *NO*
- *Why or why not?*
  - Purpose and content
- *How to best exploit it?*
  - Understand its role

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## OpenGL Technical Training

- Who needs OpenGL?
  - Experienced Practitioners
  - Professional Developers
- What are the requirements?
  - Basic CG concepts understanding
  - Software development proficiency
- How to teach?
  - Application-oriented
  - Efficiency issues

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## OpenGL is not for CG101

- Content Issues
  - Standard: *does not cover all key notions*
- Pedagogical Issues
  - Professional System: *too much detail*
- Conceptual Issues
  - Rendering Engine: *architecture, not algorithms*
- Expository Issues
  - Programmers API: *hides implementation*

## How to Teach CG101

### *Anatomy of an Introductory Graphics Course*

- Key Concepts
  - Ideas behind most Standards
- Basic Theory
  - Fundamental Algorithms
- Simple Practice
  - Minimal Code, but Complete

(Lesson: *solid ground for future development*)

## The Mock-Up Paradigm

### *Custom-made teaching tool*

- Learning with Other Areas
  - Programming Languages
    - Pascal
    - Scheme
  - Operating Systems
    - MINIX
    - XINU

## IMPA's Experience

- Course: *3D Graphics Systems Design*
  - Introductory Master's level course
  - Math / CS students
- Toolkit: *I3D Graphics Library*
  - C Language
  - GNU environment: UNIX / Windows
- Book: *Sistemas Gráficos 3D*
  - Concepts and Algorithms

## Issues for Discussion

- *Scope*
  - 2D Graphics / 3D Graphics
- *Length*
  - 1 Semester / 2 Semester
- *Level*
  - Undergraduate / Graduate
- *Target Audience*
  - Technical / Artistic