

Teaching Statistics with Electronic Textbooks

J. Symanzik* & N. Vukasinovic
Utah State University, Logan, UT

**symanzik@math.usu.edu*

<http://www.math.usu.edu/~symanzik>

Outline

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The background of the slide is a grayscale, high-magnification micrograph showing a complex, porous, and interconnected network of fibers or cells, resembling a biological or material structure. A large, light gray rectangular area is overlaid on the left side of the slide, containing the title text. Two vertical white bars are positioned on the left edge of the slide: one at the top and one below the title area.

Introduction

Introduction

- Traditional Intro Stats Courses:
 - Difficult & boring !
- Computer-based Intro Stats Courses:
 - Reduced manual calculations
 - Graphics
 - Simulations

Teaching with Software

- Chromiak & Rossman (1992):
Use of Hypercard for Mac
- Lock (1997):
Internet resources for teaching stats
- Currall (1997), Rönz (1997):
Computer-aided teaching stats
- Symanzik (1998):
Resources for Web-based teaching

Purposes of Teachware

- Enables better and easier understanding of statistical concepts.
- Creates more interesting and active learning environment.

E-Textbooks

- HyperStats
- UCLA Statistics e-book
- Seeing Statistics
- ActivStats
- CyberStats
- MM*Stat



E-Textbook Review

Comparative Review

- ActivStats
- CyberStats
- MM*Stat

Common Features

- Text, graphics, exercises
- Interactive table of contents
- Index
- Glossary
- Self-assessment

ActivStats

- Author: Paul Velleman
- First release: 1996 by Addison Wesley
- Price: \$51 individual, \$225 commercial
- Annual updates
- CD-ROM + 30-page "User's Guide"
- Incorporated Software: DataDesk

ActivStats (2)

- Targets undergraduates (non-science majors)
- Emphasizes concepts, visualizations, data analysis
- Topic sequence as in “standard” textbooks
- Multimedia package
- Demo

CyberStats

- Publisher: CyberGnostic (Alex Kugushev)
- First release: 1999
- Price: \$30 per semester/individual
- Frequent updates
- Web access only
- Incorporated Software: Datatool (WebStats)

CyberStats (2)

- Undergraduate audience
- Flexible topic selection & sequence
- Three keys: Basics, Uses, Warning
- Instructor's and students' Web pages, message board, chat room
- Demo

MM*Stat

- Authors: W. Härdle, B. Rönz, et al.
- First commercial release: 2001 by Springer
- Price: EUR 17.20 (German edition)
- CD-ROM + printed manual
- International editions freely available on the Web
- Incorporated Software: XploRe

MM*Stat (2)

- Targets science and engineering majors
- More abstract level of presentation
- Different sequence of topics
- Definitions, formulas, math concepts
- Demo



Teaching Experiences with CyberStats

CyberStats at USU

- Two sections of intro stats (Stat 2000) in Fall 2001 at Utah State:
 - “Traditional”:
 - 17 students
 - “regular” classroom
 - textbook (Moore & McCabe)
 - “Web-based”:
 - 14 students
 - electronic classroom (computer lab)
 - CyberStats V. 2.0

CyberStats at USU (2)

- No major differences in student performance and grade distribution in both sections
- CyberStats students motivated to work on electronic assignments, but not on additional paper assignments
- Less material covered in Web section

CyberStats at USU (3)

- Subjectively, students liked CyberStats
- Most favorite features: Interactives & online homework submission
- Least favorite features: Problems due to Web-only access

The background of the slide is a grayscale microscopic image showing a complex, textured surface with a grid-like pattern of small, interconnected structures. A large, light gray rectangular area is overlaid on the left side of the image, containing the word "Conclusions" in a bold, dark red font. There are also two vertical gray bars on the left side of the slide, one above and one below the main text area.

Conclusions

Summary

- E-Textbooks aim at different audiences
 - Difficulty level
 - In-class / out-of-class use
- Advantages, but also disadvantages of electronic textbooks exist
- Highly recommendable are alternative formats: Web, CD & printed version